

2023 Annual Report of the National Poison Data System® (NPDS) from America's Poison Centers®: 41st Annual Report

David D. Gummin, James B. Mowry, Michael C. Beuhler, Daniel A. Spyker, Laura J. Rivers, Ryan Feldman, Kaitlyn Brown, Nathaniel P.T. Pham, Alvin C. Bronstein & Carol DesLauriers

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2023 Annual Report of the National Poison Data System® (NPDS) from America's Poison Centers®: 41st Annual Report

David D. Gummin , James B. Mowry , Michael C. Beuhler , Daniel A. Spyker , Laura J. Rivers, Ryan Feldman , Kaitlyn Brown , Nathaniel P.T. Pham, Alvin C. Bronstein  and Carol DesLauriers

ABSTRACT

Introduction: This is the 41st Annual Report of America's Poison Centers® National Poison Data System®. As of 1 January, 2023, all 55 of the nation's poison centers uploaded case data automatically to NPDS.

Methods: We analyzed the case data, tabulating specific indices from the NPDS®. The methodology was as in previous years. Where changes were introduced, the differences are identified. Cases with medical outcomes of death were evaluated by a team of medical and clinical toxicologists using an ordinal scale of 1-6 to assess the Relative Contribution to Fatality of the exposure.

Results: In 2023, 2,421,251 closed encounters were logged by the National Poison Data System®: 2,080,659 human exposures, 41,857 animal exposures, 293,663 information requests, 5,046 human confirmed nonexposures, and 26 animal confirmed nonexposures. The upload interval was 4.88 [4.43, 9.33] (median [25%, 75%]) minutes, creating a near real-time national exposure and information database and surveillance system. Total encounters showed a 2.49% decrease from 2022 while human exposure cases increased by 0.764% and health care facility human exposure cases increased by 2.38%. All information requests decreased by 19.1%, medication identification (Drug ID) requests decreased by 14.0%, and medical information requests showed a 61.3% decrease, returning to pre-COVID-19 pandemic numbers. Drug Information requests showed a 17.6% decrease, due to continued declining COVID-19 vaccine calls to poison centers, but these still comprised 21.7% of all information contacts. Human exposures with less serious outcomes have decreased by 1.58% per year since 2008, while those with more serious outcomes (moderate, major or death) have increased by 4.25% per year since 2000.

Consistent with the previous year, the top 4 substance classes most frequently involved in all human exposures were analgesics (11.00%), household cleaning substances (7.12%), antidepressants (5.58%), and cosmetics/personal care products (5.01%). Cardiovascular drugs (4.97%) replaced antihistamines as the 5th most common substance class. As a class, analgesic exposures increased most rapidly, by 1,260 cases/year (2.72%/year) over the past 10 years for cases with more serious outcomes.

The top 5 most common exposures in children aged 5 years or less were household cleaning substances (10.1%), analgesics (9.13%), cosmetics/personal care products (9.10%), foreign bodies/toys/miscellaneous (8.03%), and dietary supplements/herbals/homeopathic (6.88%). The National Poison Data System® documented 3,272 human exposures resulting in death; 2,700 (82.5%) of these were judged as related (Relative Contribution to Fatality of 1-Undoubtedly responsible, 2-Probably responsible, or 3-Contributory).

Conclusions: These data support the continued value of poison center expertise and the need for specialized medical toxicology information to manage the increasing number of more serious exposures. Unintentional and intentional exposures continue to be a significant cause of morbidity and mortality in the US. The near real-time nature of the National Poison Data System® represents a national public health resource for collecting and monitoring US exposure cases and information requests. The continuing mission of the National Poison Data System® is to provide a nationwide infrastructure for surveillance for all types of exposures (e.g., foreign body, infectious, venomous, chemical agent, or commercial product), and the identification and tracking of significant public health events. The National Poison Data System® is a model system for the near real-time surveillance of national and global public health.

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Introduction

This is the 41st Annual Report of America's Poison Centers® National Poison Data System® (NPDS) [1]. Fifty-five regional poison centers (PCs), serving the entire population of the 50 United States, American Samoa, the District of Columbia, Federated States of Micronesia, Guam, Puerto Rico, and the US Virgin Islands submitted information and exposure case data collected during the course of providing patient-specific exposure management and poison information for the entire year of 2023.

NPDS is the data warehouse for the nation's PCs, which prioritize exposure management, accurate data collection and coding, and respond to the continuing need for poison-related public and professional education. Consultation with the PCs' healthcare professionals is available free of charge to users, 24 hours a day, every day of the year. Poison centers respond to questions from the public, healthcare professionals, and public health agencies. The number of exposures and information encounters has averaged over 3.3 million annually since the year 2000. Encounters involve either an exposed human or animal (Exposure case) or a request for information with no person or animal exposed to any foreign body, viral, bacterial, venom, chemical agent or commercial product (Information request). A unique feature of PC case management is the use of follow-up calls to monitor case progress, provide ongoing treatment recommendations, and determine the medical outcome of each case.

The NPDS Products Database

The NPDS products database contains over 483,000 products, ranging from viral and bacterial pathogens to commercial chemical and drug products. The products database is maintained and continuously updated by data analysts at the Micromedex® POISINDEX® System (Micromedex® [electronic version], Merative™, Ann Arbor, MI, USA. Available at: <https://www.micromedexsolutions.com/>). A robust generic coding system categorizes the product data into 1,118 active America's Poison Centers Generic Codes®. These generic codes are grouped into Pharmaceutical (555) and Nonpharmaceutical (563) groups. These two groups are divided into Major (68) and Minor (189) categories. The generic coding schema undergoes continuous improvement through the work of the America's Poison Centers®–Micromedex® Joint Coding Committee. The group consists of America's Poison Centers® members and Micromedex® editorial and lexicon staff who work to follow best terminology practices. The generic code system provides enhanced report granularity as shown in [Appendix B \(Table 22\)](#). The following generic codes were introduced in 2023:

Generic Codes Added in 2023*

1. Mushrooms, Processed Preparations: Psilocybin Containing
2. Mushrooms, Processed Preparations: Amanita Containing
3. Expanding Water Beads

*Because the new codes were added during December 2023, the number of cases for these generic codes in [Appendix B \(Table 22\)](#) does not reflect the entire year. For completeness, certain categories require customized data retrieval until they have been in place for more than 1 calendar year.

What's New in the 2023 NPDS Annual Report?

- Emerging trends: Unregulated (Non-cannabinoid) Psychoactive Substances
- Data snapshot: Water beads

PoisonHelp.org

Since the advent of the smartphone and tablet in 2006, consumers increasingly turn to web-based resources to obtain poisoning and other health-related information. In response to this trend, in 2015, America's Poison Centers® devised an online tool for consumers to obtain simple, individualized poisoning recommendations. This tool provides an alternative to directly contacting a poison center and guides the consumer to a poison center when poison specialist input is deemed most appropriate. The platform launched during National Poison Prevention Week in 2016 with initial goals that included a system that would be credible, fast, easy-to-use, readily accessible from a variety of devices, and available free of charge to consumers. Data collection began in 2017, documenting web-based contacts which are defined as a completed case form submission on PoisonHelp.org. PoisonHelp.org features an interactive Get Help tool that provides critical triage recommendations on how to manage exposures to potentially toxic products, substances, and medications. Users are prompted to answer a few questions regarding a human exposure to any of the 483,000-plus unique products. Recommendations are vetted by specially-trained physicians, pharmacists, and nurses from our nation's 55 poison centers. The website can be accessed from any computer or mobile device and is free, confidential, and available 24/7.

[Appendix D](#) contains web-based contact data obtained during the years of PoisonHelp.org activity. Tables in [Appendix D](#) show the demographic information, and the most frequent substances queried for human exposure contacts in 2023.

Methods

Characterization of Participating Poison Centers and Population Served

Fifty-five US poison centers submitted data to NPDS through 31 December 2023. The entire population of the 50 United States, American Samoa, the District of Columbia, the Federated States of Micronesia, Guam, Puerto Rico, and the US Virgin Islands was served by the US PC network in 2023 [2].

Encounter Management–Specialized Poison Exposure Emergency Providers

Poison center Managing Directors are primarily responsible for patient care/information service operations, clinical education, and supervising staff instruction. Most are PharmDs or RNs with American Board of Applied Toxicology

(ABAT) certification in clinical toxicology. Medical direction is provided by Medical Directors who are board-certified physician medical toxicologists. At some PCs, the Managing and Medical Director roles are held by the same individual.

Encounters with US PCs are managed by healthcare professionals who have received specialized training in toxicology to provide assessment, triage, management and monitoring of toxic emergencies. These personnel include medical and clinical toxicologists, registered nurses (RNs), pharmacists (PharmD or BS), physicians, and physician assistants. Most commonly, RNs and pharmacists make up the contingent of "Specialists in Poison Information" (SPIs) or "Certified Specialists in Poison Information" (CSPIs) in the US. CSPIs triage lay public callers to the most appropriate level of care and provide health care professionals with the most up-to-date management recommendations to care for their poisoned/overdosed patients. For a SPI to become nationally certified as a CSPI, they must log, at minimum, 1,200 hours in a PC and handle 2,000 human exposure cases before being considered eligible to take the certification examination. RNs, pharmacists, physicians, and physician assistants are the only individuals eligible to sit for the CSPI examination. Of note is the lack of an appropriate, core toxicology training within most graduate medical education curricula to allow these medical professionals to be prepared for PC patient management operations. These individuals must receive significant additional training beyond their degree programs to become CSPIs. Such training is only offered within the PCs. "Poison Information Providers" (PIPs) are allied healthcare professionals who are allowed to manage information-type and lower acuity cases while working under the supervision of a CSPI; they have been utilized to a lesser degree by PCs in recent years. Poison centers undergo a rigorous accreditation process administered by America's Poison Centers® and must submit an annual accreditation report and an extensive reaccreditation application every 7 years.

NPDS—Near Real-time Data Capture

Extensively enhanced over its predecessor, the Toxic Exposure Surveillance System (TESS), which began collecting data in 1983 and near real-time data in 2003, NPDS was launched on 12 April 2006. NPDS is the data repository for all US PCs and includes all case information collected by its predecessor. In 2023, all 55 US PCs uploaded case data automatically to NPDS in near real-time, making NPDS one of the few operational systems of its kind. Poison center staff record cases contemporaneously in 1 of 5 electronic medical record systems. Each PC uploads case data automatically.

The web-based NPDS software facilitates the detection, analysis, and reporting of surveillance anomalies. System software offers a myriad of surveillance uses allowing America's Poison Centers®, its member centers, and public health agencies to utilize NPDS exposure data. Users can access regional data for their own areas and

view national aggregate data. Custom surveillance definitions are available, along with ad hoc reporting tools. Information in the NPDS database is dynamic. Each year the database is locked prior to extraction of annual report data to ensure consistent, reproducible reports. Additional information including autopsy data on fatalities may be added after the lock date as an addendum to the fatality abstract. The 2023 database was locked on 5 August 2024 at 11:52 AM EDT.

Note: NPDS entries are referred to as human or animal **"exposure cases,"** rather than "calls," because a single call may describe more than one case and because the management of an NPDS case often requires more than a single telephone call or contact. The information in this report reflects only individual case entries that are not duplicates, and only those cases that have been designated by the regional PC as being "closed." A case is closed when the PC has determined that no further follow-up/recommendations are required or when no further information is available. Exposure cases are followed to obtain the most precise medical outcome possible, when appropriate to do so. Depending on the case specifics, most cases are "closed" within a few hours of the initial contact. Cases involving complex hospitalized patients or those resulting in death may remain open for months while data continue to be collected. Follow-up contacts provide a proven mechanism for monitoring the appropriateness of management recommendations, enabling continual updates of case information, augmenting patient guidelines, providing poison prevention education, and obtaining final medical outcomes to make the data collected as accurate and complete as possible.

Statistical Methods

All tables except Tables 1A, 3B, 17B, and Tables D-1, D-2, and D-3 were generated directly by the NPDS web-based application and can thus be reproduced by each PC. The analyses for Figures 1-4 were done using SAS JMP® Pro version 16.2.0 (SAS Institute, Cary, NC) with summary counts generated by the NPDS web-based application. The analyses for Figures 5-10, Tables 1A, 3B, 17B, D-1, D-2, and D-3, and Figure D-1 were created using Microsoft Excel 365 (Microsoft, Redmond, WA) with summary counts and data generated by the NPDS web-based application.

NPDS Surveillance

As previously noted, all active US PCs upload case data automatically to NPDS. This unique near real-time upload is the foundation of the NPDS surveillance system, making both spatial and temporal case volume and case-based surveillance possible. NPDS allows creation of volume and case-based definitions. Definitions can be applied to national, regional, state, or ZIP code coverage areas. Geocentric definitions can also be created, which use cases reported from a geographic location regardless of which PC managed the

case. This functionality is available to every PC as well as the America's Poison Centers' Toxicosurveillance Team. Poison centers can also share NPDS near real-time surveillance technology with external organizations such as their state and local health departments or other regulatory agencies. Another NPDS feature is the ability to generate system alerts on adverse drug events and other drug or commercial products of public health interest such as contaminated food or product recalls. Thus, NPDS can provide near real-time adverse event monitoring, surveillance, response, and situational awareness.

Surveillance definitions can be created to monitor a variety of parameters (i.e., volume or case-based) on any desired substance or commercial product in the Micromedex® products database; and/or set of clinical effects or other parameters. The products database contains over 483,000 entries ranging from viral and bacterial agents to commercial chemical and drug products. Surveillance definitions may be constructed using volume or case-based definitions with a variety of mathematical options and historical baseline periods from 1 to 5 years. NPDS surveillance tools include:

- Volume Alert Surveillance Definitions
 - Total Encounter Volume
 - Human Exposure Case Volume
 - Animal Exposure Case Volume
 - Information Request Volume
 - Clinical Effects Volume (signs and symptoms, or laboratory abnormalities)
 - Syndromic Surveillance Volume allows Boolean based definitions utilizing various NPDS data fields to be run based on historical trends for user defined periods of interest
- Case-Based Surveillance Definitions utilizing various NPDS data fields linked in Boolean expressions
 - Substance
 - Clinical Effects
 - Species
 - Medical Outcome and others

Incoming data are monitored continuously, and anomalous signals generate an automated, emailed alert to the America's Poison Centers'-designated PC or public health agency staff. These anomaly alerts are reviewed by the America's Poison Centers' Toxicosurveillance Team, the PC, or the public health agency that created the surveillance definition. When reports of potential public health significance are detected, additional information is obtained from reporting PCs through the NPDS surveillance correspondence system or by phone. The PC then can alert their respective local or state health department (if not already done). Public health issues are brought to the attention of the Health Studies Branch, National Center for Environmental Health, Centers for Disease Control and Prevention (HSB/NCEH/CDC).

Clinical and medical toxicologists on the America's Poison Centers' Toxicosurveillance Team review surveillance

definitions on a regular basis to fine-tune the queries. The CDC, as well as state and local health departments with NPDS access granted by their respective PCs, can also create surveillance definitions for routine surveillance tasks or to respond to emerging public health events.

Emerging Trends

Each year since the 2007 annual report, the authors have highlighted a trend in NPDS data with public health importance. Previous reports have focused on the poison center response to COVID-19, e-cigarette vaping-associated lung injury, adolescent suicides, cannabinoid exposures, and fentanyl fatalities. This year we highlight trends in the use of phenibut, tianeptine, kratom, and nitrous oxide. These psychoactive substances, frequently found in retail settings (e.g., gas stations, smoking accessory retailers—"smoke" or "vape" shops—or nutritional supplement stores), all share a federally unregulated status, and the first three have been highlighted as representing potential for increasing health concerns [3]. While cannabinoid derivative products (e.g., delta 8, delta 10) have also rapidly proliferated in this space, these were previously examined in 2022. This section aims to highlight the public health significance and potential risks associated with these unregulated psychotropic products.

NPDS was queried for closed human exposure cases excluding confirmed non-exposures from January 1, 2014 - Dec 31, 2023 for the generic codes of kratom and nitrous oxide. Product codes were utilized for phenibut and tianeptine. Rates of poison center case contacts, more serious medical outcomes, health care utilization, and frequency of withdrawal states were compared.

Snapshot

The Snapshot is intended to very briefly highlight an exposure of newly-identified significance. Because of a sudden increase in PC contacts, water bead exposures reported to US PCs are examined in the 2023 Snapshot. These superabsorbent polymer beads are often colorful and are used in children's activities [4]. Exploratory pediatric ingestion appears increasingly common. The NPDS database was queried for all confirmed single substance human exposure cases, age 0 to 19 years, for water bead generic and product codes from January 1, 2014 to December 31, 2023. Product codes for hot packs, cold packs and stress balls were excluded.

Fatality Case Review and Abstract Selection

NPDS fatality cases are recorded as Death or Death (Indirect Report). A medical outcome of Death means that the PC was notified of the death in a case in which PC personnel were involved in some aspect of the management or responded to

a specific case query. Deaths (Indirect Report) are deaths that the PC acquired, typically from medical examiners or media, but did not manage or answer any questions related specifically to that case.

The definitions used for the Relative Contribution to Fatality (RCF) classification are provided in [Appendix F](#), and the methods to select abstracts for publications are described in [Appendix C](#). Although PCs may report death as an outcome, the death might not necessarily result from the exposure. We define exposure-related fatality as a death judged by the America's Poison Centers' Fatality Review Team to be at least contributory to the exposure (RCF 1-3). The America's Poison Centers' fatality review process was first published in detail in the 2008 NPDS Annual Report [1].

Pediatric Fatality Case Review

A focused Pediatric Fatality Review team comprised of five toxicologists with pediatric expertise evaluated cases for patients under 19 years of age. The panel reviewed the documentation of all such cases, with specific focus on the conditions behind the poisoning exposure and on identifying commonalities which might inform efforts at prevention. The reviewed pediatric fatality cases exhibited a bimodal age distribution. As has been true for several years, the circumstances of the case are often not captured in the reason code or the narrative. The pediatric fatality review team encourages that additional detail be obtained from law enforcement or child protective services, postmortem investigation, and regarding how the child accessed the substances responsible for the fatality.

Results

Data Upload Frequency

The time to upload data for all PCs is 4.88 [4.43, 9.33] (median [25%, 75%]) minutes creating a near real-time national exposure database and surveillance system.

Information Requests to Poison Centers

A total of 22,446,009 information requests have been logged into NPDS since the year 2000. Data from 293,663 information requests to PCs in 2023 ([Table 1C](#)) were entered into NPDS, including requests in optional reporting categories such as medical information (26,247), drug information (63,709), caller referred (55,924), poison information (44,501), administrative (17,162), and prevention/safety/education (16,236). Total information requests to PCs decreased 19.1% from 2022 (363,099 requests) to 2023 (293,663 requests). COVID-19 information requests decreased as well, from 60,353 requests in 2022 to 7,786 requests in 2023 (as shown in [Figure 1](#)).

[Figure 2](#) shows that daily medication identification (drug ID) requests have decreased dramatically since mid-2008. Answering drug ID requests is optional for PCs, and some have stopped answering such requests from the public. Law enforcement drug ID requests also showed a decline.

Drug ID requests were the 6th most frequent information requests for 2023, comprising 17,315 requests for PCs during the year. Of these, 7,999 (46.2%) were identified as drugs with known abuse potential. However, these cases were categorized based on the drug's abuse potential without knowledge of whether abuse was intended.

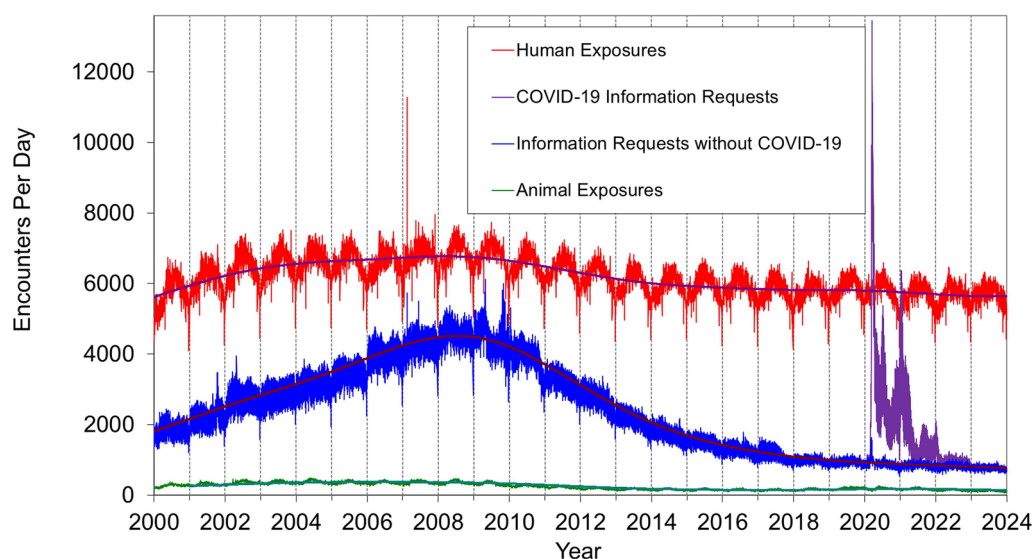


Figure 1. Human Exposure Cases, Information Requests, and Animal Exposure Cases by Day since 1 January 2000.

Smoothing spline fits using $\lambda = 1200$ for human exposures had associated $RSqr = 0.514$, information requests $RSqr = 0.945$ (excluding COVID-19 information requests), and animal exposures $RSqr = 0.889$. COVID-19 information requests on the disease, vaccines, home tests, and monoclonal antibodies are plotted separately from other information requests.

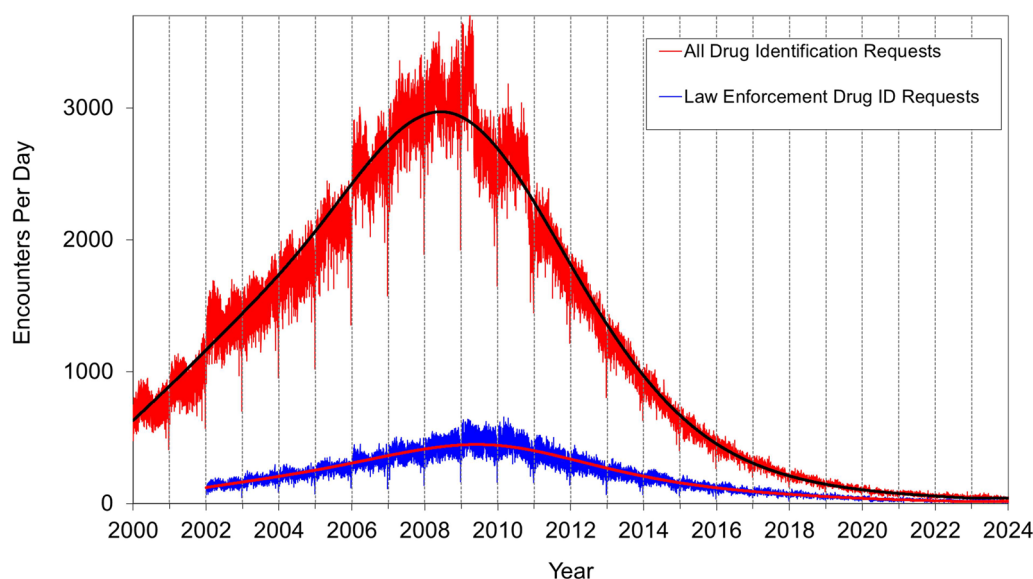


Figure 2. All Drug Identification and Law Enforcement Drug Identification Requests by Day since 1 January 2000. Smoothing spline fits used $\lambda = 1200$, all drug identification requests had associated $RSqr = 0.977$ and law enforcement drug ID requests $RSqr = 0.922$.

Drug information requests decreased 17.6% from 2022 (77,342) to 2023 (63,709) due to a continuing decrease in requests to PCs about COVID-19 vaccines from 2022 (12,328) to 2023 (1,266). The most common drug information requests were drug-drug interactions (7.69%), other drug info (3.62%), and dosage (2.90%).

The number of medical information requests decreased 61.3% from 2022 (67,780) to 2023 (26,247). The most common medical information requests were other medical, diagnostic or treatment recommendations, explanation of disease states, and general first aid. Environmental inquiries comprised 3.41% of all information requests and increased 12.3% from 2022 (8,927) to 2023 (10,024). Of these environmental inquiries, specific questions related to pesticides were most common, followed by potential toxicity of chemicals in the environment, air quality, carbon monoxide, and safe disposal of chemicals.

Of all the information requests, poison information comprised 15.2% of the requests with inquiries involving general toxicity the most common followed by questions involving other poisons, safe use of household products, food preparation/handling practices, and food poisoning.

Exposure Cases Logged at Poison Centers

In 2023, participating PCs logged 2,421,251 total encounters including 2,080,659 closed human exposure cases (Table 1A), 41,857 animal exposures (Table 1B), 293,663 information contacts (Table 1C), 5,046 human confirmed non-exposures, and 26 animal confirmed non-exposures. An additional 22 cases were still open at the time the database was locked. The cumulative America's Poison Centers® database now contains over 81 million human exposure case records.

The average number of human exposure cases managed per day by all US PCs was 5,700. As in other years, higher

volumes were observed in the warmer months, with a mean of 5,939 cases per day in May compared with 5,334 per day in December. On average, US PCs experienced a new encounter involving a human exposure every 15.2 seconds.

Figure 1 shows the human exposures, information requests and animal exposures by day since 1 January 2000. Smoothing spline fit of these data shows departure from linearity (declining rate of cases since mid-2007) for human exposure cases with some flattening over the last 4 years. Animal exposure cases have been declining since mid-2005. Information requests had been declining until early 2020 when PCs response to COVID-19 showed a sustained increase in information requests which have since declined below pre-pandemic levels.

A hallmark of PC case management is the use of follow-up contacts to monitor case progress and medical outcome. PCs made over 2,496,000 follow-up contacts in 2023. (Note: there exists some variation in the way that this number is determined between the 5 data entry systems presently used by America's Poison Centers® members). Follow-up was performed in 42.7% of human exposure cases. One follow-up contact was made in 19.3% of human exposure cases and multiple follow-ups (range 2 to 258) were performed in 23.4% of cases. For human exposure cases in which follow-up contacts were documented, an average of 2.74 contacts per case were done.

Figure 3 shows a graphic summary and analyses of Health Care Facility (HCF) exposure cases and HCF information requests. The trend in HCF exposure cases slightly departs from linearity but continues to increase. HCF information requests increased dramatically in 2020 and 2021 due to the COVID-19 pandemic before returning to a pre-pandemic rate in 2022. This increasing use of the PCs for the more serious cases (HCF exposures) is important in the face of the overall decline in exposure and information encounters.

Table 1A. America's Poison Centers Population Served and Reported Exposures (1983-2023)

Year	No. of participating centers	Population served (in millions)	Human exposures	Exposures per thousand population
1983	16	43.1	251,012	5.82
1984	47	99.8	730,224	7.32
1985	56	113.6	900,513	7.93
1986	57	132.1	1,098,894	8.32
1987	63	137.5	1,166,940	8.49
1988	64	155.7	1,368,748	8.79
1989	70	182.4	1,581,540	8.67
1990	72	191.7	1,713,462	8.94
1991	73	200.7	1,837,939	9.16
1992	68	196.7	1,864,188	9.48
1993	64	181.3	1,751,476	9.66
1994	65	215.9	1,926,438	8.92
1995	67	218.5	2,023,089	9.26
1996	67	232.3	2,155,952	9.28
1997	66	250.1	2,192,088	8.76
1998	65	257.5	2,241,082	8.70
1999	64	260.9	2,201,156	8.44
2000	63	270.6	2,168,248	8.01
2001	64	281.3	2,267,979	8.06
2002	64	291.6	2,380,028	8.16
2003	64	294.7	2,395,582	8.13
2004	62	293.7	2,438,643	8.30
2005	61	296.4	2,424,180	8.18
2006	61	299.4	2,403,539	8.03
2007	61	305.6	2,482,041	8.12
2008	61	308.5 ^b	2,491,049	8.07
2009	60	310.9 ^b	2,479,355	7.97
2010	60 ^a	313.3 ^b	2,384,825	7.62
2011	57 ^c	315.7 ^b	2,334,004	7.39
2012	57	318.0 ^b	2,275,141	7.15
2013	57 ^d	320.2 ^e	2,188,013	6.83
2014	56 ^d	322.9 ^e	2,165,142	6.71
2015	55 ^f	325.4 ^e	2,168,371	6.66
2016	55	327.0 ^e	2,159,032	6.60
2017	55	330.4 ^e	2,115,186	6.40
2018	55	330.0 ^e	2,099,751	6.36
2019	55	334.0 ^e	2,148,141	6.43
2020	55	336.4 ^e	2,128,198	6.33
2021	55	338.7 ^e	2,080,917	6.14
2022	55	337.0 ^e	2,064,875	6.13
2023	55	343.1 ^e	2,080,659	6.06
Total			81,327,640	

^aAs of 1 July 2010 there were 60 Participating Centers.^bAAPCC Total as of 1 July Mid Year US Census (2012 data for 50 United States, District of Columbia and Puerto Rico; 2011 data for Guam; 2010 data for American Samoa, Federated States of Micronesia, and the US Virgin Islands).^cAs of 1 July 2011 there were 57 Participating Centers.^dOne Participating Center closed in September 2013. Its data is included in the 2013 totals but not in the 2014 data.^eAmerica's Poison Centers Total as of 1 July Mid Year US Census (data for 50 United States, District of Columbia and Puerto Rico, Guam, American Samoa, Federated States of Micronesia, and the US Virgin Islands) [2].^fOne Participating Center closed in July 2014. Its data is included in the 2014 totals but not in the 2015 data.**Table 1B.** Non-Human Exposures by Animal Type

Animal	N	%
Dog	37,391	89.33
Cat	3,838	9.17
Bird	141	0.34
Rodent / lagomorph	101	0.24
Horse	67	0.16
Sheep / goat	37	0.09
Cow	24	0.06
Aquatic	22	0.05
Other	236	0.56
Total	41,857	100.00

Table 1C. Distribution of Information Requests

Information request type	N	% of Info. requests
Drug identification		
Public inquiry: Drug sometimes involved in abuse	3,895	1.33
Public inquiry: Drug not known to be abused	3,827	1.30
Public inquiry: Unknown abuse potential	250	0.09
Public inquiry: Unable to identify	1,797	0.61
HCP inquiry: Drug sometimes involved in abuse	195	0.07
HCP inquiry: Drug not known to be abused	209	0.07
HCP inquiry: Unknown abuse potential	24	0.01
HCP inquiry: Unable to identify	171	0.06
Law Enf. inquiry: Drug sometimes involved in abuse	3,909	1.33
Law Enf. inquiry: Drug not known to be abused	1,703	0.58
Law Enf. inquiry: Unknown abuse potential	170	0.06
Law Enf. inquiry: Unable to identify	754	0.26
Other drug ID	411	0.14
Subtotal	17,315	5.90
Drug information		
Adverse effects (no known exposure)	3,992	1.36
Brand / generic name clarifications	251	0.09
Calculations	69	0.02
Compatibility of parenteral medications	85	0.03
Compounding	80	0.03
Contraindications	847	0.29
Dietary supplement, herbal, and homeopathic	312	0.11
Dosage	8,508	2.90
Dosage form / formulation	970	0.33
Drug use during breast-feeding	668	0.23
Drug-drug interactions	22,577	7.69
Drug-food interactions	1,419	0.48
Foreign drug	24	0.01
Generic substitution	93	0.03
Indications / therapeutic use	3,039	1.03
Medication administration	5,098	1.74
Medication availability	1,173	0.40
Medication disposal	515	0.18
Pharmacokinetics	685	0.23
Pharmacology	265	0.09
Regulatory	753	0.26
Stability / storage	1,387	0.47
Therapeutic drug monitoring	262	0.09
Other drug info	10,637	3.62
Subtotal	63,709	21.69
Environmental information		
Air quality	972	0.33
Carbon monoxide - no known patient(s)	427	0.15
Carbon monoxide alarm use	448	0.15
Chem / bioterrorism / weapons (suspected or confirmed)	9	0.00
Clarification of media reports of environmental contamination	34	0.01
Clarification of substances involved in a HAZMAT incident - no known victim(s)	382	0.13
General questions about contamination of air and / or soil	199	0.07
HAZMAT planning	30	0.01
Lead - no known patient(s)	215	0.07
Mercury thermometer cleanup	466	0.16
Mercury (excluding thermometers) cleanup	387	0.13
Notification of a HAZMAT incident - no known patient(s)	437	0.15
Pesticide application by a professional pest control operator	304	0.10
Pesticides (other)	1,287	0.44
Potential toxicity of chemicals in the environment	996	0.34
Radiation	46	0.02
Safe disposal of chemicals	813	0.28
Water purity / contamination	457	0.16

(Continued)

Table 1C. Distribution of Information Requests – Continued.

Information request type	N	% of Info. requests
Other environmental	2,115	0.72
Subtotal	10,024	3.41
Medical information		
Dental questions	58	0.02
Diagnostic or treatment recommendations for diseases or conditions - non-toxicology	6,952	2.37
Disease prevention	472	0.16
Explanation of disease states	1,034	0.35
General first-aid	727	0.25
Interpretation of non-toxicology laboratory reports	133	0.05
Medical terminology questions	22	0.01
Rabies - no known patient(s)	291	0.10
Sunburn management	1,365	0.46
Other medical	15,193	5.17
Subtotal	26,247	8.94
Occupational information		
Occupational treatment / first-aid guidelines - no known patient(s)	31	0.01
Information on chemicals in the workplace	73	0.02
MSDS interpretation	19	0.01
Occupational MSDS requests	69	0.02
Routine toxicity monitoring	10	0.00
Safe handling of workplace chemicals	82	0.03
Other occupational	137	0.05
Subtotal	421	0.14
Poison information		
Analytical toxicology	553	0.19
Carcinogenicity	65	0.02
Food poisoning - no known patient(s)	1,234	0.42
Food preparation / handling practices	4,291	1.46
General toxicity	20,076	6.84
Mutagenicity	20	0.01
Plant toxicity	870	0.30
Recalls of non-drug products (including food)	287	0.10
Safe use of household products	4,586	1.56
Toxicology information for legal use / litigation	106	0.04
Other poison	12,413	4.23
Subtotal	44,501	15.15
Prevention / Safety / Education		
Confirmation of poison center number	10,654	3.63
General (non-poison) injury prevention requests	339	0.12
Media requests	282	0.10
Poison prevention material requests	4,134	1.41
Poison prevention week date inquiries	41	0.01
Professional education presentation requests	116	0.04
Public education presentation requests	142	0.05
Other prevention	528	0.18
Subtotal	16,236	5.53
Teratogenicity information		
Teratogenicity	296	0.10
Subtotal	296	0.10
Other information		
Other	40,381	13.75
Subtotal	40,381	13.75
Substance Abuse		
Drug screen information	763	0.26
Effects of illicit substances - no known patient(s)	91	0.03
New trend information	53	0.02
Withdrawal from illicit substances - no known patient(s)	127	0.04
Other substance abuse	413	0.14
Subtotal	1,447	0.49
Administrative		
Expert witness requests	22	0.01
Faculty activities	14	0.00
Funding	12	0.00
Personnel issues	56	0.02
Poison center record request	154	0.05

(Continued)

Table 1C. Distribution of Information Requests – Continued.

Information request type	N	% of Info. requests
Product replacement / malfunction (issues intended for the manufacturer)	274	0.09
Scheduling of poison center rotations	30	0.01
Other administration	16,600	5.65
Subtotal	17,162	5.84
Caller Referred		
Immediate referral - animal poison center or veterinarian	33,540	11.42
Immediate referral - drug identification	128	0.04
Immediate referral - drug information	286	0.10
Immediate referral - health department	4,743	1.62
Immediate referral - medical advice line	326	0.11
Immediate referral - pediatric triage service	125	0.04
Immediate referral - pesticide hotline	137	0.05
Immediate referral - pharmacy	571	0.19
Immediate referral - poison center	4,880	1.66
Immediate referral - private physician	1,372	0.47
Immediate referral - psychiatric crisis line	104	0.04
Immediate referral - teratology information program	91	0.03
Other call referral	9,621	3.28
Subtotal	55,924	19.04
Total	293,663	100.00

Tables 22A (Nonpharmaceuticals) and 22B (Pharmaceuticals) found in Appendix B provide summary demographic data on patient age, reason for exposure, medical outcome, and use of an HCF for all 2,080,659 human exposure cases, presented by substance categories. The Pharmaceuticals category includes both licit and illicit drugs.

Column 1: Name of the major, minor generic categories and their associated generic substances. Note that for pharmaceuticals, the generic category or generic substance listed is for the initial FDA approved indication and may not reflect current indications or uses for the pharmaceutical.

Column 2: Number of Case Mentions (all exposures) in grey shading, displays the number of times the specific generic code was reported in any human exposure case. If a human exposure case has multiple instances of a specific generic code, it is only counted once.

Column 3: Number of Single Exposures displays the number of human exposure cases that identified only 1 substance (1 case, substance).

The succeeding columns (Age, Reason, Treatment Site, and Outcome) show selected details from these single-substance exposure cases. Death cases include both cases that have the outcome of Death or Death (indirect report). These death cases are not limited by the RCF.

Tables 22A and 22B (Appendix B) restrict the breakdown columns to single-substance cases. Prior to 2007, when multi-substance exposures were included, a relatively innocuous substance could be mentioned in a death column when, for example, the death was attributed to an antidepressant, opioid, or cyanide. The restriction of the breakdowns to single-substance exposures should increase precision and reduce misrepresentation of the results in this by-substance table. Single substance cases reflect the majority (87.4%) of all exposures. In contrast, only 43.1% of fatalities are single substance exposures (Table 5).

Table 22A and Table 22B (Appendix B) tabulate 2,515,880 case mentions, of which 1,818,901 were single-substance

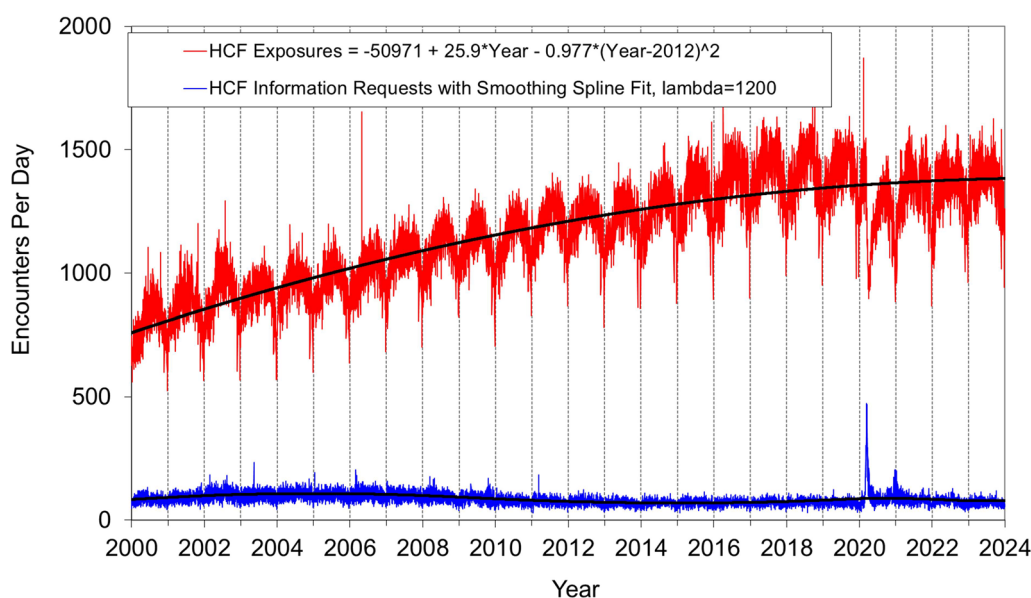


Figure 3. Health Care Facility (HCF) Exposure Cases and HCF Information Requests by Day since 1 January 2000.

Both linear and second order (quadratic) terms were statistically significant ($p < 0.0001$) for regression of HCF human exposure with associated $RSqr = 0.703$ and $RSqr = 0.741$ respectively. The quadratic coefficient is negative meaning the case counts are increasing slower than linearly. Smoothing spline fit with $\lambda = 1200$ for HCF information requests had associated $RSqr = 0.258$.

Table 2. Site of Call and Site of Exposure, Human Exposure Cases

Site	Site of caller		Site of exposure	
	N	%	N	%
Residence				
Own	1,376,858	66.17	1,879,088	90.31
Other	22,221	1.07	37,465	1.80
Workplace	22,804	1.10	42,843	2.06
Health care facility	502,547	24.15	7,118	0.34
School	13,179	0.63	36,771	1.77
Restaurant / food service	413	0.02	3,097	0.15
Public area	7,842	0.38	23,910	1.15
Other	127,903	6.15	27,108	1.30
Unknown	6,892	0.33	23,259	1.12

exposures, including 885,412 (48.7%) nonpharmaceuticals and 933,489 (51.3%) pharmaceuticals. In 21.9% of single-substance exposures that involved pharmaceutical substances, the reason for exposure was intentional, compared to only 4.56% when the exposure involved a nonpharmaceutical substance. Correspondingly, treatment in an HCF was provided in a higher percentage of exposures that involved pharmaceutical substances (33.3%) compared with nonpharmaceutical substances (18.2%). Exposures to pharmaceuticals also had more severe outcomes. Of 1,449 single-substance exposure-related fatal cases, 1,158 (79.9%) were pharmaceuticals compared with 291 (20.1%) nonpharmaceuticals.

Age and Gender Distributions

The age and gender distribution of human exposures is outlined in Table 3A. Children younger than 3 years of age were involved in 28.1% of exposures and children ≤ 5 years accounted for 39.8% of human exposures. A male predominance was found among cases involving children ≤ 12 years, but this gender distribution was reversed in teenagers and adults, with females comprising most

reported exposures. The overall rate of poison exposures reported to PCs is 606/100,000 population (Table 3B). The highest rates of poison exposures are in 1-year-old children (5,968/100,000 population) and 2-year-old children (5,751/100,000 population). Rates declined with age from 588/100,000 population in children 6–12 to 350/100,000 population in adults ≥ 20 years. Table 4 shows the age and gender distribution for the 1,422 exposure-related fatalities (excluding death, indirect).

Caller Site and Exposure Site

As shown in Table 2, of the 2,080,659 human exposure cases reported, 67.2% of cases originated from a residence (own or other) while 92.1% of exposures occurred at a residence (own or other). Another 24.2% of cases originated from an HCF. Beyond residences, exposures occurred in the workplace (2.06% of cases), schools (1.77%), HCF (0.34%), and restaurants or food services (0.15%).

Exposures in Pregnancy

Exposure during pregnancy occurred in 6,184 women (0.297% of all human exposures). Of those with known pregnancy duration ($n = 5,767$), 44.5% occurred in the first trimester, 30.8% in the second trimester, and 24.7% beyond the second trimester. Most (73.4%) were unintentional exposures and 18.9% were intentional exposures. There were 6 deaths of pregnant females recorded in 2023 (3 of these fatalities are published in Appendix C: Annual Report IDs 377, 894, and 1731). Of the other 3 pregnant fatalities, the first was not selected for publication, the second was an indirect death and the third case was not selected for publication as it was assigned an RCF of unknown).

Table 3A. Age and Gender Distribution of Human Exposures

Age (y)	Male		Female		Unknown gender		Total		Cumulative total	
	N	% of age group total	N	% of age group total	N	% of age group total	N	% of total exposures	N	%
Children (<20)										
< 1	48,234	51.66	44,548	47.71	581	0.62	93,363	4.49	93,363	4.49
1	129,098	51.69	119,890	48.01	751	0.30	249,739	12.00	343,102	16.49
2	125,435	52.09	114,679	47.62	706	0.29	240,820	11.57	583,922	28.06
3	71,880	54.74	58,939	44.89	485	0.37	131,304	6.31	715,226	34.37
4	38,934	56.78	29,262	42.68	371	0.54	68,567	3.30	783,793	37.67
5	24,320	57.26	17,847	42.02	304	0.72	42,471	2.04	826,264	39.71
Unknown ≤5	1,087	45.20	963	40.04	355	14.76	2,405	0.12	828,669	39.83
Child 6-12	81,478	55.99	62,527	42.97	1,516	1.04	145,521	6.99	974,190	46.82
Teen 13-19	65,015	36.32	113,098	63.18	893	0.50	179,006	8.60	1,153,196	55.42
Unknown Child	1,834	37.87	1,537	31.74	1,472	30.39	4,843	0.23	1,158,039	55.66
Subtotal	587,315	50.72	563,290	48.64	7,434	0.64	1,158,039	55.66	1,158,039	55.66
Adults (≥20)										
20-29	82,519	42.39	111,667	57.37	471	0.24	194,657	9.36	1,352,696	65.01
30-39	75,496	43.99	95,900	55.88	236	0.14	171,632	8.25	1,524,328	73.26
40-49	49,933	41.26	70,942	58.63	131	0.11	121,006	5.82	1,645,334	79.08
50-59	42,040	39.38	64,594	60.51	114	0.11	106,748	5.13	1,752,082	84.21
60-69	36,764	37.96	59,992	61.95	81	0.08	96,837	4.65	1,848,919	88.86
70-79	25,243	36.00	44,839	63.94	41	0.06	70,123	3.37	1,919,042	92.23
80-89	11,957	35.42	21,783	64.53	19	0.06	33,759	1.62	1,952,801	93.85
≥90	2,477	32.32	5,177	67.56	9	0.12	7,663	0.37	1,960,464	94.22
Unknown adult	38,986	36.66	65,204	61.31	2,153	2.02	106,343	5.11	2,066,807	99.33
Subtotal	365,415	40.21	540,098	59.43	3,255	0.36	908,768	43.68	2,066,807	99.33
Other										
Unknown age	4,454	32.15	6,458	46.62	2,940	21.22	13,852	0.67	2,080,659	100.00
Total	957,184	46.00	1,109,846	53.34	13,629	0.66	2,080,659	100.00	2,080,659	100.00

Table 3B. Population-Adjusted Exposures by Age Group

Age Group	Exposures/100k population	Number of Exposures ^a	Population ^b
Children (<20)			
< 1	2,234	93,363	4,178,406
1	5,968	249,739	4,184,627
2	5,751	240,820	4,187,148
3	3,138	131,304	4,184,473
4	1,641	68,567	4,177,099
5	1,019	42,471	4,166,818
Child 6-12	505	145,521	28,780,511
Teen 13-19	600	179,006	29,817,087
Subgroup	1,383	1,158,039	83,676,169
Adults (≥20)			
20-29	430	194,657	45,219,045
30-39	364	171,632	47,099,229
40-49	289	121,006	41,817,622
50-59	257	106,748	41,447,416
60-69	235	96,837	41,136,485
70-79	251	70,123	27,965,254
80-89	284	33,759	11,875,535
≥90	264	7,663	2,904,860
Subgroup	350	908,768	259,465,446
Overall Total	606	2,080,659	343,141,615

^aNumber of Exposures excludes unknown ages from the individual age categories, but includes them in the Subtotals and Overall Total (see Table 3A).

^bAmerica's Poison Centers Total as of 1 July 2023, 343,141,615 (see Table 1A) [2].

Chronicity

Most human exposures, 1,763,094 (84.7%), were acute cases (single, repeated or continuous exposure occurring over 8 hours or less) although these comprised only 1,068 (32.6%) of the 3,272 fatalities. Chronic exposures (continuous or repeated exposures occurring over more than 8 hours) comprised 2.49% (51,776) of all human exposures. Acute-on-chronic exposures (single exposure that was preceded by a continuous, repeated, or intermittent exposure occurring over a period greater than 8 hours) numbered 228,107 (11.0%).

Reason for Exposure

The reason category for most human exposures was unintentional (77.2%), including: unintentional general (45.1%), therapeutic error (16.6%), and unintentional misuse (8.60%) (Table 6A).

Scenarios

Of the total 345,057 cases involving therapeutic errors (Table 6A) the most common scenarios for all ages included: inadvertent double-dosing (31.0%), other incorrect dose

Table 4. Distribution of Age^a and Gender for Fatalities^b

Age (y)	Male	Female	Unknown	Total (%)	Cumulative total (%)
< 1 year	1	4	0	5 (0.35%)	5 (0.35%)
1 year	3	1	0	4 (0.28%)	9 (0.63%)
2 years	1	2	0	3 (0.21%)	12 (0.84%)
3 years	2	0	0	2 (0.14%)	14 (0.98%)
4 years	1	1	0	2 (0.14%)	16 (1.13%)
5 years	0	0	0	0 (0.00%)	16 (1.13%)
Child 6-12 years	5	6	0	11 (0.77%)	27 (1.90%)
Teen 13-19 years	28	37	0	65 (4.57%)	92 (6.47%)
20-29 years	86	64	0	150 (10.55%)	242 (17.02%)
30-39 years	99	110	0	209 (14.70%)	451 (31.72%)
40-49 years	111	93	0	204 (14.35%)	655 (46.06%)
50-59 years	119	109	0	228 (16.03%)	883 (62.10%)
60-69 years	89	135	0	224 (15.75%)	1,107 (77.85%)
70-79 years	73	112	0	185 (13.01%)	1,292 (90.86%)
80-89 years	39	60	0	99 (6.96%)	1,391 (97.82%)
≥90 years	8	14	0	22 (1.55%)	1,413 (99.37%)
Unknown adult	7	0	0	7 (0.49%)	1,420 (99.86%)
Unknown age	0	1	1	2 (0.14%)	1,422 (100.00%)
Total	672	749	1	1,422 (100.00%)	1,422 (100.00%)

^aAge includes cases with both actual and estimated ages as shown in Table 21.

^bIncludes cases with RCF of 1-Undoubtedly responsible, 2-Probably responsible, or 3-Contributory. This excludes reports with outcome of Death, indirect.

Table 5. Number of Substances Involved in Human Exposure Cases

No. of Substances	Human exposures		Fatal exposures ^a	
	N	%	N	%
1	1,818,901	87.42	613	43.11
2	166,464	8.00	374	26.30
3	52,599	2.53	205	14.42
4	21,459	1.03	110	7.74
5	9,594	0.46	46	3.23
6	4,924	0.24	29	2.04
7	2,606	0.13	8	0.56
8	1,586	0.08	17	1.20
≥9	2,526	0.12	20	1.41
Total	2,080,659	100.00	1,422	100.00

^aIncludes cases with RCF of 1-Undoubtedly responsible, 2-Probably responsible, or 3-Contributory. This excludes reports with outcome of Death, indirect.

(16.4%), wrong medication taken or given (14.9%), doses given/taken too close together (11.3%), and inadvertent exposure to someone else's medication (8.51%). The types of therapeutic errors observed are different for each age group and are summarized in Table 6B.

Reason by Age

Intentional exposures accounted for 18.4% of human exposure cases. Suicidal intent was suspected in 12.8% of cases, intentional misuse in 2.63%, and intentional abuse in 2.17%. Unintentional exposures outnumbered intentional exposures in all age groups with the exception of ages 13-19 years (Table 7). In contrast, of the 1,422 reported fatalities with RCF 1-3, the major reason reported for children ≤ 5 years was unintentional, while most fatalities in adults (≥20 years) were intentional (Table 8).

Route of Exposure

Ingestion was the route of exposure in 82.3% of cases (Table 9), followed in frequency by inhalation/nasal (7.94%), dermal (6.81%), and ocular routes (4.13%). For the

1,422 exposure-related fatalities, ingestion (83.8%), and inhalation/nasal (7.45%) were the predominant known exposure routes. Each exposure case may have more than one route.

Clinical Effects

The NPDS database allows for the coding of up to 169 individual clinical effects (signs, symptoms, or laboratory abnormalities) for each case. Each clinical effect can be further determined as related, not related, or unknown if related. Clinical effects were coded in 807,319 (38.8%) cases (17.0% had 1 effect, 9.82% had 2 effects, 5.34% had 3 effects, 2.79% had 4 effects, 1.46% had 5 effects, and 2.38% had >5 effects coded). Of clinical effects coded, 75.8% were deemed related to the exposure, 10.0% were considered not related, and 14.2% were coded as unknown if related.

Case Management Site

Most cases reported to PCs were managed outside of an HCF (66.5%), usually at the site of exposure, primarily the patient's own residence (Table 10). Evaluation or treatment in an HCF

Table 6A. Reason for Human Exposure Cases

Reason	N	% Human exposures
Unintentional		
Unintentional - General	939,272	45.10
Unintentional - Therapeutic error	345,057	16.60
Unintentional - Misuse	178,510	8.60
Unintentional - Environmental	55,795	2.70
Unintentional - Occupational	33,684	1.60
Unintentional-Bite / sting	31,605	1.50
Unintentional - Food poisoning	16,331	0.80
Unintentional - Unknown	5,091	0.20
Subtotal	1,605,345	77.20
Intentional		
Intentional - Suspected suicide	265,992	12.80
Intentional - Misuse	54,803	2.60
Intentional - Abuse	45,123	2.20
Intentional - Unknown	16,127	0.80
Subtotal	382,045	18.40
Adverse Reaction		
Adverse reaction - Drug	36,674	1.80
Adverse reaction - Other	9,524	0.50
Adverse reaction - Food	5,926	0.30
Subtotal	52,124	2.50
Unknown		
Unknown reason	22,580	1.10
Subtotal	22,580	1.10
Other		
Other - Malicious	8,238	0.40
Other - Contamination / tampering	7,753	0.40
Other - Withdrawal	2,574	0.10
Subtotal	18,565	0.90
Total	2,080,659	100.00

occurred in 30.7% of cases. Only 1.16% of cases were referred to an HCF but refused referral.

Of the 639,142 cases managed in an HCF, 312,463 (48.9%) were treated and released, 71,361 (11.2%) were admitted to a critical care unit, 80,834 (12.6%) were admitted to a noncritical unit, and 91,787 (14.4%) were admitted to a psychiatric facility.

The percentage of patients treated in an HCF varied considerably with age. Only 13.5% of children ≤ 5 years and 20.1% of children between 6 and 12 years were managed in an HCF compared to 66.3% of teenagers (13-19 years) and 45.5% of adults (age ≥ 20 years).

Medical Outcome

Table 11 displays the medical outcome of human exposure cases distributed by age. Older age groups exhibited a greater number of more serious medical outcomes. Table 12 compares medical outcome and reason for exposure and shows a greater frequency of serious outcomes in intentional exposures.

The duration of effect is required for all cases which report at least 1 clinical effect and have a medical outcome of minor, moderate or major effect ($n = 519,351$; 25.0% of exposures). Table 13 demonstrates an increasing duration of the clinical effects observed with more severe outcomes.

Decontamination Procedures and Specific Antidotes

Tables 14 and 15 outline the use of 112 decontamination procedures, specific physiological antagonists (antidotes), and measures to enhance elimination in the treatment of patients reported in the NPDS database.

Table 16 details the decontamination trends for all ages and pediatric exposures (≤ 5 years) for the last decade detailing low rates of ipecac use ($<0.01\%$) and declining activated charcoal use ($<1.60\%$).

Top Substances in Human Exposures

Table 17A presents the 25 most common substance categories listed by frequency of human exposure. This ranking provides an indication where prevention efforts might be focused, as well as the types of more serious exposures PCs regularly manage (resulting in death, major effect or moderate effect). It is relevant to know whether exposures to these substances are increasing or decreasing.

To better understand these relationships, we examined exposures with more serious outcomes per year over the last 10 years for the change over time for each of the 68 major generic categories by least squares linear regression. The serious outcome exposure cases per year over this period were increasing for 39, static for 5, and decreasing for 24 of the 68 categories with data for the entire time period. The change over time for the 10 yearly values was statistically significant ($p < 0.05$) for 39 of the 68 categories with data for the entire time period. Table 17B shows the 25 categories which increased the most rapidly over the past 10 years. Statistical significance of the linear regressions can be verified by noting the 95% confidence interval on the rate of increase excludes zero for all but 3 of the 25 categories. Figure 4 shows the change over time and linear regressions for the top 4 increasing categories in Table 17B for the 10-year period.

Tables 17C and 17D present exposure results for children and adults, respectively, and show the differences between substance categories involved in pediatric and adult exposures.

Tables 17E reports the 25 categories of substances most frequently involved in pediatric (≤ 5 years) fatalities in 2023.

Table 17F reports the 25 Drug ID categories most frequently queried in 2023, highlighting the value of Drug ID information to America's Poison Centers*, public health, public safety, and regulatory agencies. The top 10 substance categories include antibiotics, drugs with widespread use and abuse potential such as opioids and benzodiazepines, and drugs with the potential for serious toxicity.

Table 17G reports the 25 substance categories most frequently reported in exposures involving pregnant patients.

Changes Over Time

Total encounters peaked in 2008 at 4,333,012 including 2,491,049 human exposure cases and 1,703,762 information contacts. Total encounters decreased 2.49% from 2,483,183 in 2022 to 2,421,251 in 2023. Information requests decreased by 19.1% from 363,099 in 2022 to 293,663 in 2023, with a 61.3% decrease in medical information requests. A 5.19% decrease in HCF information requests, and a 17.6% decrease in drug information requests reflects

Table 6B. Scenarios for Therapeutic Errors^a by Age^b

Scenario	N	≤ 5 y (Row %)	6-12 y (Row %)	13-19 y (Row %)	≥ 20 y (Row %)	Unknown child (Row %)	Unknown adult (Row %)	Unknown age (Row %)
Inadvertently took/given medication twice	107,024	13.44	10.16	5.50	63.56	0.06	6.95	0.33
Other incorrect dose	56,546	27.02	11.11	6.75	50.31	0.08	4.36	0.37
Wrong medication taken/given	51,285	16.55	10.74	5.45	61.21	0.04	5.71	0.30
Medication doses given/taken too close together	39,006	13.81	8.43	6.47	63.89	0.09	6.99	0.31
Inadvertently took/given someone else's medication	29,365	12.54	16.98	6.57	58.15	0.06	5.50	0.20
Other/unknown therapeutic error	22,269	17.29	10.81	6.83	57.12	0.15	7.20	0.59
Incorrect dosing route	18,927	7.32	3.54	7.53	68.28	0.10	12.46	0.77
More than 1 product containing same ingredient	7,336	8.74	14.01	11.65	57.54	0.05	7.59	0.41
Health professional/iatrogenic error (pharmacist/nurse/physician)	6,689	19.94	10.27	6.28	59.26	0.18	3.35	0.72
Incorrect formulation or concentration given	6,659	50.47	17.93	4.48	24.60	0.09	2.34	0.09
Confused units of measure	6,261	50.38	13.80	4.31	28.14	0.14	3.10	0.13
Drug interaction	5,940	5.19	6.92	6.25	66.63	0.25	13.70	1.06
Dispensing cup error	3,286	63.79	14.82	2.83	16.16	0.18	2.13	0.09
10-fold dosing error	2,562	59.17	6.44	2.07	30.13	0.16	1.80	0.23
Incorrect formulation or concentration dispensed	1,494	50.67	14.39	4.69	26.31	0.13	3.21	0.60
Exposure through breast milk	219	91.78	0.00	0.00	3.20	2.74	2.28	0.00

^aAll cases with a scenario category of therapeutic error regardless of reason.

^bOf the human exposure cases reported to U.S. Poison Centers in 2023, 493,248 (23.7%) were coded to 1 or more of 54 scenarios.

Table 7. Distribution of Reason for Exposure by Age

Reason	≤ 5 y		6-12 y		13-19 y		≥ 20 y		Unknown child		Unknown adult		Unknown age		Total	
	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	%
Unintentional	821,869	54.4	121,209	8.0	59,838	4.0	500,042	33.1	4,227	0.3	88,947	5.9	9,213	0.6	1,605,345	77.2
Intentional	24	0.0	18,643	5.0	111,330	29.7	242,438	64.7	251	0.1	6,793	1.8	2,566	0.7	382,045	18.4
Adverse reaction	2,972	6.5	2,704	5.9	3,732	8.2	35,472	77.7	103	0.2	6,375	14.0	766	1.7	52,124	2.5
Unknown	2,678	12.6	1,456	6.9	2,543	12.0	13,705	64.5	90	0.4	1,255	5.9	853	4.0	22,580	1.1
Other	1,126	7.3	1,509	9.8	1,563	10.1	10,768	69.8	172	1.1	2,973	19.3	454	2.9	18,565	0.9
Total	828,669	42.1	145,521	7.4	179,006	9.1	802,425	40.7	4,843	0.3	106,343	5.4	13,852	0.7	2,080,659	100.0

decreased COVID-19 vaccine calls to PCs. Human exposures increased by 0.764% from 2,064,875 to 2,080,659 cases over the same time period.

Figure 5 shows the year-to-year change through 2023 as a percentage of year 2000 for human exposure cases broken down into cases with more serious outcomes (death, major effect, and moderate effect) and less serious outcomes (minor effect, no effect, not followed (non-toxic), not followed (minimal toxicity possible), unable to follow (potentially toxic), and unrelated effect). Since 2000, cases with more serious outcomes have increased by 4.25% (95% CI [3.93%, 4.58%]) per year from 108,148 cases in 2000 to 207,282 cases in 2023. Cases with less serious outcomes have decreased since 2008 by 1.58% [-1.94%, -1.22%] per year from 2,339,460 in 2008 to 1,872,052 cases in 2023. The decrease in less serious exposures has largely driven the overall decrease in human exposures since 2008; however, there has been a small (0.779%) increase in cases with less serious exposures from 2022 (1,857,589) to 2023

(1,872,052). America's PCs have seen a consistent increase in exposure cases from HCFs (Figure 3), as well as for the most severe exposures (Figure 5), while there is a continued decreasing trend in cases involving less severe exposures.

Emerging Trends—Unregulated Psychotropic Products

Phenibut, tianeptine, and kratom present an emerging public health concern in several aspects: their recent emergence in the U.S. market, their purported nootropic effects, and their federally unregulated status. While these substances are relatively novel, other unregulated psychotropics like nitrous oxide have been available in the U.S. for decades. Each of these products is readily accessible in various retail environments, including gas stations, smoking accessory stores—"smoke" or "vape" shops—and nutritional supplement outlets. Retailers and users often classify these substances as "nootropic" (cognitive-enhancing). This section aims to highlight

Table 8. Distribution of Reason for Exposure And Age for Fatalities^a

Reason	≤5 y	6 - 12 y	13 - 19 y	≥20 y	Unknown child	Unknown adult	Unknown age	Total
Unintentional								
Unintentional - General	8	2	1	20	0	0	0	31
Unintentional - Environmental	2	3	3	24	0	1	0	33
Unintentional - Occupational	0	0	0	8	0	0	0	8
Unintentional - Therapeutic error	1	1	0	51	0	0	0	53
Unintentional - Misuse	0	0	0	20	0	0	0	20
Unintentional - Bite / sting	0	0	0	6	0	0	0	6
Unintentional - Food poisoning	0	0	0	1	0	0	0	1
Unintentional - Unknown	1	0	0	7	0	0	0	8
Subtotal	12	6	4	137	0	1	0	160
Intentional								
Intentional - Suspected suicide	0	2	50	706	0	2	2	762
Intentional - Misuse	0	0	1	55	0	0	0	56
Intentional - Abuse	0	1	3	152	0	2	0	158
Intentional - Unknown	0	0	1	64	0	2	0	67
Subtotal	0	3	55	977	0	6	2	1,043
Other								
Other - Contamination / tampering	0	0	0	1	0	0	0	1
Other - Malicious	0	0	0	4	0	0	0	4
Other - Withdrawal	0	0	0	2	0	0	0	2
Subtotal	0	0	0	7	0	0	0	7
Adverse reaction								
Adverse reaction - Drug	0	1	1	59	0	0	0	61
Adverse reaction - Food	0	0	0	1	0	0	0	1
Adverse reaction - Other	0	0	0	2	0	0	0	2
Subtotal	0	1	1	62	0	0	0	64
Unknown								
Unknown reason	4	1	5	138	0	0	0	148
Subtotal	4	1	5	138	0	0	0	148
Total	16	11	65	1,321	0	7	2	1,422

^aIncludes cases with RCF of 1-Undoubtedly responsible, 2-Probably responsible, or 3-Contributory. This excludes reports with outcome of Death, indirect.

Table 9. Route of Exposure for Human Exposure Cases

Route	Human exposures			Fatal exposures ^a		
	N	% of All Routes	% of All Cases	N	% of All Routes	% of All Cases
Ingestion	1,712,360	78.23	82.30	1,191	76.40	83.76
Inhalation/nasal	165,154	7.55	7.94	106	6.80	7.45
Dermal	141,745	6.48	6.81	15	0.96	1.05
Ocular	85,876	3.92	4.13	3	0.19	0.21
Bite/sting	31,621	1.44	1.52	6	0.38	0.42
Unknown	23,520	1.07	1.13	173	11.10	12.17
Parenteral	20,826	0.95	1.00	49	3.14	3.45
Other	3,272	0.15	0.16	3	0.19	0.21
Otic	1,498	0.07	0.07	0	0.00	0.00
Vaginal	1,227	0.06	0.06	0	0.00	0.00
Rectal	941	0.04	0.05	1	0.06	0.07
Aspiration (with ingestion)	733	0.03	0.04	12	0.77	0.84
Total Number of Routes	2,188,773	100.00	105.20^b	1,559	100.00	109.63^b

^aIncludes cases with RCF of 1-Undoubtedly responsible, 2-Probably responsible, or 3-Contributory. This excludes reports with outcome of Death, indirect.

^bEach exposure case may have more than one route.

public health implications related to these unregulated psychotropic products.

In the 10-year period from January 1, 2014 - Dec 31, 2023, there were 10,272 kratom exposures, 2,322 nitrous oxide exposures, 2,325 phenibut exposures, and 1,392 tianeptine exposures reported to U.S. Poison Centers. Of the 16,311 exposures, only 920 (5.64%) involved patients <13 years of age (kratom 4.93%, nitrous oxide 16.9%, phenibut 0.645%, tianeptine 0.503%). Of all exposures, 11,046 (67.7%) were male (phenibut 77.8%, tianeptine 70.0%, kratom 67.8%, nitrous oxide 55.8%). Of the analyzed substances, poison center exposures regarding kratom were 4.42 to 7.38 times more prevalent than the other 3 substances.

Annual kratom exposures increased from 2014 to 2020, with a peak incidence of exposure in 2021 (Figure 6). Phenibut exposures were first documented in NPDS in 2015,

Table 10. Management Site of Human Exposures

Site of management	N	%
Managed on site, non-health care facility	1,383,345	66.49
Managed in healthcare facility		
Treated/evaluated and released	312,463	15.02
Admitted to psychiatric facility	91,787	4.41
Patient lost to follow-up / left AMA	82,697	3.97
Admitted to noncritical care unit	80,834	3.89
Admitted to critical care unit	71,361	3.43
Subtotal (managed in HCF)	639,142	30.72
Other	20,327	0.98
Refused referral	24,158	1.16
Unknown	13,687	0.66
Total	2,080,659	100.00

and increased until 2018, after which they have since declined or plateaued. Tianeptine exposures increased from only 6 in 2014 to 389 in 2023. Because nitrous oxide meets

Table 11. Medical Outcome of Human Exposure Cases by Patient Age^a

Outcome	≤5 y		6-12 y		13-19 y		≥20 y		Unknown child		Unknown adult		Unknown age		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
No effect	169,611	20.47	23,901	16.42	32,352	18.07	101,215	12.61	637	13.15	9,600	9.03	1,243	8.97	338,559	16.27
Minor effect	65,917	7.95	19,955	13.71	50,587	28.26	164,640	20.52	302	6.24	11,348	10.67	1,267	9.15	314,016	15.09
Moderate effect	10,655	1.29	5,756	3.96	32,135	17.95	115,937	14.45	37	0.76	1,950	1.83	272	1.96	166,742	8.01
Major effect	1,691	0.20	552	0.38	4,931	2.75	31,191	3.89	2	0.04	162	0.15	64	0.46	38,593	1.85
Death	29	0.00	13	0.01	91	0.05	1,798	0.22	1	0.02	11	0.01	4	0.03	1,947	0.09
No follow-up, nontoxic	107,633	12.99	16,358	11.24	6,007	3.36	39,217	4.89	667	13.77	11,346	10.67	961	6.94	182,189	8.76
No follow-up, minimal toxicity	444,869	53.68	71,955	49.45	38,731	21.64	276,234	34.42	2,621	54.12	58,896	55.38	5,609	40.49	898,915	43.20
No follow-up, potentially toxic	17,331	2.09	3,914	2.69	9,916	5.54	39,839	4.96	483	9.97	9,403	8.84	3,988	28.79	84,874	4.08
Unrelated effect	10,921	1.32	3,116	2.14	4,230	2.36	31,092	3.87	92	1.90	3,613	3.40	435	3.14	53,499	2.57
Death, indirect report	12	0.00	1	0.00	26	0.01	1,262	0.16	1	0.02	14	0.01	9	0.06	1,325	0.06
Total	828,669	100.00	145,521	100.00	179,006	100.00	802,425	100.00	4,843	100.00	106,343	100.00	13,852	100.00	2,080,659	100.00

^aTotal number of cases where Death was an outcome (1,947+1,325) is greater than the number of fatalities (1,422) judged to be exposure-related (RCF of 1-Undoubtedly responsible, 2-Probably responsible, or 3-Contributory).

Table 12. Medical Outcome by Reason for Exposure in Human Exposures^a

Outcome	Unintentional		Intentional		Other		Adverse reaction		Unknown		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
No effect	268,603	16.73	64,589	16.91	1,927	10.38	2,048	3.93	1,392	6.16	338,559	16.27
Minor effect	189,582	11.81	107,419	28.12	3,366	18.13	11,190	21.47	2,459	10.89	314,016	15.09
Moderate effect	45,888	2.86	107,105	28.03	1,676	9.03	7,407	14.21	4,666	20.66	166,742	8.01
Major effect	4,528	0.28	29,924	7.83	259	1.40	1,144	2.19	2,738	12.13	38,593	1.85
Death	215	0.01	1,273	0.33	13	0.07	118	0.23	328	1.45	1,947	0.09
No follow-up, nontoxic	175,736	10.95	3,638	0.95	919	4.95	1,463	2.81	433	1.92	182,189	8.76
No follow-up, minimal toxicity	841,985	52.45	29,047	7.60	6,605	35.58	17,810	34.17	3,468	15.36	898,915	43.20
No follow-up, potentially toxic	45,332	2.82	28,697	7.51	2,429	13.08	3,419	6.56	4,997	22.13	84,874	4.08
Unrelated effect	33,453	2.08	9,108	2.38	1,367	7.36	7,516	14.42	2,055	9.10	53,499	2.57
Death, indirect report	23	0.00	1,245	0.33	4	0.02	9	0.02	44	0.19	1,325	0.06
Total	1,605,345	100.00	382,045	100.00	18,565	100.00	52,124	100.00	22,580	100.00	2,080,659	100.00

^aTotal number of cases where Death was an outcome (1,947+1,325) is greater than the number of fatalities (1,422) judged to be exposure-related (RCF of 1-Undoubtedly responsible, 2-Probably responsible, or 3-Contributory).

Table 13. Duration of Clinical Effects by Medical Outcome

Duration of effect	Minor effect		Moderate effect		Major effect	
	N	%	N	%	N	%
≤2 hours	85,546	27.24	5,402	3.24	1,095	2.84
>2 hours, ≤8 hours	98,154	31.26	38,556	23.12	4,681	12.13
>8 hours, ≤24 hours	59,544	18.96	60,953	36.56	8,975	23.26
>24 hours, ≤3 days	15,931	5.07	30,541	18.32	11,650	30.19
>3 days, ≤1 week	4,057	1.29	8,259	4.95	6,262	16.23
>1 week, ≤1 month	1,083	0.34	1,883	1.13	1,916	4.96
>1 month	330	0.11	386	0.23	184	0.48
Anticipated permanent	125	0.04	109	0.07	411	1.06
Unknown	49,246	15.68	20,653	12.39	3,419	8.86
Total	314,016	100.00	166,742	100.00	38,593	100.00

similar criteria (psychoactive, widely available in unregulated retail spaces) and has been prevalent for decades, it was included as a historical precedent to compare exposure incidence against these 3 novel substances. Kratom exposures eclipsed nitrous oxide by 2015, phenibut surpassed nitrous oxide exposure by 2018 but dropped off in 2021, while tianeptine demonstrated higher exposure rates beginning in

Table 14. Decontamination and Therapeutic Interventions

Therapy	N	%
Decontamination Only	947,639	45.55
Therapeutic Intervention Only	253,838	12.20
Decontamination and Therapeutic Intervention	91,813	4.41
Not Coded	787,369	37.84
Total	2,080,659	100.00

Table 15. Therapy Provided in Human Exposures by Age

Therapy	≤ 5 y	6-12 y	13-19 y	≥ 20 y	Unknown child	Unknown adult	Unknown age	Total
Decontamination								
Cathartic	129	80	399	799	0	5	2	1,414
Charcoal, multiple doses	24	14	201	460	0	2	0	701
Charcoal, single dose	3,490	1,042	10,503	17,185	1	78	21	32,320
Dilute/irrigate/wash	355,721	49,319	26,487	184,788	1,395	35,645	2,780	656,135
Food/snack	110,140	13,107	6,761	36,006	494	6,068	561	173,137
Fresh air	6,312	3,665	4,770	49,517	734	14,738	1,475	81,211
Ipecac	8	0	6	20	0	2	1	37
Lavage	6	3	66	212	0	1	0	288
Other emetic	6,512	857	1,641	7,928	16	715	82	17,751
Whole bowel irrigation	100	34	183	708	0	1	1	1,027
Other Therapies								
2-PAM	4	3	4	43	0	0	0	54
Alkalinization - Systemic	47	56	952	5,034	0	5	7	6,101
Alkalinization - Urinary	28	50	576	1,388	0	2	0	2,044
Amifostine	0	0	0	1	0	0	0	1
Amyl nitrite	1	0	0	0	0	0	0	1
Antiarrhythmic	16	7	91	910	0	3	0	1,027
Antibiotics	1,502	701	1,506	14,892	4	299	35	18,939
Anticonvulsants ^a	177	60	481	2,718	0	7	2	3,445
Antiemetics	1,793	1,352	11,782	22,247	7	85	16	37,282
Antifungals	4	1	10	105	0	0	0	120
Antihistamines	1,344	918	1,780	8,475	14	607	65	13,203
Antihypertensives	27	23	205	3,226	0	7	0	3,488
Antipsychotics	14	71	1,275	7,132	1	29	1	8,523
Antivenom (Immune Fab fragment)–Not Specified	143	215	201	2,143	0	2	2	2,706
Antivenom (Immune Fab) - Centruroides (Scorpion)	98	39	8	148	0	0	1	294
Antivenom (Immune Fab) - Latrodectus	1	1	0	14	0	0	0	16
Antivenom - Elapidae	1	2	5	25	0	1	0	34
Antivenom - Latrodectus	1	2	3	28	0	0	0	34
Antivenom/antitoxin (Non-Fab)–Not Specified	12	13	18	187	0	0	0	230
Antivirals	10	5	19	275	0	1	0	310
Atropine	145	54	287	1,761	0	6	1	2,254
BAL	1	0	0	5	0	0	0	6
Benzodiazepines	1,241	891	9,751	35,340	3	101	28	47,355
Blood Products	45	20	77	1,126	0	4	0	1,272
Botulinum antitoxim	10	0	0	21	0	0	0	31
Bronchodilators	332	172	387	4,144	1	139	16	5,191
Calcium	2,667	355	718	5,320	2	55	14	9,131
Cardioversion	2	5	38	292	0	2	0	339
Colony Stimulating Factors	0	0	0	14	0	0	0	14
Continuous Renal Replacement Therapy (CRRT)	11	7	76	1,022	0	1	0	1,117
CPR	168	27	281	1,986	1	21	4	2,488
Deferoxamine	4	1	42	36	0	0	0	83
Digoxin Immune Fab	4	0	0	358	0	2	0	364
Direct-acting Oral Anticoagulant Reversal Agents	0	0	1	10	0	0	0	11
DMPS	0	0	0	2	0	0	0	2
DTPA - Zinc	0	0	0	1	0	0	0	1
ECMO	7	7	48	122	0	0	1	185
EDTA	19	1	0	4	0	0	1	25
Ethanol	2	0	2	28	0	2	0	34
Extracorp. procedure (other)	1	1	11	38	0	1	0	52
Fluids, IV	6,315	3,850	34,369	105,711	1	222	61	150,529
Flumazenil	39	12	96	710	0	0	1	858
Folate	4	3	64	3,102	0	6	1	3,180
Fomepizole	65	40	262	2,558	0	3	3	2,931
Glucagon	41	10	151	1,967	0	5	0	2,174
Glucarpidase	1	0	0	6	0	0	0	7
Glucose, > 5%	419	66	488	4,906	0	14	2	5,895
Granulocyte Stimulating Growth Factors	0	0	0	4	0	0	0	4
Hemodialysis	6	10	101	2,256	1	3	0	2,377
Hemoperfusion	1	0	0	25	0	0	0	26

(Continued)

Table 15. Continued.

Therapy	≤ 5 y	6-12 y	13-19 y	≥ 20 y	Unknown child	Unknown adult	Unknown age	Total
High Dose Insulin/ Glucose	0	6	44	635	0	2	1	688
Hydroxocobalamin	6	9	19	205	0	0	0	239
Hyperbaric oxygen	28	33	23	290	1	2	2	379
Hypothermia Protocol	9	2	19	176	0	1	0	207
Insulin	25	10	173	2,326	0	7	2	2,543
Intubation	507	163	1,847	16,140	1	68	32	18,758
L-Carnitine	6	11	72	518	0	0	0	607
Leucovorin	8	1	9	183	0	0	0	201
Lipid Emulsion Therapy	5	2	75	407	0	2	1	492
Magnesium	33	167	2,906	13,578	0	13	3	16,700
Methylene blue	12	4	63	528	0	2	1	610
Molecular Adsorbant Recirculating System (MARS)	0	0	1	6	0	0	0	7
NAC, IV	320	736	8,483	17,027	0	18	15	26,599
NAC, PO	17	26	382	644	0	1	1	1,071
Nalmefene	0	0	1	11	0	0	0	12
Naloxone	1,740	279	2,842	22,224	1	153	57	27,296
Neuromuscular blocker	91	19	297	2,057	0	4	2	2,470
Octreotide	80	6	50	552	0	0	1	689
Opioid analgesia	381	249	879	9,684	0	18	13	11,224
Other	15,750	4,492	7,737	46,148	72	2,914	518	77,631
Oxygen	1,990	791	4,039	42,121	4	196	71	49,212
Pacemaker	2	1	5	256	0	0	0	264
Penicillamine	0	0	0	3	0	0	0	3
Physostigmine	0	2	37	38	0	0	0	77
Phytonadione	21	21	179	646	0	4	1	872
Plasmapheresis	2	3	10	37	0	0	0	52
Potassium	355	419	5,507	21,642	0	24	10	27,957
Potassium iodide	1	1	10	42	0	0	0	54
Propofol	129	59	1,082	10,240	0	30	16	11,556
Prussian blue	0	0	1	3	0	0	0	4
Pyridoxine	3	9	24	560	0	1	2	599
Rabies immune globulin	49	69	56	335	1	12	3	525
Rabies vaccine	60	83	75	434	1	19	5	677
Raxibacumab	2	1	1	7	0	0	0	11
Sedation (other)	427	195	1,899	12,152	0	37	19	14,729
Silibinin	0	3	1	13	0	0	0	17
Smallpox vaccine	0	0	0	1	0	0	0	1
Sodium bicarbonate - metabolic acidosis	35	20	421	3,049	0	6	0	3,531
Sodium bicarbonate - nebulized	5	8	21	199	0	4	0	237
Sodium nitrite	0	0	0	9	0	0	0	9
Sodium thiosulfate	3	3	2	26	0	0	0	34
Steroids	534	283	487	4,703	11	211	20	6,249
Succimer	186	16	7	33	1	1	1	245
Surgical intervention	209	88	93	812	2	2	0	1,206
Thiamine	5	5	135	5,684	0	10	7	5,846
Transplantation	1	0	3	19	0	1	0	24
Vasopressors	164	104	868	10,001	0	30	7	11,174
Ventilation, Non-invasive (CPAP, BiPAP)	95	22	159	3,525	0	17	1	3,819
Ventilator	519	171	1,970	16,922	1	67	37	19,687

^aExcludes benzodiazepines.

2023. Nitrous oxide itself nearly doubled in exposure rate from 2014 to 2023.

There is significant overlap in the clinical syndromes produced by exposure (or withdrawal from repeated exposure) to these 4 substances. Table A demonstrates the top 10 clinical effects reported from single substance exposures to these products. Nausea, vomiting, and confusion are within the top 10 most frequently reported effects for all 4 substances. Kratom, phenibut, and tianeptine were also associated with tachycardia, agitation, and hypertension. Phenibut exposures were noteworthy for hallucinations/delusions and drowsiness/lethargy amongst the most frequent effects,

while tianeptine cases reported CNS depression and diaphoresis. Nitrous oxide appears to manifest a clinically distinct syndrome with neurologic dysfunction such as ataxia and numbness reported more frequently. Chronic nitrous oxide use is known to precipitate neurotoxicity through indirect effects on cyanocobalamin. An increase in reports of nitrous oxide-induced neurologic dysfunction coincided with increased nitrous oxide exposures. (Figure 7).

Trends in healthcare utilization and more serious medical outcomes after exposure increased along with exposures. The 10-years' prevalence of health care evaluations, hospitalization, and more serious outcomes are listed in Table B for each

Table 16. Decontamination Trends for Human and Pediatric Exposures ≤5 years: Last Decade

	Total Exposures				Activated Charcoal				Cathartic				Ipecac				Lavage				Other emetic				Whole bowel irrigation			
	Human		Children		Human		Children		Human		Children		Human		Children		Human		Children		Human		Children		Human		Children	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
2014	2,165,142		1,031,927		46,030	2.13	7,977	0.77	8,070	0.37	657	0.06	132	0.01	41	0.00	2,053	0.09	57	0.01	13,482	0.62	6,604	0.64	1,744	0.08	70	0.01
2015	2,168,371		1,017,369		42,712	1.97	6,965	0.68	6,510	0.30	495	0.05	105	0.00	29	0.00	1,745	0.08	50	0.00	14,310	0.66	6,966	0.68	1,683	0.08	53	0.01
2016	2,159,032		1,002,344		40,633	1.88	6,333	0.63	4,985	0.23	376	0.04	88	0.00	22	0.00	1,440	0.07	47	0.00	14,974	0.69	7,131	0.71	1,653	0.08	61	0.01
2017	2,115,186		956,871		39,985	1.89	5,743	0.60	5,134	0.24	327	0.03	64	0.00	12	0.00	1,057	0.05	26	0.00	14,534	0.69	6,727	0.70	1,640	0.08	60	0.01
2018	2,099,751		927,487		36,807	1.75	5,006	0.54	3,964	0.19	275	0.03	63	0.00	21	0.00	777	0.04	15	0.00	15,300	0.73	6,848	0.74	1,562	0.07	60	0.01
2019	2,148,141		920,148		35,541	1.65	4,633	0.50	2,731	0.13	202	0.02	61	0.00	12	0.00	590	0.03	14	0.00	15,836	0.74	6,731	0.73	1,517	0.07	85	0.01
2020	2,128,198		886,342		33,654	1.58	4,007	0.45	2,045	0.10	125	0.01	70	0.00	16	0.00	455	0.02	20	0.00	17,941	0.84	7,249	0.82	1,131	0.05	70	0.01
2021	2,080,917		846,482		35,819	1.72	3,936	0.46	1,958	0.09	152	0.02	47	0.00	8	0.00	387	0.02	10	0.00	18,389	0.88	6,978	0.82	1,105	0.05	82	0.01
2022	2,064,875		830,754		33,194	1.61	3,466	0.42	1,805	0.09	125	0.02	50	0.00	3	0.00	320	0.02	6	0.00	17,836	0.86	6,432	0.77	1,006	0.05	73	0.01
2023	2,080,659		828,669		33,021	1.59	3,514	0.42	1,414	0.07	129	0.02	37	0.00	8	0.00	288	0.01	6	0.00	17,751	0.85	6,512	0.79	1,027	0.05	100	0.01

substance. While most exposures with more serious outcomes and hospital admissions were found in single-substance exposures, polysubstance use was common. For single-substance cases followed to a known outcome, tianeptine had the highest proportion of more serious medical outcomes per exposure (Figure 8) at 68.2%, followed by phenibut 66.8%, kratom 57.6%, and nitrous oxide 51.5%. The trend changed slightly when evaluating cases requiring hospital admission after exposure. The hospitalization rate was 56.5% for single-substance phenibut exposures, compared to 47.6% for tianeptine, 34.3% for kratom, and 33.1% for nitrous oxide.

Exposures cases coded for withdrawal did not correlate with exposure incidence (Figure 9). In the entire NPDS data set, only 4 cases of nitrous oxide withdrawal were reported, so it was not included in further analysis of withdrawal. Only 4.76% of kratom exposures were related to withdrawal, compared to 12.8% for phenibut and 17.5% for tianeptine. Despite lower rates of overall exposure for tianeptine and phenibut compared to kratom, the need to manage a withdrawal syndrome occurred at a similar rate. Of cases managed in a health care facility, the rates of hospital admission for withdrawal were 33.5% for kratom, 37.8% for tianeptine, and 43.3% for phenibut.

Calls to poison centers for withdrawal from these substances were initiated from the patient's own residence in 13.5% of kratom withdrawal but only for 5.76% of tianeptine and 6.04% of phenibut withdrawal. This indirectly implies that poison centers are increasingly serving as a resource for hospital providers regarding withdrawal management involving these novel substances. Additionally, as kratom exposure incidence increases, patients may call more frequently to poison centers with questions about withdrawal. Despite their mostly unregulated status, kratom, phenibut, tianeptine, and nitrous oxide pose significant health risks as evidenced by the high incidence of poison center exposures involving serious medical outcomes. Notably, kratom exposures have surged, while phenibut and tianeptine exposures have also shown increases in recent years. The doubling of nitrous oxide exposures further emphasizes the enduring use of this substance. Healthcare providers must be prepared to manage both acute overdose and withdrawal from these substances. The relatively high incidence of withdrawal cases for phenibut and tianeptine, despite lower overall exposure rates compared to kratom, suggests a significant need for development of withdrawal management strategies. Both healthcare providers and poison centers must be equipped with the knowledge and resources to manage withdrawal symptoms effectively. The increasing incidence of clinical effects associated with these substances warrants regulatory measures to limit availability as well as an educational campaign to inform the public about the risks associated with their use.

2023 Snapshot–Water Beads

Water beads are beads made from superabsorbent polymer that can grow in size up to one hundredfold when exposed to water [4]. They are often small, colorful beads, sold as toys, in craft kits, as sensory tools for children, or for agricultural use. Due to their colorful nature and use in children's

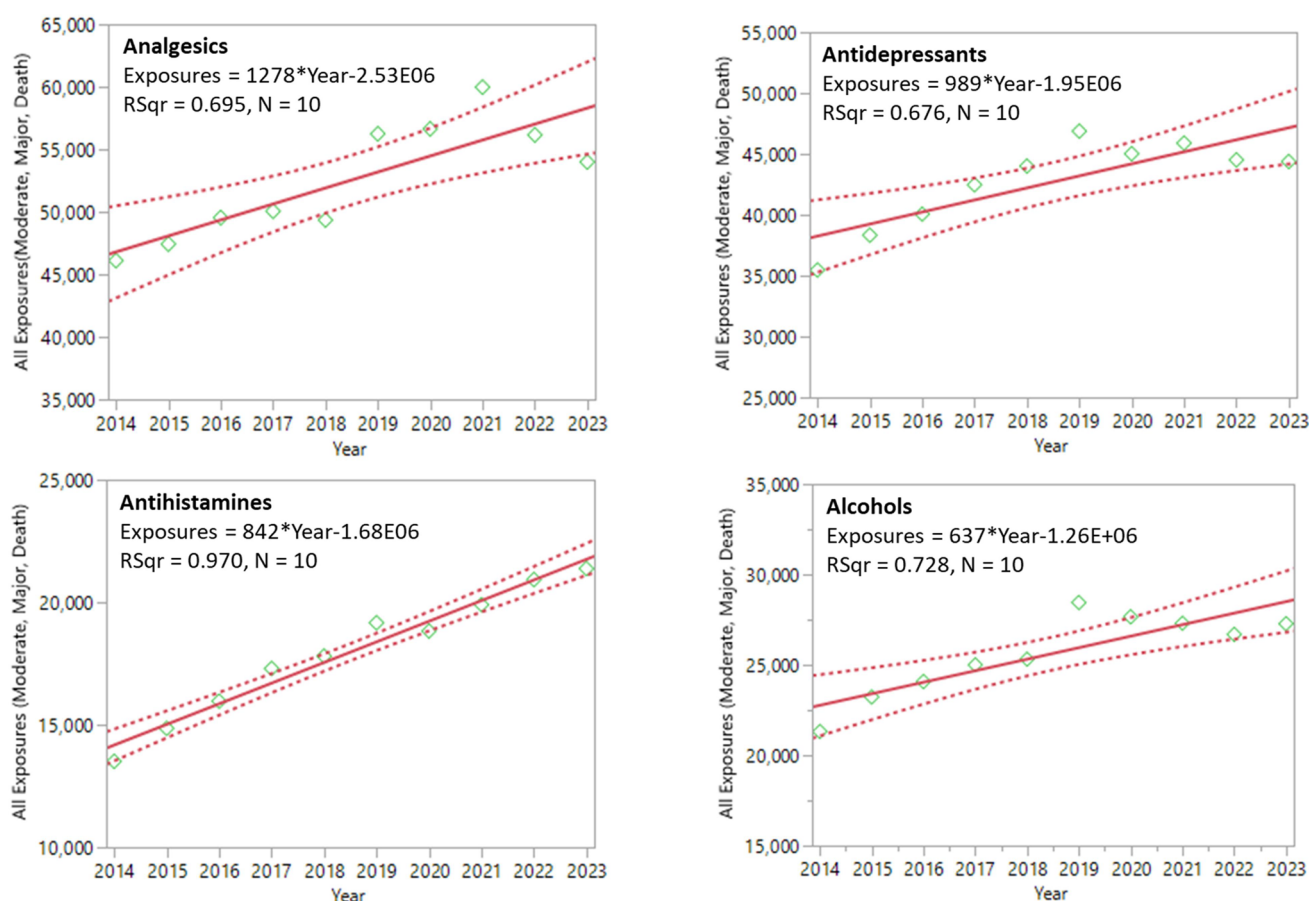


Figure 4. Substance Categories with the Greatest Rate of Exposure Increase since 1 January 2014 for More Serious Outcomes (Top 4).

Solid lines show least-squares linear regressions for the human exposure cases per year for that category (○).

Broken lines show 95% confidence interval on the regression.

Table 17A. Substance Categories Most Frequently Involved in Human Exposures (Top 25)

Substance (Major Generic Category)	All substances	% ^a	Single substance exposures	% ^b
Analgesics	278,501	11.00	179,038	9.84
Cleaning Substances (Household)	180,181	7.12	154,492	8.49
Antidepressants	141,186	5.58	64,140	3.53
Cosmetics/Personal Care Products	126,817	5.01	120,451	6.62
Cardiovascular Drugs	125,769	4.97	50,741	2.79
Antihistamines	118,354	4.68	76,859	4.23
Sedative/Hypnotics/Antipsychotics	112,790	4.46	41,129	2.26
Foreign Bodies/Toys/Miscellaneous	100,564	3.97	97,025	5.33
Dietary Supplements/Herbals/Homeopathic	84,057	3.32	72,488	3.99
Stimulants and Street Drugs	80,092	3.16	48,759	2.68
Pesticides	73,562	2.91	68,554	3.77
Alcohols	69,538	2.75	21,308	1.17
Anticonvulsants	62,669	2.48	24,517	1.35
Hormones and Hormone Antagonists	61,392	2.43	40,270	2.21
Vitamins	59,176	2.34	46,586	2.56
Topical Preparations	58,528	2.31	56,736	3.12
Cold and Cough Preparations	53,550	2.12	35,288	1.94
Chemicals	52,410	2.07	43,315	2.38
Plants	51,099	2.02	48,664	2.68
Antimicrobials	50,020	1.98	39,387	2.17
Gastrointestinal Preparations	49,397	1.95	34,270	1.88
Fumes/Gases/Vapors	44,490	1.76	41,402	2.28
Electrolytes and Minerals	35,531	1.40	27,656	1.52
Bites and Envenomations	35,430	1.40	34,792	1.91
Miscellaneous Foods	28,681	1.13	25,661	1.41

^aPercentages are based on the total number of substances reported in all exposures (N=2,531,089).

^bPercentages are based on the total number of single substance exposures (N=1,818,901).

activities, exploratory pediatric ingestion is not uncommon. If ingested, water beads can expand and cause bowel obstruction, but the true incidence of this is not well characterized

and may depend on the product or amount ingested. This can pose a challenge for medical assessment and triage. Clinical effects from ingestion range from none to complete

Table 17B. Substance Categories with the Greatest Rate of Exposure Increase (Top 25)

Substance (Major Generic Category)	Increase in serious exposures per year ^a		All substances serious exposures in 2023
	Mean	95% CI ^b	
Analgesics	1,278	[588, 1969]	54,000
Antidepressants	989	[431, 1547]	44,385
Antihistamines	842	[720, 964]	21,380
Alcohols	637	[320, 955]	27,282
Cardiovascular Drugs	563	[330, 797]	25,382
Unknown Drug	478	[342, 614]	11,661
Stimulants and Street Drugs	464	[81, 847]	27,795
Anticonvulsants	174	[-190, 537]	17,349
Infectious and Toxin-Mediated Diseases	113	[-26, 252]	758
Fumes/Gases/Vapors	103	[64, 143]	4,481
Dietary Supplements/Herbals/Homeopathic	99	[56, 143]	2,799
Hormones and Hormone Antagonists	98	[13, 184]	7,259
Cosmetics/Personal Care Products	81	[30, 132]	2,865
Mushrooms, Naturally Occurring	81	[34, 128]	1,569
Gastrointestinal Preparations	68	[6, 131]	3,370
Other/Unknown Nondrug Substances	67	[5, 130]	1,404
Miscellaneous Drugs	61	[36, 86]	2,811
Electrolytes and Minerals	55	[47, 64]	1,499
Chemicals	50	[13, 87]	4,421
Anesthetics	46	[29, 63]	941
Opioid Antagonists	45	[38, 53]	560
Serums, Toxoids, Vaccines	44	[-42, 130]	157
Vitamins	41	[31, 52]	1,268
Miscellaneous Foods	26	[14, 39]	611
Veterinary Drugs	18	[6, 29]	306

^aSerious exposures have outcomes of Moderate, Major or Death.^bIncrease and confidence intervals are based on least squares linear regression of the number of cases per year for 2014-2023.**Table 17C.** Substance Categories Most Frequently Involved in Pediatric (≤ 5 years) Exposures (Top 25)^a

Substance (Major Generic Category)	All substances	% ^b	Single substance exposures	% ^c
Cleaning Substances (Household)	87,031	10.06	83,011	10.34
Analgesics	78,993	9.13	71,849	8.95
Cosmetics/Personal Care Products	78,721	9.10	76,870	9.58
Foreign Bodies/Toys/Miscellaneous	69,513	8.03	67,835	8.45
Dietary Supplements/Herbals/Homeopathic	59,575	6.88	56,470	7.04
Antihistamines	40,924	4.73	36,499	4.55
Vitamins	40,343	4.66	35,463	4.42
Topical Preparations	33,739	3.90	33,070	4.12
Pesticides	29,541	3.41	28,687	3.57
Plants	28,770	3.32	27,807	3.46
Gastrointestinal Preparations	23,473	2.71	21,155	2.64
Antimicrobials	19,019	2.20	17,801	2.22
Electrolytes and Minerals	18,330	2.12	16,353	2.04
Cardiovascular Drugs	17,704	2.05	11,594	1.44
Cold and Cough Preparations	17,508	2.02	15,773	1.96
Stimulants and Street Drugs	16,849	1.95	15,242	1.90
Arts/Crafts/Office Supplies	15,731	1.82	15,215	1.90
Hormones and Hormone Antagonists	13,212	1.53	10,489	1.31
Deodorizers	12,925	1.49	12,765	1.59
Tobacco/Nicotine/eCigarette Products	12,392	1.43	12,324	1.54
Essential Oils	11,993	1.39	11,405	1.42
Antidepressants	11,121	1.28	8,163	1.02
Chemicals	10,771	1.24	9,858	1.23
Miscellaneous Foods	10,205	1.18	9,473	1.18
Alcohols	8,020	0.93	7,772	0.97

^aIncludes all children with actual or estimated ages ≤ 5 years old. Results do not include "Unknown Child" or "Unknown Age".^bPercentages are based on the total number of substances reported in pediatric exposures (N=865,530).^cPercentages are based on the total number of single substance pediatric exposures (N=802,699).

bowel obstruction, necrosis, or need for surgical intervention [5]. Recently, severe cases of pediatric water bead ingestion have prompted lawmakers to introduce bills reducing pediatric access [6]. The 2023 Snapshot examines water bead exposures reported to U.S. Poison Centers.

There were 19,660 pediatric (< 19 years old) single substance exposures to water beads reported between January 1, 2014 and December 31, 2023. (Figure 10)

- Pediatric water bead exposures have increased by 1,820% in the past 5 years.
- 55% of pediatric water bead exposures over the past 10 years were documented in 2023 alone.
- The reason for exposure was classified as unintentional in 19,012 (96.7%) exposures.
- In total 13,269 (67.5%) exposures were not followed or were unable to be followed to a known outcome.

Table 17D. Substance Categories Most Frequently Involved in Adult (≥ 20 years) Exposures (Top 25)^a

Substance (Major Generic Category)	All substances	% ^b	Single substance exposures	% ^c
Analgesics	134,924	10.85	67,773	9.37
Cardiovascular Drugs	92,078	7.41	31,029	4.29
Antidepressants	91,679	7.37	36,365	5.03
Sedative/Hypnotics/Antipsychotics	88,503	7.12	29,055	4.02
Cleaning Substances (Household)	76,069	6.12	57,368	7.93
Alcohols	54,062	4.35	10,705	1.48
Anticonvulsants	47,744	3.84	16,258	2.25
Antihistamines	45,426	3.65	21,001	2.90
Hormones and Hormone Antagonists	42,408	3.41	26,152	3.62
Stimulants and Street Drugs	38,536	3.10	17,452	2.41
Pesticides	37,708	3.03	34,018	4.70
Fumes/Gases/Vapors	34,102	2.74	31,539	4.36
Chemicals	33,945	2.73	26,882	3.72
Cosmetics/Personal Care Products	31,571	2.54	28,462	3.94
Antimicrobials	23,540	1.89	16,441	2.27
Bites and Envenomations	23,445	1.89	22,995	3.18
Cold and Cough Preparations	22,092	1.78	11,641	1.61
Topical Preparations	20,148	1.62	19,280	2.67
Gastrointestinal Preparations	20,114	1.62	9,587	1.33
Hydrocarbons	18,734	1.51	17,473	2.42
Muscle Relaxants	17,382	1.40	6,257	0.87
Miscellaneous Drugs	17,067	1.37	9,320	1.29
Unknown Drug	16,440	1.32	9,928	1.37
Other/Unknown Nondrug Substances	14,169	1.14	13,003	1.80
Plants	13,680	1.10	12,752	1.76

^aIncludes all adults with actual or estimated ages ≥ 20 years old. Results also include "Unknown Adult" but do not include "Unknown Age".

^bPercentages are based on the total number of substances reported in adult exposures (N=1,243,207).

^cPercentages are based on the total number of single substance adult exposures (N=723,278).

Table 17E. Substance Categories Most Frequently Involved in Pediatric (≤ 5 years) Deaths^a

Substance (Major Generic Category)	All substances	% ^b	Single substance exposures	% ^c
Analgesics	18	31.58	6	21.43
Stimulants and Street Drugs	6	10.53	1	3.57
Batteries	5	8.77	5	17.86
Alcohols	3	5.26	3	10.71
Unknown Drug	3	5.26	3	10.71
Antidepressants	2	3.51	0	0.00
Automotive/Aircraft/Boat Products	2	3.51	2	7.14
Fumes/Gases/Vapors	2	3.51	2	7.14
Pesticides	2	3.51	0	0.00
Veterinary Drugs	2	3.51	0	0.00
Anesthetics	1	1.75	0	0.00
Anticonvulsants	1	1.75	1	3.57
Antimicrobials	1	1.75	0	0.00
Cleaning Substances (Household)	1	1.75	1	3.57
Cosmetics/Personal Care Products	1	1.75	1	3.57
Diagnostic Agents	1	1.75	0	0.00
Dietary Supplements/Herbals/Homeopathic	1	1.75	0	0.00
Essential Oils	1	1.75	0	0.00
Other/Unknown Nondrug Substances	1	1.75	1	3.57
Plants	1	1.75	0	0.00
Topical Preparations	1	1.75	1	3.57
Weapons of Mass Destruction	1	1.75	1	3.57

^aIncludes all children with actual or estimated ages ≤ 5 years old. Results do not include "Unknown Child" or "Unknown Age". Includes death and death, indirect regardless of RCF.

^bPercentages are based on the total number of substances reported in pediatric fatalities (N=57).

^cPercentages are based on the total number of single substance pediatric fatalities (N=28).

- Of the 6,391 cases followed to a known outcome, 5,333 (83.5%) had no identified outcome. The next most frequent effect was minor effect, documented in 671 (10.5%) cases, followed by unrelated effect in 333 (5.2%), moderate effect in 47 (0.74%), and major effect in 7 (0.11%).
- NPDS has captured no deaths associated with single substance pediatric exposures to water beads.
- Since the introduction of the surgical intervention code in 2019, 34 cases (0.18%) of pediatric water bead exposures have had surgical intervention documented as a performed therapy.
 - 32 of the 34 water bead exposures undergoing surgical intervention were from cases with an unintentional reason for exposure.
 - The proportion of cases documenting surgical intervention as a therapy peaked at 0.4% in 2022.
- In total 3,838 (19.5%) of patients were already in or referred to a health care facility for management.
 - 83% of patients receiving care at a health care facility were treated/evaluated and released from the emergency department, 3.9% were admitted to a non-critical care unit,

Table 17F. Substance Categories Most Frequently Identified in Drug Identification Calls (Top 25)

Substance (Major Generic Category)	All substances	% ^a
Analgesics	5,773	29.71
Sedative/Hypnotics/Antipsychotics	2,927	15.07
Unknown Drug	1,950	10.04
Cardiovascular Drugs	1,758	9.05
Anticonvulsants	978	5.03
Antidepressants	914	4.70
Stimulants and Street Drugs	914	4.70
Antimicrobials	714	3.67
Muscle Relaxants	689	3.55
Antihistamines	678	3.49
Hormones and Hormone Antagonists	456	2.35
Gastrointestinal Preparations	404	2.08
Diuretics	249	1.28
Information Calls	244	1.26
Miscellaneous Drugs	216	1.11
Cold and Cough Preparations	101	0.52
Electrolytes and Minerals	65	0.33
Other/Unknown Nondrug Substances	54	0.28
Asthma Therapies	53	0.27
Anticoagulants	50	0.26
Vitamins	46	0.24
Anticholinergic Drugs	40	0.21
Antineoplastics	19	0.10
Chemicals	18	0.09
Dietary Supplements/Herbals/Homeopathic	16	0.08

^aPercentages are based on the total number of substances reported in all drug identification calls (N=19,429).

Table 17G. Substance Categories Most Frequently Involved in Pregnant Exposures^a (Top 25)

Substance (Major Generic Category)	All substances	% ^b	Single substance exposures	% ^c
Analgesics	869	12.02	564	10.35
Cleaning Substances (Household)	660	9.13	456	8.37
Fumes/Gases/Vapors	518	7.16	487	8.94
Antidepressants	321	4.44	188	3.45
Pesticides	311	4.30	284	5.21
Antihistamines	295	4.08	178	3.27
Vitamins	230	3.18	149	2.73
Chemicals	213	2.95	152	2.79
Bites and Envenomations	205	2.84	201	3.69
Sedative/Hypnotics/Antipsychotics	204	2.82	88	1.61
Miscellaneous Foods	202	2.79	176	3.23
Hormones and Hormone Antagonists	202	2.79	178	3.27
Electrolytes and Minerals	189	2.61	157	2.88
Stimulants and Street Drugs	175	2.42	74	1.36
Cosmetics/Personal Care Products	172	2.38	157	2.88
Cardiovascular Drugs	150	2.07	94	1.72
Antimicrobials	146	2.02	106	1.94
Foreign Bodies/Toys/Miscellaneous	146	2.02	137	2.51
Gastrointestinal Preparations	144	1.99	102	1.87
Other/Unknown Nondrug Substances	135	1.87	126	2.31
Plants	130	1.80	121	2.22
Hydrocarbons	123	1.70	114	2.09
Alcohols	122	1.69	39	0.72
Anticonvulsants	113	1.56	57	1.05
Infectious and Toxin-Mediated Diseases	109	1.51	101	1.85

^aIncludes all patient classified as pregnant and all female patients with a 'duration of pregnancy' greater than 0.

^bPercentages are based on the total number of substances reported in pregnant exposures (N=7,230).

^cPercentages are based on the total number of single substance pregnant exposures (N=5,450).

and 0.7% were admitted to a critical care unit. 12.4% of patients were either lost to follow-up, left against medical advice or did not arrive at the health care facility.

- The proportion of cases referred to or treated in a health care facility has increased from 8% in 2019 to a peak of 23% in 2023.

Distribution of Suicides

Table 19A shows modest variation in the distribution of suicides and pediatric deaths over the past 2 decades as

reported to the NPDS national database. Within the last decade, the percentage of exposures determined to be suspected suicides ranged from 22.6% to 45.8% and the percentage of pediatric cases has ranged from 0.779% to 2.29%. The relatively large changes seen for 2017, 2018, 2020, 2021 and 2022 reflect the large increase in indirect death reports in those years (peaking at 2,482 in year 2020). Analyses of suicides and pediatric deaths for direct and indirect reports are shown in Table 19B. For a more detailed review of trends in adolescent suicides, the reader is referred to the 2018 NPDS Annual Report [1].

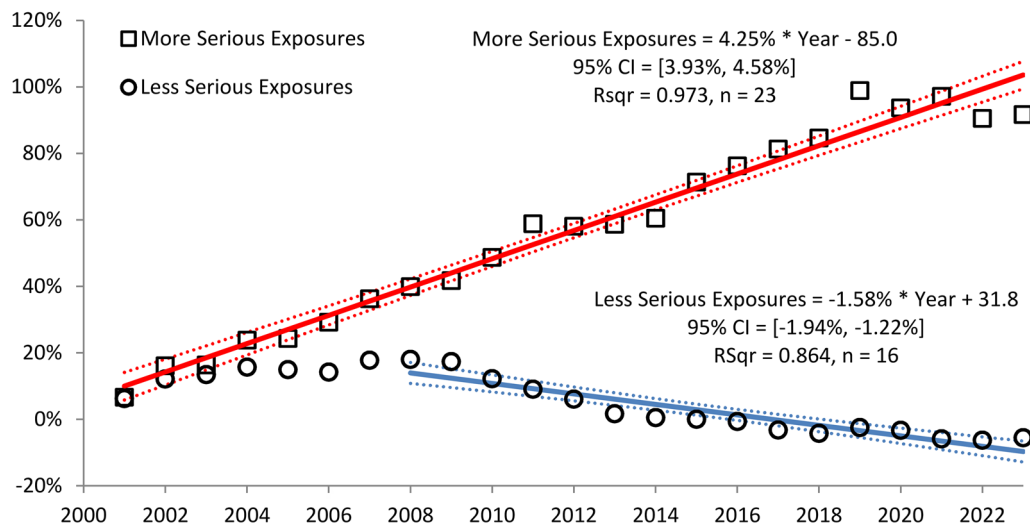


Figure 5. Change in Human Exposures by Outcome from Year 2000

The percent change from baseline (year 2000) for human exposure cases divided among the 10 medical outcomes. The more serious exposures (moderate, major and death) increased. The less serious exposures (no effect, minor effect, not followed (non-toxic), not followed (minimal toxicity possible), unable to follow (potentially toxic) and unrelated effect) decreased after 2008. Solid lines show least-squares linear regressions for the change in more serious exposures per year (□) and less serious exposures (○). Broken lines show 95% confidence intervals on the regression.

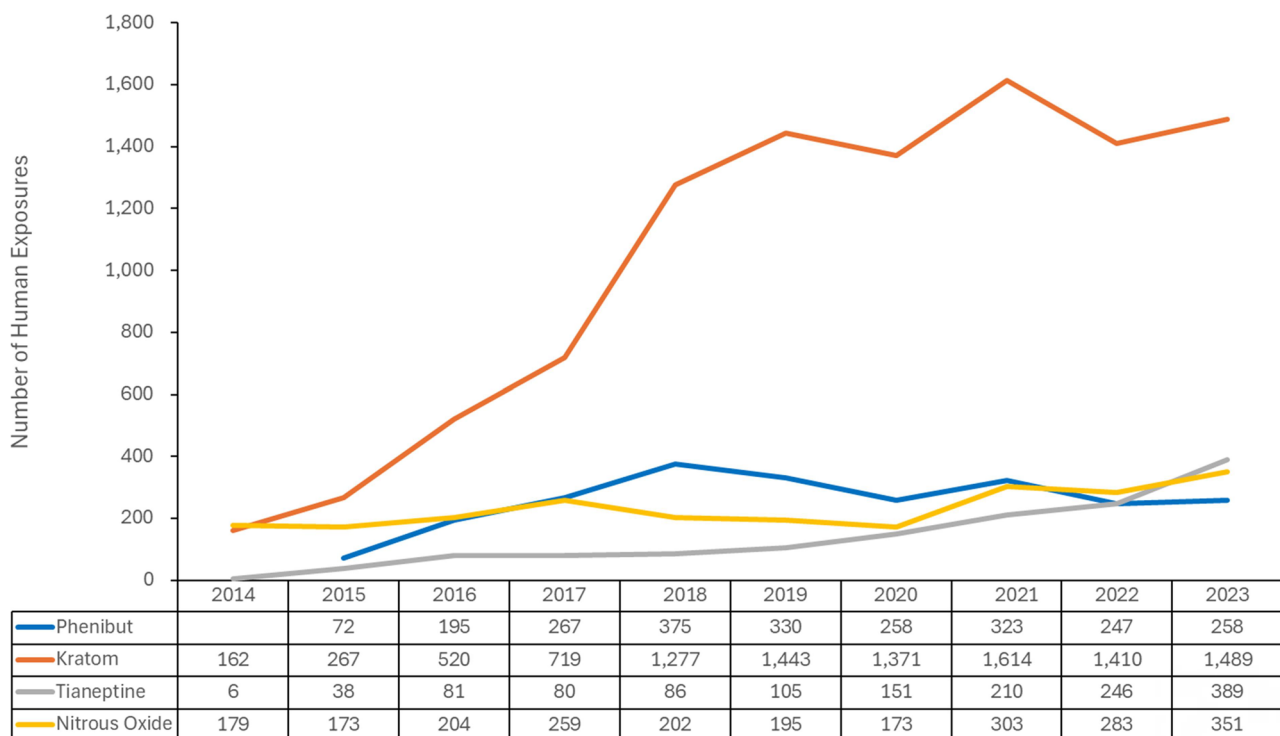


Figure 6. Kratom, Tianeptine, Phenibut, and Nitrous Oxide Exposures Reported to US Poison Centers by Year, 2014-2023

Table A. Top 10 Clinical Effects Reported in Unregulated Psychotropic Product Exposures, Ordered from Most to Least Frequently Reported

Nitrous Oxide	Kratom	Phenibut	Tianeptine
Other - Miscellaneous	Tachycardia	Agitation	Agitation
Confusion	Agitation	Confusion	Tachycardia
*Numbness	Nausea	Tachycardia	Hypertension
Other - Neurological	Vomiting	Hypertension	Nausea
Tachycardia	Hypertension	*Drowsiness/lethargy	Confusion
Dizziness/vertigo	Other - Miscellaneous	Other - Miscellaneous	Vomiting
*Ataxia	Confusion	Vomiting	Other - Miscellaneous
Nausea	Tremor	*Hallucinations/delusions	Other - Neurological
Vomiting	Other - Neurological	Nausea	*CNS Depression (Moderate)
*Headache	Dizziness/vertigo	Tremor	*Diaphoresis

***Bolded** clinical effects appear only within the top 10 effects of the that product, all other clinical effects overlap

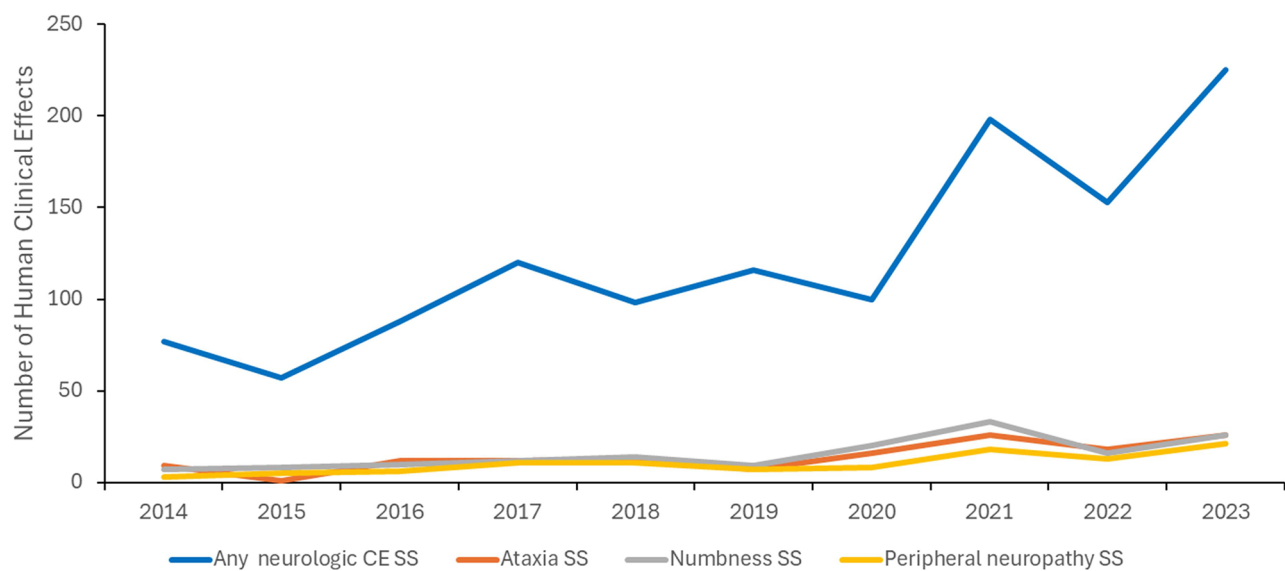


Figure 7. Single Substance Nitrous Oxide Induced Neurologic Clinical Effects by Year, 2014-2023
SS=Single Substance

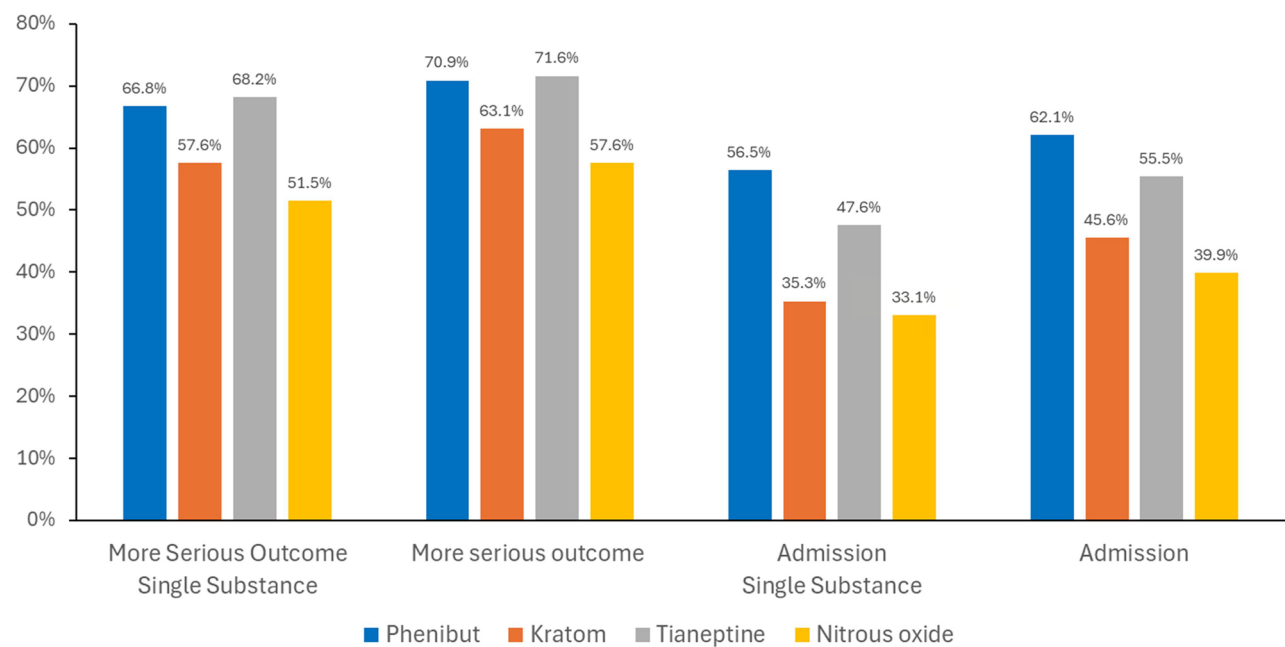


Figure 8. Percentage of Exposures to Unregulated Psychotropic Products with More Serious Medical Outcome and Hospital Admission, 2014-2023
More serious outcomes=Moderate, Major and Death

Table B. 10-Year Prevalence of Healthcare Utilization and Medical Outcomes

	Healthcare evaluation		Hospital admission		More serious medical outcome	
	Total	%SS	Total	%SS	Total	%SS
Kratom	7,333	58.5%	3,343	45.3%	4,885	54.2%
Phenibut	2,032	59.9%	1,261	54.6%	1,425	56.1%
Nitrous oxide	1,493	68.8%	596	57.0%	889	63.0%
Tianeptine	1,190	71.3%	660	54.5%	847	61.4%

SS=Single substance exposure

Plant Exposures

Table 20 provides the number of times a specific plant was reported to NPDS (n = 51,099). The 25 most commonly

involved plant species and categories account for 42.9% of all reported plant exposures. Three of the top 10 categories in the table are essentially synonymous for unknown plant and comprise 6.59% (3,367) of all plant exposures. For various reasons,

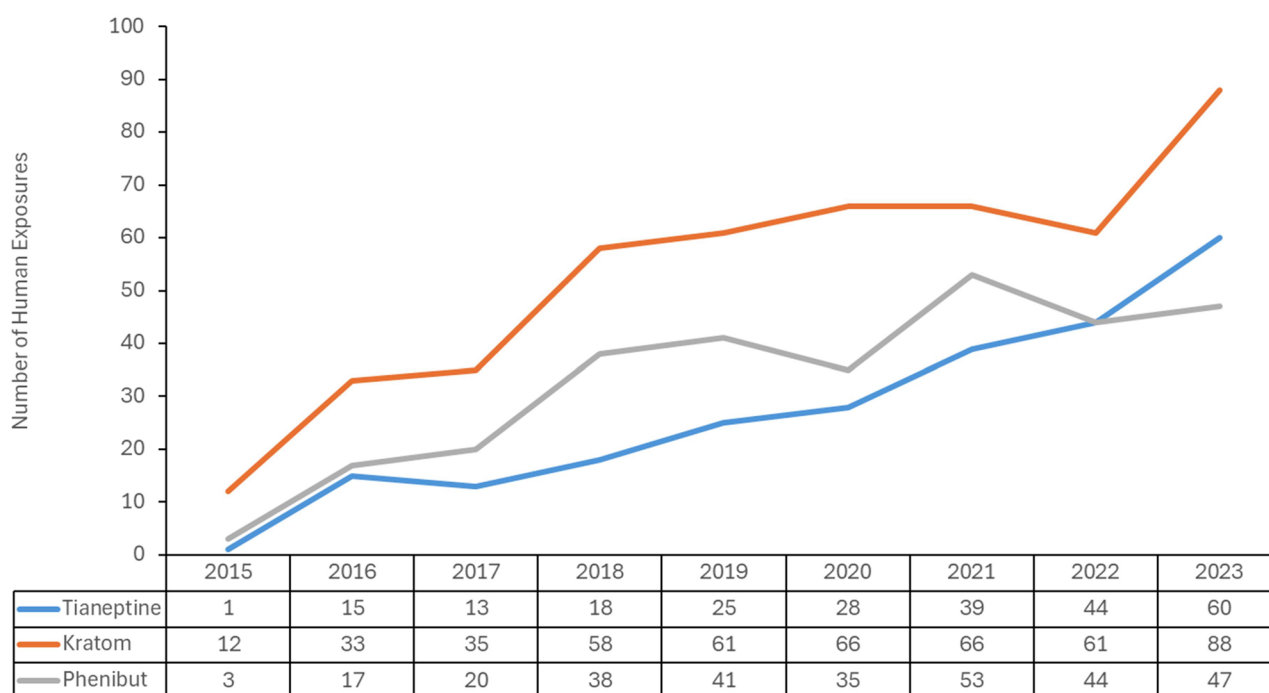


Figure 9. Withdrawal Cases Associated with Selected Unregulated Psychotropic Products as Reported to US Poison Centers by Year, 2015-2023

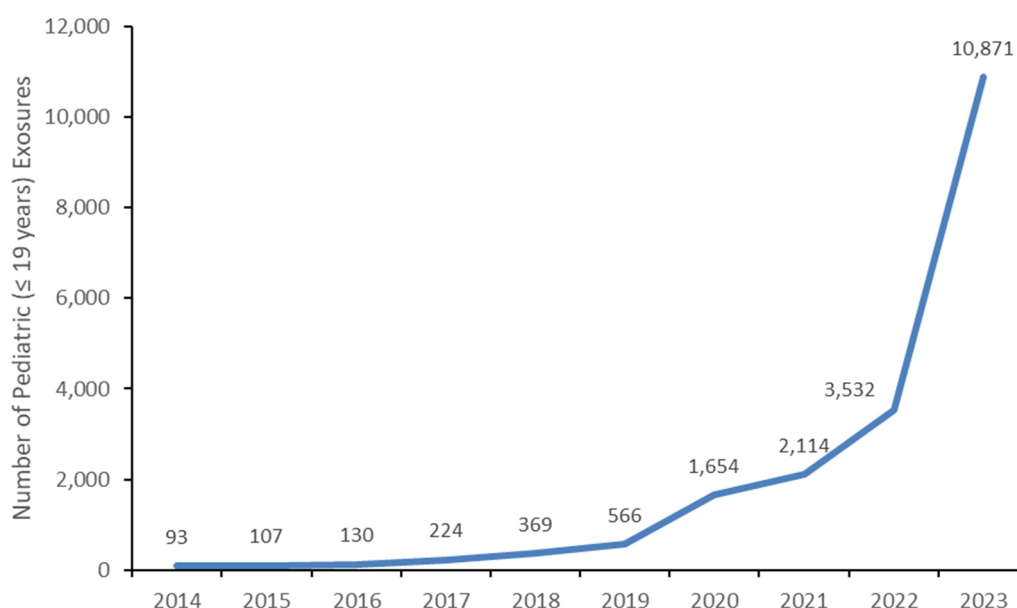


Figure 10. Pediatric (≤ 19 Years) Water Bead Human Exposure Cases Reported to US Poison Centers by Year, 2014-2023

it was impossible to make a precise identification in these 3 groups. The most frequent plant exposures where positive plant identification was made were (descending order): Pokeweed (*Phytolacca americana*), Cherry Pit or Fruit, Elephant's Ear (Family: *Araceae*), *Ilex* species, and *Epipremnum aureum*.

Deaths and Exposure-related Fatalities

A listing of cases (Table 21, Appendix A) and summary of cases (Tables 4, 5, 8, 9, and 18) are provided for fatal cases with reasonable confidence that the death was a result of the exposure (exposure-related fatalities; RCF of 1, 2 or 3 and

excluding death, indirect cases). Tables 11, 12, 17E, 19 and 22 consider all deaths (direct and indirect), irrespective of the RCF. Beginning in 2010, fatalities recorded as death, indirect report were no longer reviewed by the America's Poison Centers® fatality review team and the RCF was determined by the reporting PC. Table 19C indicates which cases are included in 12 tables reporting fatalities.

There were 1,947 deaths, and 1,325 indirect deaths. Of these, 3,272 cases, 2,700 were judged exposure-related fatalities (RCF = 1 - Undoubtedly responsible, 2 - Probably responsible, or 3 - Contributory). The remaining 572 cases were judged as follows: 162 as RCF 4 - Probably not responsible, 17

Table 18. Categories Associated with Largest Number of Fatalities (Top 25)^a

Substance (Minor Generic Category)	All substances	% ^b	Single substance exposures	% ^c
Acetaminophen Alone	286	8.87	135	22.02
Miscellaneous Sedative/Hypnotics/Antipsychotics	254	7.88	19	3.10
Miscellaneous Alcohols	245	7.60	29	4.73
Pharmaceutical and Illegal Opioid Preparations	221	6.85	30	4.89
Miscellaneous Stimulants and Street Drugs	196	6.08	35	5.71
Calcium Antagonist	193	5.99	36	5.87
Beta Blockers	125	3.88	15	2.45
Miscellaneous Antidepressants	111	3.44	12	1.96
Hypoglycemic, Single Agent	101	3.13	15	2.45
Sedating Antihistamines	97	3.01	15	2.45
Miscellaneous Unknown Drug	90	2.79	20	3.26
Acetaminophen Combinations	85	2.64	12	1.96
Selective Serotonin Reuptake Inhibitors (SSRI)	85	2.64	3	0.49
Miscellaneous Cardiovascular Drugs	83	2.57	30	4.89
Miscellaneous Fumes/Gases/Vapors	71	2.20	39	6.36
Miscellaneous Chemicals	65	2.02	35	5.71
Anticonvulsants: Gamma Aminobutyric Acid and Analogs	64	1.99	0	0.00
Nonsteroidal Antiinflammatory Drugs	62	1.92	4	0.65
Acetylsalicylic Acid Alone	53	1.64	13	2.12
Miscellaneous Muscle Relaxants	53	1.64	3	0.49
Serotonin Norepinephrine Reuptake Inhibitors (SNRI)	43	1.33	0	0.00
Angiotensin Converting Enzyme Inhibitor	42	1.30	2	0.33
Tricyclic Antidepressants (TCA)	40	1.24	9	1.47
Cannabinoids and Analogs	34	1.05	1	0.16
Miscellaneous Anticonvulsants	33	1.02	0	0.00

^aNumbers represent total exposures associated with 1,422 fatalities (with RCF of 1-Undoubtedly responsible, 2-Probably responsible, or 3-Contributory and no death, indirect cases); each fatality may have had exposure to more than one substance.

^bPercentages are based on the total number of substances reported in fatal exposures (n = 3,224).

^cPercentages are based on the total number of single substance fatal exposures (n = 613).

Table 19A. Comparisons of Death Data (1985-2023)^a

Year	Total fatalities		Suicides		Pediatric deaths (≤5 years) ^b	
	N	% of cases	N	% of deaths	N	% of deaths
1985	328	0.036	174	53.05	20	6.10
1986	406	0.037	223	54.93	15	3.69
1987	398	0.034	227	57.04	22	5.53
1988	544	0.040	296	54.41	30	5.51
1989	590	0.037	323	54.75	24	4.07
1990	553	0.032	320	57.87	21	3.80
1991	764	0.042	408	53.40	44	5.76
1992	705	0.038	395	56.03	29	4.11
1993	626	0.036	338	53.99	27	4.31
1994	766	0.040	410	53.52	26	3.39
1995	724	0.036	405	55.94	20	2.76
1996	726	0.034	358	49.31	29	3.99
1997	786	0.036	418	53.18	25	3.18
1998	775	0.035	421	54.32	16	2.06
1999	873	0.040	472	54.07	24	2.75
2000	921	0.042	477	51.79	20	2.17
2001	1,085	0.048	553	50.97	27	2.49
2002	1,170	0.049	635	54.27	27	2.31
2003	1,109	0.046	592	53.38	35	3.16
2004	1,190	0.049	642	53.95	27	2.27
2005	1,438	0.059	674	46.87	32	2.23
2006	1,515	0.063	705	46.53	39	2.57
2007	1,597	0.064	737	46.15	47	2.94
2008	1,756	0.070	797	45.39	39	2.22
2009	1,544	0.062	779	50.45	37	2.40
2010	1,730	0.072	779	45.03	55	3.18
2011	2,765	0.118	865	31.28	42	1.52
2012	2,937	0.129	890	30.30	46	1.57
2013	2,477	0.113	785	31.69	51	2.06
2014	1,835	0.085	790	43.05	34	1.85
2015	1,831	0.084	814	44.46	42	2.29
2016	1,977	0.091	906	45.83	44	2.23
2017	3,208	0.151	954	29.74	25	0.78
2018	3,111	0.148	953	30.63	51	1.64
2019	2,619	0.122	909	34.71	31	1.18
2020	4,488	0.210	1,013	22.57	57	1.27
2021	4,497	0.216	1,042	23.17	56	1.25
2022	3,255	0.157	1,016	31.21	61	1.87
2023	3,272	0.157	963	29.40	41	1.30

^aHuman exposures with medical outcome of death or death, indirect regardless of RCF.

^bIncludes all children with actual or estimated ages ≤ 5 years old. Results do not include "Unknown Child" or "Unknown Age". Includes death and death, indirect regardless of RCF.

Table 19B. Comparisons of Direct and Indirect Death Data (2000-2023)^a

Year	All deaths			Suicides					Pediatric deaths (≤5 years)				
	Total	Direct	Indirect	Total	% of deaths	Direct	% of direct	Indirect	Total	% of deaths	Direct	% of direct	Indirect
2000	864	845	19	448	51.85	443	52.43	5	18	2.08	18	2.13	0
2001	1,066	952	114	542	50.84	503	52.84	39	26	2.44	24	2.52	2
2002	850	739	111	455	53.53	436	59.00	19	24	2.82	15	2.03	9
2003	867	826	41	464	53.52	454	54.96	10	29	3.34	22	2.66	7
2004	955	898	57	516	54.03	501	55.79	15	25	2.62	21	2.34	4
2005	1,423	1,332	91	666	46.80	656	49.25	10	32	2.25	26	1.95	6
2006	1,515	1,415	100	705	46.53	687	48.55	18	39	2.57	32	2.26	7
2007	1,597	1,502	95	737	46.15	712	47.40	25	47	2.94	41	2.73	6
2008	1,756	1,535	221	797	45.39	750	48.86	47	39	2.22	32	2.08	7
2009	1,544	1,452	92	779	50.45	748	51.52	31	37	2.40	31	2.13	6
2010	1,730	1,455	275	779	45.03	732	50.31	47	55	3.18	47	3.23	8
2011	2,765	1,503	1,262	865	31.28	758	50.43	107	42	1.52	31	2.06	11
2012	2,937	1,507	1,430	890	30.30	759	50.36	131	46	1.57	30	1.99	16
2013	2,477	1,552	925	785	31.69	698	44.97	87	51	2.06	43	2.77	8
2014	1,835	1,559	276	790	43.05	757	48.56	33	34	1.85	23	1.48	11
2015	1,831	1,670	161	814	44.46	784	46.95	30	42	2.29	34	2.04	8
2016	1,977	1,852	125	906	45.83	885	47.79	21	44	2.23	37	2.00	7
2017	3,208	1,832	1,376	954	29.74	821	44.81	133	25	0.78	19	1.04	6
2018	3,111	1,821	1,290	953	30.63	823	45.19	130	51	1.64	32	1.76	19
2019	2,619	1,923	696	909	34.71	855	44.46	54	31	1.18	22	1.14	9
2020	4,488	2,006	2,482	1,013	22.57	880	43.87	133	57	1.27	37	1.84	20
2021	4,497	2,234	2,263	1,042	23.17	941	42.12	101	56	1.25	35	1.57	21
2022	3,255	2,072	1,183	1,016	31.21	953	45.99	63	61	1.87	44	2.12	17
2023	3,272	1,947	1,325	963	29.43	898	46.12	65	41	1.25	29	1.49	12

^aHuman exposures with medical outcome of death or death, indirect regardless of RCF.

Table 19C. Detail of Cases Included in Fatality Tables

Table	Fatalities Included	RCF	N
4	Death only	1,2,3	1,422
5	Death only	1,2,3	1,422
8	Death only	1,2,3	1,422
9	Death only	1,2,3	1,422
11	Death and Death (indirect report)	All	3,272
12	Death and Death (indirect report)	All	3,272
17E	Pediatric Death and Death (indirect report)	All	41
18	Death only	1,2,3	1,422
19A	Death and Death (indirect report)	All	3,272
19B	Death and Death (indirect report)	All	3,272
21	Death and Death (indirect report)	1,2,3	2,700
22	Death and Death (indirect report) - Single substance deaths only	All	1,449

as RCF 5 - Clearly not responsible, and 393 as RCF 6 - Unknown. Deaths are sorted in [Table 21 \(Appendix A\)](#) according to the category, then substance deemed most likely responsible for the death (Cause Rank), and then by patient age. The Cause Rank permits the PC to judge 2 or more substances as indistinguishable in terms of cause, for example, 2 substances which appear equally likely to have caused the death could have Substance Rank of 1,2 and Cause Rank of 1,1. Additional agents implicated in the death are listed below the primary agent in the order of their contribution to the fatality.

As shown in [Table 5](#), a single substance was implicated in 87.4% of reported human exposures, and 12.6% of patients were exposed to ≥ 2 substances. The exposure-related fatalities involved a single substance in 613 cases (43.1%), 2 substances in 374 cases (26.3%), 3 in 205 cases (14.4%), and 4 or more in the balance of cases.

In [Table 21 \(Appendix A\)](#), the Annual Report ID number [bracketed] indicates that the abstract for that case is included in [Appendix C](#). The letters following the Annual Report ID number indicate: i=death, indirect report (occurred in 1,278, 47.3% of cases), p=prehospital cardiac and/or respiratory

arrest (occurred in 450, 16.7% of cases), h=hospital records reviewed (occurred in 1,154, 42.7% of cases), a=autopsy report reviewed (occurred in 1,308, 48.4% of cases). The distribution of NPDS RCF was: 1 = Undoubtedly responsible in 1,549 cases (57.4%), 2 = Probably responsible in 911 cases (33.7%), 3 = Contributory in 240 cases (8.89%). The denominator for these [Table 21](#) percentages is 2,700.

All Fatalities—All Ages

[Table 4](#) presents the age and gender distribution for the 1,422 exposure-related fatalities (excluding death, indirect). The age distribution of reported fatalities showed a decrease in deaths among children (<20 years old) compared to 2022, with 92 cases representing 6.47% of fatalities. This was an absolute decrease of 26 fatalities (22.0%) in that age group. The age distribution of reported fatalities in adults (≥ 20 years) was similar to prior years with 1,328 of 1,422 (93.4%) fatal cases occurring in that age group and 2 (0.141%) occurring in unknown age patients. While children ≤ 5 years old were involved in the majority of exposures, the deaths in this

Table 20. Frequency of Plant Exposures (Top 25)^a

	Botanical name or Category	America's Poison Centers Generic Codes® Name	N
1	<i>Phytolacca americana</i> / Pokeweed	Plants: Gastrointestinal Irritants (Excluding Oxalate Containing Plants)	3,436
2	Cherry Pit / Cherry (Species unspecified)	Plants: Amygdalin and/or Cyanogenic Glycosides	2,464
3	Plants-cyanogenic glycosides	Plants: Amygdalin and/or Cyanogenic Glycosides	1,433
4	Unknown Botanical Name	Plants: Unknown Toxic Types or Unknown if Toxic	1,424
5	Plants-cardiac glycosides	Plants: Cardiac Glycosides (Excluding Drugs)	1,104
6	Elephant's Ear	Plants: Oxalates	1,045
7	Berry	Plants: Unknown Toxic Types or Unknown if Toxic	979
8	Plants-general-unknown	Plants: Unknown Toxic Types or Unknown if Toxic	964
9	<i>Ilex species</i>	Plants: Gastrointestinal Irritants (Excluding Oxalate Containing Plants)	727
10	<i>Epipremnum aureum</i>	Plants: Oxalates	712
13	<i>Solanum nigrum</i>	Plants: Solanine	695
14	Apple Seed / Fruit	Plants: Amygdalin and/or Cyanogenic Glycosides	626
15	Plants-toxicodendrol	Plants: Skin Irritants (Excluding Oxalate Containing Plants)	619
16	<i>Conium maculatum</i>	Plants: Nicotine (Excluding Tobacco Products)	611
17	Plants-solanine	Plants: Solanine	569
18	Plants-oxalates	Plants: Oxalates	560
19	<i>Spathiphyllum species</i>	Plants: Oxalates	550
18	<i>Solanum dulcamara</i>	Plants: Solanine	479
19	Unknown Botanical Name	Plants: Amygdalin and/or Cyanogenic Glycosides	447
20	<i>Euphorbia tirucalli</i>	Plants: Gastrointestinal Irritants (Excluding Oxalate Containing Plants)	443
21	Unknown Botanical Name	Plants: Oxalates	431
22	<i>Zamioculcas zamiifolia</i>	Plants: Oxalates	409
23	<i>Solanum tuberosum</i>	Plants: Solanine	401
24	Unknown Botanical Name	Plants: Non-Toxic	397
25	Unknown Botanical Name	Plants: Gastrointestinal Irritants (Excluding Oxalate Containing Plants)	377

^aNumber of substances related to a human exposure with a Major Generic Category of Plant. Unknown Botanical Name represents substances with a Major Generic Category of Plant and a NULL substance code. Total = 51,099.

group comprised just 1.13% of the exposure-related fatalities. The number of deaths in this age group decreased by 11 from 2022. Most (55.6%) of the fatalities occurred in 20 to 59-year-old individuals, in line with prior years, although 37.3% occurred in older individuals (>60 years old). Exposures causing death in children ≤ 5 years of age were mostly coded as "Unintentional-General," while those in ages >13 years were mostly "Intentional."

Table 21 (Appendix A) lists 2,700 human fatalities (RCF 1, 2, 3; including death, indirect) along with all the substances involved for each case. The headers in column 1 are the major categories of nonpharmaceutical or pharmaceutical the exposure substance belongs to. The substance listed in column 3 of Table 21 (alternate name) was chosen to be the most specific generic name based upon the Poisindex® product name and generic code selected for that substance (for example, column 1 may have the major category of alcohols and column 3 will list the specific substance, methanol). Alternate names are maintained in the NPDS for each substance involved in a fatality. The cross-references at the end of each major category section in Table 21 list all cases that identify the substance as other than the primary substance. This alternate name may not agree with the America's Poison Centers® generic categories used in the summary tables (including Appendix B (Table 22)).

Table 18 lists the top 25 minor generic substance categories associated with reported fatalities and the number of single substance exposure fatalities for that category. The 10 substance categories associated most frequently with fatalities were acetaminophen alone, miscellaneous sedative/hypnotics/antipsychotics, miscellaneous alcohols, pharmaceutical and illegal opioid preparations, miscellaneous stimulants and street drugs, calcium antagonist, beta blockers, miscellaneous antidepressants, hypoglycemic, single agent, and sedating antihistamines. Note that

Table 18 is sorted by all substances to which a patient was exposed (i.e., a patient exposed to an opioid may have also been exposed to 1 or more other products) and shows single substance exposures in the right-hand column.

Table 21 contains 2,700 fatalities, of which the first ranked substances were pharmaceutical for 2,399 (88.9%). The most common groups of pharmaceuticals included:

- 1,373 analgesics (761 fentanyl (non-prescription), 239 acetaminophen, 113 opioid, N.O.S., 38 fentanyl (prescription), 35 oxycodone, 32 heroin, 30 acetaminophen/hydrocodone, 25 salicylate, 13 methadone, 13 morphine, 11 tramadol, 9 acetaminophen/oxycodone, 9 colchicine, 8 acetaminophen/diphenhydramine, 5 acetaminophen (ER), 5 acetaminophen/codeine, 5 hydrocodone).
- 314 stimulants/street drugs (221 methamphetamine, 63 cocaine, 5 stimulant/street drug, N.O.S., 4 amphetamine (hallucinogenic), 3,4-methylenedioxymethamphetamine (MDMA), 3 amphetamine, 3 *Mitragyna speciosa korthals*, 2 amphetamine, N.O.S., 2 benzoyllecgonine, 2 nitrites (amyl-butyl), 2 THC homolog).
- 275 cardiovascular drugs (109 amlodipine, 29 digoxin, 22 metoprolol, 19 propranolol, 15 diltiazem, 11 verapamil, 10 calcium antagonist, N.O.S., 9 carvedilol, 8 diltiazem (ER), 6 flecainide, 6 metoprolol (ER), 5 atenolol, 4 clonidine, 3 nifedipine (ER)).
- 114 antidepressants (35 bupropion, 17 amitriptyline, 14 bupropion (ER), 12 trazodone, 8 doxepin, 4 fluoxetine, 4 lithium, 4 venlafaxine (ER), 3 escitalopram, 3 sertraline, 2 citalopram, 2 venlafaxine).
- 79 unknown drug (79 drug, N.O.S.).
- 70 sedative/hypnotic/antipsychotics (19 quetiapine, 13 alprazolam, 6 clozapine, 4 clonazepam, 3 benzodiazepine, N.O.S., 3 olanzapine, 2 atypical antipsychotic, N.O.S., 2 bromazepam, 2 diazepam, 2 lorazepam, 2 phenobarbital, 2 quetiapine (ER)).
- 40 hormones and hormone antagonists (24 metformin, 7 insulin, N.O.S., 2 glimepiride, 2 insulin (glargine) (ER), 1 empagliflozin, 1 glipizide, 1 insulin (lispro), 1 metformin/sitagliptin, 1 oral hypoglycemic (sulfonylurea), N.O.S.).

The exposure was acute (A) in 810 (30.0%), acute on chronic (A/C) in 371 (13.7%), chronic (C) in 157 (5.81%), and unknown (U) in 1,362 (50.4%) of fatalities.

A total of 1,489 tissue concentrations for 1 or more related analytes were reported in 785 cases. Most of these (1,332) involved fatalities with RCF of 1-3 and are listed in [Appendix A \(Table 21\)](#). Of note, all tissue concentrations are available to the PCs through the NPDS Enterprise Reports. The most frequent of the 137 analytes included: 400 acetaminophen (APAP), 143 ethanol, 49 salicylate, 42 carboxyhemoglobin, 39 fentanyl, 32 digoxin, 31 bupropion, 29 methamphetamine, 27 amphetamine, 24 methanol, 23 hydroxybupropion, 22 diphenhydramine, 20 norfentanyl, 18 benzoylecgonine, 17 gabapentin, and 17 methemoglobin.

Route of exposure was ingestion only in 1,101 cases (40.8%), inhalation/nasal only in 111 cases (4.11%), and parenteral only in 36 cases (1.33%). Most other exposures recorded a combination of routes or an unknown route.

The Intentional exposure reason was abuse in 1,306 cases (48.4%), suspected suicide in 824 cases (30.5%), misuse in 63 cases (2.33%), and unknown in 73 cases (2.704%). Unintentional exposure reasons were therapeutic error in 53 cases (1.96%), general in 38 cases (1.41%), environmental in 38 cases (1.41%), misuse in 20 cases (0.741%), occupational in 10 cases (0.370%), unknown in 9 cases (0.333%), bite/sting in 6 cases (0.222%) and food poisoning in 1 case (0.0370%). Adverse drug reaction was the reason in 65 cases (2.41%).

Pediatric fatalities—age ≤ 5 years

Although children younger than 6 years were involved in most exposures, they comprised only 41 (1.25%) of the 3,272 fatalities. These numbers reflect those reported since 1985 ([Table 19A](#), all RCFs and include death, indirect reports). [Table 8](#) (RCF 1, 2 or 3, excludes death, indirect reports) shows the percentage of fatalities in children ≤ 5 years related to total pediatric exposures was 16/828,669 (0.00193%). By comparison, 1,328/908,768 (0.145%) of all adult exposures involved a fatality. Of the 16 pediatric fatalities in [Table 8](#), 12 (75.0%) were reported as unintentional and 4 had an unknown reason (25.0%). The 25 fatalities in children ≤ 5 years detailed in ([Table 21](#)) (includes death, indirect reports and RCF 1-3) included 9 nonpharmaceuticals and 16 pharmaceuticals. The first ranked substances associated with these fatalities included: analgesics (13), batteries (4), fumes/gases/vapors (2), alcohols (1), antimicrobials (1), automotive/aircraft/boat products (1), cosmetics/personal care products (1), stimulants and street drugs (1), and unknown drug (1).

Pediatric fatalities—ages 6-12 years

In the age range 6 to 12 years, 12 fatalities are listed in [Appendix A \(Table 21\)](#) (includes death, indirect reports and RCF 1-3) included: fumes/gases/vapors (4), analgesics (2), cardiovascular drugs (1), cosmetics/personal care products (1), miscellaneous drugs (1), miscellaneous foods (1), plants (1), and stimulants and street drugs (1). In the 11 deaths with RCF 1-3 (no death, indirect reports), the exposure reasons were: 3 unintentional

- environmental, 2 unintentional-general, 2 intentional-suspected suicide, 1 unintentional-therapeutic error, 1 intentional-abuse, 1-adverse reaction drug, and 1 unknown. ([Table 8](#)).

Adolescent fatalities—ages 13-19 years

In the age range 13 to 19 years, there were 65 reported fatalities with RCF 1-3 (no death, indirect reports), a decrease of 17 (20.7%) from 2022. Reasons included 55 intentional, 5 unknown, 4 unintentional, and 1 adverse reaction. ([Table 8](#)). The 90 fatalities listed in [Appendix A \(Table 21\)](#) (includes death, indirect reports and RCF 1-3) included 71 pharmaceuticals and 19 nonpharmaceuticals. The first ranked pharmaceuticals associated with these fatalities included: analgesics (27), antidepressants (8), cardiovascular drugs (7), cold and cough preparations (6), unknown drug (6), stimulants and street drugs (5), sedative/hypnotics/antipsychotics (3), antihistamines (2), antimicrobials (2), anesthetics (1), dietary supplements/herbals/homeopathic (1), electrolytes and minerals (1), gastrointestinal preparations (1), and miscellaneous drugs (1).

The first ranked nonpharmaceutical associated with these fatalities included: chemicals (11), fumes/gases/vapors (4), alcohols (3), and cosmetics/personal care products (1).

Pregnancy and Fatalities

There were 6 deaths in pregnant women reported to NPDS in 2023 (includes death, indirect reports). A total of 65 deaths of pregnant women have been reported between 2000 and 2023. The majority (55 of 65, 84.6%) were intentional exposures (misuse, abuse or suspected suicide).

America's Poison Centers' Surveillance Results

Key components of the NPDS surveillance system include the automated monitoring tools available to the NPDS user community. Since Surveillance Anomaly 1, generated at 2:00pm EDT on 17 September 2006, over 483,000 anomalies have been detected and reported. Over 3,000 were confirmed as representing public health significance with PCs working collaboratively with local health departments and, in some instances the CDC, on the identified issues.

At the time of this report, 194 surveillance definitions run continuously, monitoring case and clinical effects volumes and a variety of case-based definitions from food poisoning to nerve agents. These definitions represent the surveillance work by many individual PCs, health departments, America's Poison Centers®, the Health Studies Branch (Division of Environmental Hazards and Health Effects, National Center for Environmental Health), and CDC. NPDS has also been used for surveillance during mass gathering events, such as the Super Bowl.

The methodology for automating surveillance continues to be improved in efforts to detect the index case of any relevant public health event. Algorithms for identifying the index case vary greatly regarding the substance to be identified. No individual algorithm works for every application. The magnitude and penetrance of NPDS are critical to epidemiologic

surveillance and to the ability to substantiate situational awareness for clinicians, policymakers, and public health officials nationwide. Typically, NPDS surveillance detects the response to an event, rather than predicting an event. This fosters situational awareness that is undoubtedly beneficial to public health activities.

Discussion

The exposure cases and information requests reported by PCs in 2023 do not reflect the full extent of PC efforts, which also include poison prevention activities, partnership with public health entities, research endeavors and public and health care professional education programs.

NPDS exposure data may be considered “numerator data” in the absence of a true denominator; that is, we do not know the number of actual exposures that occur in the population. NPDS data covers only those exposures that are reported to PCs since most poison exposures and poisoning deaths are not universally reportable events.

NPDS 2000–2023 encounter volume data clearly demonstrate an overall trend toward decreasing exposure cases. This decline has been apparent since mid-2007 and reflects the decreasing use of the PC for less serious exposures. However, during this same period, exposures with a more serious outcome (death, major, moderate) and HCF cases have continued to slightly increase. Possible contributors to the declining PC utilization include declining US birth rate (especially since exposure rates are much higher in children ≤ 5 years of age), increasing use of text rather than voice communication (although some of these communications may end up as cases), lack of familiarity with poison center services and increasing use of and reliance on internet resources. To meet our public health goals, PCs will need to understand and provide access via the public’s 21st-century communication preferences. We are concerned that failure to respond to these changes may result in a regression in the pattern of seeking care, with more people seeking medical care at HCFs for exposures that could have been managed on-site by a PC. Likewise, minor exposures may progress to more serious morbidity and mortality because of incorrect internet information or the absence of PC management. The net effect could be more serious poisoning outcomes because fewer people have taken advantage of PC services, with a resultant increased burden on the national healthcare infrastructure as may be reflected in the increased number of cases managed in an HCF this year. PoisonHelp.org (see [Appendix D](#)) was created to provide appropriate management and triage of poisoning cases by members of the public who do not initially contact a poison center.

Unlike many other data sources, NPDS offers a near real-time view of these public health issues without data source extrapolations. A limitation of NPDS data has been the perceived lack of fatality case volume compared to other reporting sources. However, when change over

time is studied, NPDS is clearly consistent with other public health fatality analyses. One of the issues leading to this concern is the fact that medical record systems seldom have common output streams. This is particularly apparent with the various electronic medical record systems available. It is important to build a federated approach like the one modeled by NPDS to allow data sharing, for example, between hospital emergency departments and other medical record systems, including medical examiner offices, nationwide. Enhancements to NPDS could promote interoperability between NPDS and electronic medical records systems to better trend poison-related morbidity and mortality in the US and internationally.

Summary

Unintentional and intentional exposures continue to be a significant cause of morbidity and mortality in the US. The near real-time status of NPDS represents a national public health resource to collect and monitor US exposure cases and information requests. Changes in 2023 encounters from 2022 are shown in [Figures 1, 3, and 4](#), and include:

- Total encounters (all exposure cases and information requests) decreased by 2.49%.
- Information requests decreased 19.1%, Drug ID requests decreased 14.03%, Drug information requests decreased 17.6%, medical information requests decreased 61.3% reflecting the decrease in calls related to the COVID-19 pandemic and vaccines.
- HCF information requests decreased 5.19% and have returned to pre-COVID-19 pandemic numbers.
- Exposure cases reported from an HCF increased 2.38%, reflecting the steady increase since 2000.
- Human exposures with less serious outcomes increased 0.779%.
- Human exposures with more serious outcomes (moderate, major or death) had an increase of 0.637% compared to 2022, while serious outcome cases have increased 4.25% annually since 2000.
- The most rapidly increasing substance categories resulting in more serious outcomes over the past decade are analgesics, antidepressants, antihistamines, and alcohols.

The data support the continued value of PC expertise and need for specialized medical toxicology information to manage more severe exposures, despite the slight decrease in total exposures. In addition to telephonic services, PCs must consider newer communication approaches that match current and future public preferences. The continuing mission of NPDS is to provide a nation-wide infrastructure for public health surveillance for all types of exposures, public health event identification, resilience, response and situational awareness tracking. NPDS is a model system for the nation and global public health.

Disclaimer

America's Poison Centers® (<https://poisoncenters.org/>) maintains the national database of information logged by the country's 55 regional Poison Centers (PCs) serving all 50 United States, Puerto Rico, the US territories of Guam, American Samoa, Federated States of Micronesia, US Virgin Islands, and the District of Columbia. The records reflect only information provided when the public or healthcare professionals report an actual or potential exposure to a substance (e.g., an ingestion, inhalation, or topical exposure, etc.) or request information/educational materials. Exposures do not necessarily represent a poisoning or overdose. America's Poison Centers® is not able to independently verify the accuracy of every report made to member centers. Additional exposures may go unreported to PCs and data referenced from America's Poison Centers® should not be construed to represent the complete incidence of US exposures to any substance(s).

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APPENDIX A

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
Non-Pharmaceutical Exposures										
Alcohols										
1ai	15 y F	ethanol (beverage)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2ai	17 y F	ethanol (beverage)	1	1	U	Unk	Int-A	1		
3p	17 y M	methanol	1	1	A	Ingst	Int-S	1	methanol	120 mg/dL In Blood (unspecified) @ Unknown
		methanol	1	1					methanol	22 mg/dL In Blood (unspecified) @ Unknown
4ai	21 y F	ethanol (beverage)	1	1	U	Unk	Int-A	1		
5ph	22 y M	ethanol (beverage) drug, N.O.S.	1	1	A	Ingst	Int-A	2		
			2	2						
6pha	23 y F	ethanol (beverage)	1	1	U	Ingst	Unk	2	ethanol	450 mg/dL In Serum @ Unknown
		drug, N.O.S.	2	2						
7h	24 y M	methanol	1	1	A	Ingst	Int-S	1	methanol	40 mg/dL In Blood (unspecified) @ Unknown
8pha	26 y M	ethanol (beverage)	1	1	A	Ingst	Int-A	1	ethanol	394 mg/dL In Blood (unspecified) @ Unknown
		ethylene glycol (antifreeze)	2	2					ethylene glycol	28 mg/dL In Blood (unspecified) @ Unknown
		methanol	3	3					methanol	13 mg/dL In Blood (unspecified) @ Unknown
9i	27 y M	ethanol (beverage)	1	1	A/C	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
10ai	28 y F	ethanol (beverage)	1	1	C	Unk	Int-A	1		
11ha	29 y M	ethanol (beverage)	1	1	A/C	Ingst	Unk	3		
12ai	30 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
13ai	30 y M	ethanol (beverage)	1	1	C	Unk	Int-A	1		
14i	30 y F	ethanol (beverage)	1	1	U	Unk	Int-A	1		
15ha	31 y M	ethanol (beverage)	1	1	A/C	Ingst	Oth-C	1	ethanol	372 mg/dL In Serum @ 15 m (pe)
		cleaner (alkali)	2	2						
16h	32 y F	ethanol (beverage)	1	1	U	Ingst	Int-M	2	ethanol	172 mg/dL In Blood (unspecified) @ Unknown
		acetaminophen buprenorphine/naloxone (sublingual film)	2	2						
			3	3						
17h	32 y F	ethanol (beverage)	1	1	U	Ingst	Int-S	3	ethanol	114 mg/dL In Blood (unspecified) @ Unknown
18h	32 y F	ethanol (beverage)	1	1	A	Ingst	Int-A	3	ethanol	305 mg/dL In Blood (unspecified) @ Unknown
19h	33 y F	methanol	1	1	A	Ingst	Int-S	1	methanol	15 mg/dL In Blood (unspecified) @ Unknown
		methanol	1	1					methanol	150 mg/dL In Serum @ 22 h (pe)
		methanol	1	1					methanol	35 mg/dL In Plasma @ Unknown
20i	34 y F	ethanol (beverage)	1	1	A/C	Unk	Int-A	1		
		acetaminophen	2	2						
21h	34 y M	methanol	1	1	A	Ingst	Int-A	1	methanol	15 mg/dL In Serum @ 3 d (pe)
		methanol	1	1					methanol	318 mg/dL In Serum @ 1 h (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		methanol	1	1					methanol	46 mg/dL In Serum @ 2 d (pe)
		ethanol (beverage)	2	2					ethanol	333 mg/dL In Blood (unspecified) @ Unknown
22ha	34 y M	ethanol (beverage)	1	1	U	Ingst	Int-S	3		
23h	34 y M	ethanol (beverage)	1	1	U	Ingst	Unk	3	ethylene glycol	0 mg/dL In Serum @ Unknown
		ethanol (beverage)	1	1					methanol	0 mg/dL In Serum @ Unknown
		ethanol (beverage)	1	1					ethanol	34 mg/dL In Serum @ Unknown
24ph	35 y F	ethanol (beverage)	1	1	A	Ingst	Unk	3	ethanol	241 mg/dL In Blood (unspecified) @ Unknown
25ai	35 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
26ai	35 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
27ph	36 y F	ethanol (beverage)	1	1	A	Ingst	Int-A	2	ethanol	541 mg/dL In Plasma @ Unknown
		ethanol (beverage)	1	1					ethanol	574 mg/dL In Plasma @ Unknown
28h	36 y M	methanol	1	1	A	Ingst	Int-U	1		
29i	36 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
		chlordiazepoxide	2	2						
30h	36 y F	ethanol (beverage)	1	1	U	Ingst	Int-A	3		
31ai	37 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
		dextromethorphan	2	2						
32ai	37 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
33h	37 y M	methanol	1	1	A	Ingst	Int-S	1	methanol	526 mg/dL In Blood (unspecified) @ Unknown
		bupropion	2	2						
34ai	37 y M	ethanol (beverage)	1	1	C	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
35ai	39 y M	ethanol (beverage)	1	1	U	Unk	Int-A	2		
		marijuana, N.O.S.	2	2						
36h	39 y M	ethanol (beverage)	1	1	C	Ingst + Unk	Int-A	2	ethanol	4 mg/dL In Serum @ 0h (pe)
		substance (non-drug), N.O.S.	2	2						
37ph	40 y M	ethanol (beverage)	1	1	A	Ingst	Int-S	3		
		acetaminophen (ER)	2	2						
38ai	40 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
39h	42 y F	ethanol (beverage)	1	1	C	Ingst	Int-U	3	ethanol	503 mg/dL In Blood (unspecified) @ Unknown
		acetaminophen	2	2					acetaminophen (apap)	5 mcg/mL In Blood (unspecified) @ Unknown
40h	42 y M	methanol	1	1	A	Ingst	Int-S	2	methanol	169 mg/dL In Serum @ Unknown
		mineral spirits	2	2						
41h	42 y F	ethanol (beverage)	1	1	A/C	Ingst	Int-A	1	ethanol	47 mg/dL In Serum @ 382 m (pe)
		ethanol (beverage)	1	1					ethanol	91 mg/dL In Serum @ 80 m (pe)
42ai	44 y M	ethanol (beverage)	1	1	A	Unk	Int-A	1		
43ai	46 y M	ethanol (beverage)	1	1	C	Unk	Int-A	1		
44h	46 y M	ethanol (beverage)	1	1	U	Ingst	Int-A	2	ethanol	300 mg/dL In Blood (unspecified) @ Unknown
		ethanol (beverage)	1	1					ethanol	452 mg/dL In Blood (unspecified) @ Unknown
45ai	47 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
46ai	47 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
47h	47 y M	ethanol (beverage)	1	1	C	Ingst	Int-A	2	ethanol	166 mg/dL In Serum @ Unknown
48h	47 y M	marijuana, N.O.S.	2	2	U	Ingst	Int-A	3		
		ethanol (beverage)	1	1					ethanol	106.8 mg/dL In Blood (unspecified) @ Unknown
49pha	48 y M	methanol	1	1	A	Ingst	Int-M	1	methanol	69 mg/dL In Serum @ 8 h (pe)
		methanol	1	1					methanol	90 mg/dL In Blood (unspecified) @ Unknown
50ai	49 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
51ai	51 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
52h	51 y M	ethanol (beverage)	1	1	C	Ingst	Int-A	3	ethanol	334 mg/dL In Serum @ Unknown
53h	51 y M	ethanol (beverage)	1	1	A/C	Ingst	Int-A	2	ethanol	97 mg/dL In Blood (unspecified) @ 1 h (pe)
54h	52 y M	ethanol (beverage)	1	1	U	Ingst	Int-S	3	ethanol	394 mg/dL In Serum @ Unknown
		trazodone	2	2						
55ai	53 y F	ethanol (beverage)	1	1	A/C	Unk	Int-A	1		
56ai	53 y F	ethanol (beverage)	1	1	U	Unk	Int-A	1		
57h	53 y F	ethanol (beverage)	1	1	C	Ingst	Oth-W	3		
		ethanol (beverage)	2	2						
58ai	53 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
59h	53 y F	ethanol (beverage)	1	1	C	Ingst	Int-U	3		
		drug, N.O.S.	2	2						
60h	54 y M	ethanol (beverage)	1	1	C	Ingst	Int-A	2		
61ha	54 y M	methanol	1	1	A	Ingst	Unk	1	methanol	111.9 mg/dL In Serum @ Unknown
		methanol	1	1					methanol	130 mg/dL In Serum @ Unknown
62h	55 y F	methanol	1	1	A	Ingst	Int-S	2		
63ai	56 y F	ethanol (beverage)	1	1	U	Unk	Int-A	1		
		zolpidem	2	2						
64ai	58 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
65h	58 y M	ethanol (beverage)	1	1	A/C	Ingst	Int-S	3		
		clonazepam	2	2						
66p	58 y F	ethanol (beverage)	1	1	A	Ingst	Int-A	2		
		ethanol (denatured)	2	1					ethanol	206 mg/dL In Serum @ Unknown
67h	58 y F	ethanol (beverage)	1	1	C	Ingst	Int-A	3		
68pi	59 y F	ethanol (beverage)	2	1	U	Unk	Int-S	2		
		marijuana, N.O.S.	1	2						
		gabapentin	3	3						
		venlafaxine	4	4						
		quetiapine	5	5						
69p	59 y F	ethanol (beverage)	1	1	A	Ingst	Int-S	2	ethanol	283 mg/dL In Blood (unspecified) @ Unknown
		drug, N.O.S.	2	2						
70ai	60 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
71ph	60 y M	methanol	1	1	A	Ingst	Unk	1	methanol	104 mg/dL In Serum @ Unknown
72h	60 y M	ethanol (beverage)	1	1	A	Ingst	Unk	1		
73pha	61 y F	methanol	1	1	A	Ingst	Int-S	1	methanol	156 mg/dL In Blood (unspecified) @ Unknown
74h	61 y F	ethanol (beverage)	1	1	C	Ingst	Int-U	3	ethanol	53 mg/dL In Serum @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		acetaminophen	2	2					acetaminophen (apap)	17.3 mcg/mL In Serum @ Unknown
		acetaminophen	2	2					acetaminophen (apap)	38.3 mcg/mL In Serum @ Unknown
75	61 y F	ethanol (beverage)	2	1	C	Ingst	AR-D	2	ethanol	98 mg/dL In Serum @ Unknown
		acetaminophen	1	2					acetaminophen (apap)	88 mcg/mL In Serum @ Unknown
[76h]	62 y F	isopropanol	1	1	U	Ingst	Int-A	2	isopropanol	24 mg/dL In Serum @ Unknown
		isopropanol	1	1					acetone	46.4 mg/dL In Serum @ Unknown
		ethanol (beverage)	2	2					ethanol	155 mg/dL In Serum @ Unknown
[77h]	62 y M	ethanol/methanol	1	1	A	Ingst	Int-S	1	methanol	244 mg/dL In Blood (unspecified) @ Unknown
78h	62 y F	ethanol (beverage)	1	1	C	Ingst	AR-D	3	ethanol	191 mg/dL In Blood (unspecified) @ Unknown
		acetaminophen	2	2					acetaminophen (apap)	58 mcg/mL In Blood (unspecified) @ Unknown
79ph	63 y M	ethanol (beverage)	1	1	C	Ingst	Int-A	3	acetaminophen (apap)	37 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	2	2						
80ai	65 y F	ethanol (beverage)	1	1	U	Unk	Int-A	1		
81h	67 y M	ethanol (beverage)	1	1	A/C	Ingst	Unt-G	3		
82ai	70 y M	ethanol (beverage)	1	1	C	Unk	Int-A	1		
83ai	75 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
84ai	78 y M	ethanol (beverage)	1	1	U	Unk	Int-A	1		
		diazepam	2	2						
		chlordiazepoxide	3	3						
85h	80 y F	isopropanol	1	1	A	Ingst	Int-S	1	ethanol	555 mg/dL In Serum @ 5 m (pe)
86h	82 y M	methanol	1	1	A	Ingst	Unk	2	methanol	0.105 mg/dL In Serum @ Unknown
87	3 m F	ethanol (beverage)	1	1	A	Ingst	Unk	2		
See Also case 89, 95, 109, 170, 222, 226, 244, 266, 272, 288, 319, 356, 357, 376, 377, 401, 402, 414, 427, 429, 431, 438, 439, 441, 444, 445, 448, 459, 468, 474, 475, 479, 482, 484, 493, 499, 500, 501, 504, 512, 524, 525, 528, 530, 532, 546, 550, 551, 555, 563, 576, 582, 584, 585, 588, 590, 599, 619, 633, 636, 642, 648, 651, 660, 669, 671, 680, 685, 686, 689, 691, 704, 705, 706, 707, 710, 721, 728, 730, 735, 736, 738, 740, 741, 743, 748, 751, 757, 766, 771, 776, 778, 792, 798, 803, 804, 805, 816, 818, 825, 827, 844, 848, 849, 851, 856, 860, 861, 862, 864, 865, 868, 872, 879, 881, 882, 886, 900, 903, 906, 910, 915, 916, 920, 926, 930, 932, 939, 946, 949, 960, 967, 976, 982, 983, 984, 985, 986, 990, 1002, 1005, 1014, 1021, 1024, 1030, 1032, 1037, 1038, 1040, 1041, 1044, 1050, 1061, 1063, 1068, 1069, 1088, 1089, 1106, 1108, 1109, 1113, 1122, 1129, 1137, 1154, 1157, 1165, 1167, 1170, 1173, 1174, 1178, 1190, 1194, 1197, 1199, 1202, 1208, 1212, 1215, 1219, 1226, 1231, 1233, 1234, 1247, 1258, 1272, 1278, 1279, 1295, 1310, 1313, 1315, 1322, 1339, 1344, 1353, 1354, 1378, 1383, 1388, 1393, 1401, 1407, 1416, 1421, 1430, 1451, 1481, 1484, 1490, 1495, 1500, 1502, 1524, 1530, 1539, 1552, 1557, 1558, 1559, 1583, 1592, 1607, 1664, 1675, 1677, 1682, 1688, 1693, 1695, 1702, 1706, 1717, 1720, 1727, 1738, 1739, 1740, 1741, 1744, 1748, 1754, 1758, 1760, 1762, 1763, 1766, 1772, 1773, 1774, 1775, 1777, 1796, 1805, 1816, 1818, 1822, 1825, 1828, 1831, 1838, 1846, 1886, 1888, 1891, 1892, 1898, 1901, 1905, 1906, 1914, 1919, 1928, 1932, 1934, 1937, 1939, 1943, 1944, 1945, 1951, 1953, 1957, 1959, 1963, 1964, 1966, 1979, 1991, 1994, 1999, 2000, 2007, 2017, 2019, 2020, 2053, 2060, 2069, 2077, 2087, 2095, 2149, 2150, 2151, 2155, 2175, 2176, 2178, 2186, 2191, 2196, 2220, 2222, 2228, 2241, 2242, 2250, 2251, 2258, 2262, 2268, 2275, 2279, 2310, 2313, 2337, 2341, 2347, 2348, 2358, 2360, 2366, 2369, 2370, 2376, 2378, 2381, 2382, 2393, 2395, 2413, 2414, 2419, 2430, 2439, 2440, 2441, 2452, 2456, 2457, 2464, 2470, 2472, 2474, 2485, 2496, 2504, 2507, 2520, 2535, 2537, 2539, 2558, 2560, 2570, 2572, 2588, 2593, 2602, 2631, 2640, 2654, 2660, 2663, 2669, 2673, 2695										
Automotive/Aircraft/Boat Products										
88h	23 y M	methanol	1	1	U	Ingst	Int-S	1	methanol	217 mg/dL In Serum @ Unknown
		ibuprofen	2	2						
		diphenhydramine	3	3						
89h	25 y F	ethylene glycol (antifreeze)	1	1	A	Ingst	Int-S	2	ethylene glycol	0 mg/dL In Serum @ Unknown
		methanol	2	2					methanol	72 mg/dL In Serum @ 2 d (pe)
90	32 y M	ethylene glycol (antifreeze)	1	1	U	Ingst	Int-S	1	ethylene glycol	340 mg/dL In Blood (unspecified) @ Unknown
91ph	42 y M	methanol	1	1	A	Ingst	Int-A	2		
		buprenorphine/naloxone (sublingual film)	2	2						
		diphenhydramine	3	3						
92a	42 y M	ethylene glycol (antifreeze)	1	1	A	Ingst	Int-S	1	ethylene glycol	65 mg/dL In Blood (unspecified) @ Unknown
93h	42 y M	ethylene glycol (antifreeze)	1	1	A	Ingst	Int-S	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
94h	46 y F	ethylene glycol (antifreeze)	1	1	A	Ingst	Int-S	2	ethylene glycol	11 mg/dL In Blood (unspecified) @ Unknown
		ethylene glycol (antifreeze)	1	1					fentanyl	6.4 ng/mL In Urine (quantitative only) @ Unknown
		pregabalin	2	2						
		fentanyl (prescription)	3	3						
95ha	51 y M	ethylene glycol (antifreeze)	1	1	U	Ingst	Oth-M	1	ethylene glycol	31 mg/dL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2						
		methamphetamine	3	3					methamphetamine	396 ng/mL In Blood (unspecified) @ Unknown
		amphetamine	4	4					amphetamine	65.2 ng/mL In Blood (unspecified) @ Unknown
96h	60 y M	methanol	1	1	A	Ingst	Int-M	3		
97h	61 y M	glycol ethers/diethylene glycol salicylate drug, N.O.S.	1 2 3	1 2 3	A	Ingst	Int-S	2		
98ph	65 y F	ethylene glycol (antifreeze)	1	1	U	Ingst	Int-S	2		
[99h]	67 y M	ethylene glycol (antifreeze)	1	1	A	Ingst	Int-S	1	methanol	0 mg/dL In Blood (unspecified) @ 11 h (pe)
		ethylene glycol (antifreeze)	1	1					ethylene glycol	317 mg/dL In Blood (unspecified) @ 11 h (pe)
100hi	77 y M	ethylene glycol (antifreeze)	1	1	A	Ingst	Int-S	2		
		mirtazapine	2	2						
101h	15 m M	hydrocarbon, N.O.S.	1	1	A	Ingst	Unt-G	2		
See Also case 8, 1025										
Batteries										
102i	2 y F	battery, disc (lithium)	1	1	A	Ingst	Unt-G	1		
[103pa]	11 m F	battery, disc	1	1	A	Ingst	Unt-G	1		
104hi	11 m M	battery, disc	1	1	A	Ingst	Unt-G	1		
105i	18 m M	battery, disc (lithium)	1	1	A	Ingst	Unt-G	1		
Bites and Envenomations										
[106p]	32 y F	envenomation (Solenopsis saevissima)	1	1	A	B-S	Unt-B	1		
[107pha]	35 y F	Phyllomedusa bicolor	1	1	A	Derm	Int-M	1		
[108ha]	37 y F	envenomation (Loxosceles reclusa)	1	1	A	B-S	Unt-B	1		
[109ph]	47 y M	envenomation (crotalinae)	1	1	A	Ingst + B-S	Unt-B	1		
		ethanol (beverage)	2	2					ethanol	194 mg/dL In Blood (unspecified) @ Unknown
[110ph]	51 y M	envenomation (agkistrodon)	1	1	A	B-S	Unt-B	1		
[111h]	81 y M	sting (hymenoptera)	1	1	A	B-S	Unt-B	1		
112a	90 y M	envenomation (crotalinae)	1	1	A	B-S	Unt-B	3		
Building and Construction Products										
[113h]	57 y M	magnesium hexafluorosilicate	1	1	A	Ingst + Unk	Unt-M	1		
		methamphetamine	2	2						
Chemicals										
114pha	13 y M	nitrates (sodium)	1	1	U	Ingst + Unk	Int-S	1		
		diphenhydramine	2	2					diphenhydramine	271 ng/mL In Blood (unspecified) @ Unknown
[115pha]	14 y F	nitrates (sodium)	1	1	A	Ingst + Unk	Int-S	1	nitrite	1000 mmol/L In Urine (quantitative only) @ Unknown
		sertraline	2	2					sertraline	43 ng/mL In Serum @ Unknown
		sertraline	2	2					desmethylsertraline	56 ng/mL In Serum @ Unknown
116ph	15 y M	nitrates (sodium)	1	1	U	Ingst + Unk	Int-S	2		
		lorazepam	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
117ph	17 y M				A	Ingst	Int-S	1		
[118pha]	17 y M	nitrites (sodium)	1	1	A	Ingst	Unk	1		
		nitrites, N.O.S.	1	1					nitrite	100 mmol/L In Blood (unspecified) @ Unknown
		nitrites, N.O.S.	1	1					nitrite	1000 µmol/L In Blood (unspecified) @ Autopsy
119a	18 y F	nitrites (sodium)	1	1	A	Ingst	Int-S	1		
120ph	18 y F	nitrites, N.O.S.	1	1	A	Ingst	Int-S	1		
121h	18 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1	methemoglobin	30 % In Blood (unspecified) @ Unknown
122h	18 y M	nitrites, N.O.S.	1	1	A	Ingst	Int-S	1	methemoglobin	31 % In Blood (unspecified) @ 40 m (pe)
123pa	19 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	2	methemoglobin	94 % In Blood (unspecified) @ Unknown
124ph	19 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1		
125pha	20 y F	nitrites (sodium)	1	1	A	Ingst	Int-S	1	methemoglobin	4.2 % In Blood (unspecified) @ Unknown
		bupropion	2	2						
		venlafaxine	3	3						
		fluoxetine	4	4						
		aripiprazole	5	5						
		hydroxyzine	6	6						
126ph	20 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1		
127h	20 y F	nitrites (sodium)	1	1	A	Ingst	Int-S	1		
[128h]	21 y M	sodium hydroxide	1	1	A	Inhal+Oc+Derm	Unt-O	1		
129hai	21 y F	nitrites (sodium)	1	1	U	Unk	Int-S	1	methemoglobin	30 % In Blood (unspecified) @ Autopsy
		nitrites (sodium)	1	1					methemoglobin	30 % In Blood (unspecified) @ Unknown
130pha	21 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1	methemoglobin	80 % In Blood (unspecified) @ Autopsy
131ha	23 y M	ethylene glycol	1	1	A	Ingst	Unk	2		
132h	23 y M	ethylene glycol	1	1	A	Unk	Unk	1	ethylene glycol	70.8 mg/L In Blood (unspecified) @ Unknown
		amphetamine/dextroamphetamine	2	2						
133pha	24 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1		
[134ha]	24 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1		
135	26 y M	nitrites (sodium)	1	1	A	Ingst	Int-U	2		
136ph	26 y M	potassium cyanide	1	1	A	Ingst	Int-S	1		
137p	27 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1	methemoglobin	53 % In Blood (unspecified) @ Unknown
		nitrites (sodium)	1	1					methemoglobin	60 % In Blood (unspecified) @ Unknown
138pha	29 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1	methemoglobin	21 % In Other @ Autopsy
139ai	30 y M	ethylene glycol	1	1	U	Unk	Int-S	1		
140ai	30 y M	nitrites (sodium)	1	1	U	Unk	Int-S	1		
141ph	30 y F	nitrites (sodium)	1	1	A	Unk	Int-S	2		
142pha	31 y F	nitrites (sodium)	1	1	A	Ingst	Int-S	1	methemoglobin	84.4 % In Blood (unspecified) @ Unknown
143ph	34 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1	methemoglobin	30 % In Blood (unspecified) @ Unknown
144h	34 y M	nitrites, N.O.S.	1	1	A	Unk	Int-S	2	methemoglobin	1.6 % In Whole Blood @ 2 h (pe)
		nitrites, N.O.S.	1	1					methemoglobin	30 % In Whole Blood @ 0 h (pe)
145ai	36 y M	ethylene glycol	1	1	U	Unk	Int-S	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
146	38 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	2		
147h	39 y M	acid (sulfuric)	1	1	A	Ingst	Int-S	1		
[148pha]	42 y M	diethylene glycol	1	1	A	Ingst	Int-S	2		
[149ha]	43 y F	cyanide	1	1	A	Ingst	Oth-M	1	cyanide	1.7 mcg/mL In Blood (unspecified) @ 10 m (pe)
		cyanide	1	1					cyanide	3.7 mcg/mL In Blood (unspecified) @ 8 h (pe)
		arsenic	2	2					arsenic	0.61 mcg/g In Liver @ Autopsy
		arsenic	2	2					arsenic	330 mcg/L In Blood (unspecified) @ Unknown
		arsenic	2	2					arsenic	68 mcg/L In Blood (unspecified) @ 10 m (pe)
		tetrahydrozoline	3	3					tetrahydrozoline	95 ng/mL In Blood (unspecified) @ Unknown
150ph	48 y M	sodium azide	1	1	A	Ingst	Int-S	2		
151h	49 y M	nitrites (sodium)	1	1	A	Ingst	Int-S	1	methemoglobin	30 % In Blood (unspecified) @ Unknown
152h	51 y F	ethylene glycol	1	1	U	Ingst	Int-U	3	ethylene glycol	18.4 mg/dL In Serum @ Unknown
		metformin	2	2						
153h	51 y F	ethylene glycol cocaine	1 2	1 2	U	Ingst + Inhal	Unk	2		
154ph	51 y M	chemical (paper strips)	1	1	A	Inhal	Int-A	3		
155pha	56 y M	ethylene glycol	1	1	A	Ingst	Int-S	3	ethylene glycol	51 mg/dL In Blood (unspecified) @ Unknown
		propylene glycol	2	2					propylene glycol	15 mg/dL In Blood (unspecified) @ Unknown
156	57 y M	lithium trazodone ibuprofen quetiapine escitalopram	1 2 3 4 5	1 2 3 4 5	A	Ingst	Int-S	2		
157h	58 y M	diethylene glycol ibuprofen hand sanitizer (ethanol) glycol, N.O.S.	1 2 3 4	1 2 3 4	A	Ingst	Int-M	2		
158h	62 y F	potassium hydroxide	1	1	A	Ingst	Int-S	1		
159	62 y F	ethylene glycol	1	1	A	Ingst	Int-S	1	ethylene glycol	264 mg/dL In Blood (unspecified) @ Unknown
[160h]	64 y M	ammonia	1	1	A	Inhal+Oc+Derm	Unt-O	1		
161h	64 y M	acid (sulfuric) oven cleaner (alkali) drain cleaner (sodium hydroxide/ sodium hypochlorite/sodium silicate)	1 2 3	1 2 3	A	Ingst	Int-M	1		
162h	65 y M	ethylene glycol	1	1	A	Ingst	Int-A	1	ethylene glycol	3400 mg/L In Blood (unspecified) @ Unknown
163h	66 y M	acid (nitric)	1	1	A	Ingst	Int-S	2		
164h	68 y M	ethylene glycol	1	1	A	Ingst	Int-S	1	ethylene glycol	15.6 mg/dL In Blood (unspecified) @ 5 h (pe)
165h	72 y M	cupric sulfate/polyvinyl chloride	1	1	A	Ingst	Unt-M	2		
166h	83 y M	ethylene glycol	1	1	A	Ingst	Int-S	1	ethylene glycol	8 mg/dL In Blood (unspecified) @ Unknown
167p	89 y F	cyanide smoke, N.O.S.	1 2	1 2	A	Inhal	Unt-E	2		

See Also case 197, 205, 219, 223, 228, 236, 240, 241, 242, 295, 732, 1830, 1871, 1913, 1921, 2158, 2307, 2687

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
Cleaning Substances (Household)										
168a	32 y M				A	Ingst	Unt-M	1		
		hydrofluoric acid	1	1						
169ha	42 y M				A	Ingst+Derm	Int-S	1		
		drain cleaner (alkali)	1	1						
		acetaminophen/diphenhydramine	2	2						
170h	51 y M				A	Ingst	Unt-M	1		
		drain cleaner, N.O.S.	1	1						
		ethanol (beverage)	2	2						
171h	52 y M				A	Ingst	Int-S	2		
		cleaner (alkali)	1	1						
		cleaner (hypochlorite)	2	2						
		drain cleaner (sulfuric acid)	3	3						
172ph	55 y F				A	Inhal+Unk	Unt-O	2		
		cleaner (anionic/nonionic)	1	1						
		cleaner (hypochlorite)	2	2						
173h	57 y F				A	Ingst	Unt-M	2		
		drain cleaner (alkali)	1	1						
174	65 y F				A	Ingst	Int-S	2		
		cleaner (acid/anionic/nonionic)	1	1						
175	79 y M				A	Ingst	Unt-G	1		
		laundry detergent (granules)	1	1						
176phai	81 y M				A	Ingst	Int-S	1		
		cleaner (acid/anionic/nonionic)	1	1						
		venlafaxine	2	2					venlafaxine 1900 ng/mL In Serum @ Unknown	
		venlafaxine	2	2					o-desmethylenlafaxine 440 ng/mL In Serum @ Unknown	
		aripiprazole	3	3					aripiprazole 66 ng/mL In Serum @ Unknown	
177h	84 y F				A	Ingst	Int-S	3		
		cleaner (anionic/nonionic)	1	1						
178h	84 y M				A	Ingst	Unt-G	1		
		sodium hydroxide	1	1						
179a	85 y M				A	Ingst+Aspir	Int-S	1		
		cleaner (hypochlorite)	1	1						
180	86 y F				A	Ingst	Int-S	1		
		drain cleaner (alkali)	1	1						
		antifungal drug (topical), N.O.S.	2	2						
181h	90 y M				A	Ingst	Unt-G	1		
		drain cleaner (alkali)	1	1						
See Also case 15, 161, 242, 350, 1852, 2386										
Cosmetics/Personal Care Products										
[182ph]	10 y M				A	Inhal	Int-A	2		
		butane/ethanol	1	1						
[183h]	19 y M				A	Ingst	Int-A	1		
		hand sanitizer (methanol)	1	1					methanol 105 mg/dL In Plasma @ Unknown	
184h	59 y F				U	Ingst	Int-A	3		
		ethanol (non-beverage)	1	1						
185h	65 y F				C	Ingst	Int-A	2		
		ethanol (non-beverage)	1	1					ethanol 190 mg/dL In Serum @ Unknown	
		ethanol (non-beverage)	1	1					ethanol 201 mg/dL In Serum @ Unknown	
186	70 y M				A	Ingst	Unt-G	3		
		soap	1	1						
187ph	83 y F				A	Ingst	Unt-G	2		
		ethanol (non-beverage)	1	1						
188h	15 m M				A	Ingst	Unt-G	2		
		mineral oil	1	1						
See Also case 157, 1421										
Fumes/Gases/Vapors										
189pa	2 y F				A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin 48.7 % In Blood (unspecified) @ Autopsy	
190pha	4 y F				A	Inhal+Derm	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin 27.1 % In Serum @ Unknown	
191ph	6 y M				A	Inhal	Unt-E	1		
		carbon monoxide	1	1						
192pha	7 y M				A	Inhal+Derm	Unt-G	2		
		carbon monoxide	1	1					carboxyhemoglobin 12.7 % In Blood (unspecified) @ Unknown	
193ph	8 y F				A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin 50 % In Blood (unspecified) @ Unknown	
194pa	9 y F				A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin 34 % In Blood (unspecified) @ Autopsy	
195pha	13 y M				A	Inhal	Unt-E	2		
		carbon monoxide	1	1						
196h	13 y M				A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin 34.4 % In Blood (unspecified) @ Unknown	

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		carbon monoxide	1	1					carboxyhemoglobin	50 % In Blood (unspecified) @ Unknown
		carbon monoxide	1	1					carboxyhemoglobin	6.3 % In Blood (unspecified) @ Unknown
197ph	14 y F	carbon monoxide	1	1	A	Inhal	Unt-E	2	carboxyhemoglobin	14.1 % In Serum @ Unknown
		cyanide	2	2	A	Inhal	Unt-G	2		
		carbon monoxide	1	1					carboxyhemoglobin	30.5 % In Blood (unspecified) @ Unknown
199ai	21 y F	carbon monoxide	1	1	A	Inhal + Unk	Unk	1		
		marijuana, N.O.S.	2	2						
200ai	22 y M	carbon monoxide	1	1	U	Inhal	Unk	1		
[201pha]	23 y M	hydrogen sulfide	1	1	A	Inhal	Unt-O	1		
									thiosulfate	4 mcg/mL In Blood (unspecified) @ Autopsy
202p	26 y M	helium	1	1	A	Inhal	Int-S	1		
203ph	27 y M	carbon monoxide	1	1	A	Inhal	Int-S	1	carboxyhemoglobin	37 % In Serum @ Unknown
204h	28 y M	carbon monoxide	1	1	A	Inhal	Int-S	2	carboxyhemoglobin	21.9 % In Whole Blood @ Unknown
205pha	31 y F	carbon monoxide	1	1	A	Inhal	Unt-E	1	carboxyhemoglobin	0.4 % In Blood (unspecified) @ Unknown
		carbon monoxide	1	1					carboxyhemoglobin	51 % In Blood (unspecified) @ Unknown
		carbon monoxide	3	2						
		cyanide	2	3						
		methamphetamine	4	4					methamphetamine	123 ng/mL In Blood (unspecified) @ Autopsy
		methamphetamine	4	4					amphetamine	38 ng/mL In Blood (unspecified) @ Autopsy
		marijuana, N.O.S.	5	5					11-oh-thc	8 ng/mL In Blood (unspecified) @ Autopsy
									(11-hydroxy-delta-9-tetrahydrocannabinol)	
206ph	35 y F	sodium N.O.S.	6	6	A	Inhal	Int-S	2		
207ha	36 y F	hydrogen sulfide	1	1	A	Inhal + Unk	Unk	2	carboxyhemoglobin	6 % In Blood (unspecified) @ Unknown
		methamphetamine	2	2	A	Inhal	AR-O	1		
208pha	36 y M	carbon monoxide	1	1						
		carbon monoxide	2	2	A	Inhal + Unk	Int-A	1		
209ai	37 y M	carbon monoxide	1	1						
		methamphetamine	2	2	A	Inhal	Unt-E	1		
210pi	38 y M	carbon monoxide	1	1	A	Inhal	Unt-E	1		
211ph	38 y F	carbon monoxide	1	1	A	Inhal	Unt-E	1		
212ph	40 y M	carbon monoxide	1	1	A	Inhal	Unt-E	2		
213ph	41 y F	carbon monoxide	1	1	A	Inhal	Unt-E	1	carboxyhemoglobin	44.7 % In Blood (unspecified) @ 1 h (pe)
214pi	41 y F	carbon monoxide	1	1	A	Inhal	Unt-E	1		
215ph	43 y F	carbon monoxide	1	1	U	Inhal	Unt-M	1		
216ha	43 y M	carbon monoxide	1	1	A	Inhal + Derm	Oth-M	1	carboxyhemoglobin	1.8 % In Blood (unspecified) @ 2 d (pe)
		carbon monoxide	1	1					carboxyhemoglobin	7.5 % In Blood (unspecified) @ Unknown
		carbon monoxide	2	2						
		hyperthermia	3	3						
217p	45 y M	carbon monoxide	1	1	A	Inhal	Unt-E	2	carboxyhemoglobin	30.6 % In Blood (unspecified) @ Unknown
218ai	47 y M	carbon monoxide	1	1	U	Inhal	Int-S	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
219ph	48 y M	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		carbon monoxide	2	2					carboxyhemoglobin	40.1 % In Blood (unspecified) @ Unknown
220a	50 y F	cyanide	3	3	A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin	30 % In Blood (unspecified) @ Unknown
221ph	51 y F	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		carbon monoxide	1	1					cyanide	0 mg/L In Blood (unspecified) @ 22 h (pe)
		carbon monoxide	1	1					carboxyhemoglobin	48 % In Blood (unspecified) @ 1 h (pe)
222pa	52 y F	carbon monoxide	1	1	A	Ingst+Inhal	Int-S	1		
		ethanol (beverage)	2	2					carboxyhemoglobin	36 % In Blood (unspecified) @ Unknown
		carbon monoxide	3	3						
		benzodiazepine, N.O.S.	4	4						
[223h]	52 y M	hydrochloric acid	2	1	A	Inhal	Int-S	2		
		hydrogen sulfide	1	1						
		lime sulfur	3	2						
224ph	53 y M	carbon monoxide	1	1	U	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin	36.9 % In Blood (unspecified) @ Unknown
		carbon monoxide	1	1					carboxyhemoglobin	5 % In Blood (unspecified) @ Unknown
225ai	54 y M	carbon monoxide	1	1	A	Inhal+Unk	Int-S	1		
		methamphetamine	2	2						
226pai	54 y M	nitrogen dioxide	1	1	A	Ingst+Inhal	Unt-O	1		
		ethanol (beverage)	3	2					ethanol	312 mg/dL In Other @ Autopsy
		ethanol (beverage)	3	2					ethanol	359 mg/dL In Vitreous @ Autopsy
		nitric oxide	2	2						
		chlordiazepoxide	4	4					chlordiazepoxide	33 ng/mL In Other @ Autopsy
227p	54 y M	carbon monoxide	1	1	A	Inhal	Unt-E	3		
		carbon monoxide	1	1					carboxyhemoglobin	21 % In Blood (unspecified) @ Unknown
228ph	55 y M	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin	39.9 % In Blood (unspecified) @ 30 m (pe)
229ph	56 y M	cyanide	2	1	A	Inhal+Oc	Unt-O	1		
		hydrogen sulfide	1	1						
230ph	58 y M	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin	58 % In Serum @ 1 h (pe)
231p	58 y F	carbon monoxide	1	1	A	Inhal	Int-S	2		
232ph	58 y M	carbon monoxide	1	1	A	Inhal	Unt-E	1		
233ph	60 y M	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin	45.2 % In Blood (unspecified) @ Unknown
234pa	64 y M	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin	44.9 % In Blood (unspecified) @ Unknown
		carbon monoxide	2	2						
235ph	65 y F	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin	30.7 % In Blood (unspecified) @ Unknown
236ph	65 y M	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		cyanide	2	2						
237p	65 y F	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin	55 % In Blood (unspecified) @ Unknown
[238]	66 y M	chlorine gas	1	1	A	Inhal+Derm	Unt-M	2		
239p	66 y M	carbon monoxide	1	1	A	Inhal	Unt-G	2		
240ph	69 y F	carbon monoxide	1	1	A	Inhal+Derm	Unt-E	1		
		carbon monoxide	1	1					carboxyhemoglobin	41.3 % In Blood (unspecified) @ Unknown
		cyanide	2	2						
241h	70 y M	carbon monoxide	1	1	U	Inhal	Unt-E	2		
		carbon monoxide	1	1					carboxyhemoglobin	6 % In Whole Blood @ Unknown
		cyanide	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
242ph	70 y M	chlorine gas	4	1	A	Inhal	Unt-O	2		
		hydrogen sulfide	1	1						
		acid (sulfuric)	2	2						
		cleaner (hypochlorite)	3	3						
243ph	70 y F	carbon monoxide	1	1	A	Inhal	Unk	2		
		propane	2	2						
244ph	71 y M	carbon monoxide	1	1	A	Inhal	Int-S	1		
		carbon monoxide	1	1					cyanide	0.39mcg/mL In Whole Blood @ 1 h (pe)
		ethanol (beverage)	2	2					carboxyhemoglobin	48.9 % In Whole Blood @ 1 h (pe)
									ethanol	224mg/dL In Serum @ 1 h (pe)
245ph	71 y M	carbon monoxide	1	1	A	Inhal	Unk	1		
									carboxyhemoglobin	33.8 % In Blood (unspecified) @ Unknown
246ai	72 y F	carbon monoxide	1	1	A	Inhal	Int-S	1		
247ph	73 y M	carbon monoxide	1	1	A	Inhal	Unt-E	2		
		carbon monoxide	1	1					methemoglobin	3.4 % In Blood (unspecified) @ Unknown
									carboxyhemoglobin	4.4 % In Blood (unspecified) @ Unknown
248ph	74 y M	carbon monoxide	1	1	A	Inhal	Unk	2		
249ph	74 y F	carbon monoxide	1	1	A	Inhal	Unt-E	3		
		carbon monoxide	1	1					carboxyhemoglobin	27.9 % In Blood (unspecified) @ Unknown
									methemoglobin	5.2 % In Blood (unspecified) @ Unknown
250p	78 y F	carbon monoxide	1	1	A	Inhal	Unt-E	1		
		carbon monoxide	2	2					carboxyhemoglobin	40 % In Blood (unspecified) @ Unknown
251pha	30+ y M	argon	1	1	A	Inhal	Unt-O	2		
		nitrogen	2	2						
252pi	Unknown child (≤ 19 yrs) U				A	Inhal	Unt-E	2		
		carbon monoxide	1	1						
253pi	Unknown adult (≥ 20 yrs) U				A	Inhal	Unt-O	2		
		argon	1	1						
		nitrogen	2	2						
254p	Unknown adult (≥ 20 yrs) M				A	Inhal	Int-S	2		
		carbon monoxide	1	1						
255pi	Unknown adult (≥ 20 yrs) M				C	Inhal	Unt-E	2		
		carbon monoxide	1	1						
256pi	Unknown adult (≥ 20 yrs) M				C	Inhal	Unt-E	2		
		carbon monoxide	1	1						
257pha	Unknown adult (≥ 20 yrs) M				A	Inhal	Unt-E	2		
		carbon monoxide	1	1					carboxyhemoglobin	61 % In Blood (unspecified) @ Autopsy
258p	Unknown age U				A	Inhal	Int-S	1		
		hydrogen sulfide	1	1						
See Also case 167, 294, 379, 1537, 2082, 2152										
Heavy Metals										
259ph	52 y M	barium	1	1	A	Inhal+Derm	Unt-O	3		
See Also case 149, 282										
Hydrocarbons										
260h	23 y M	hydrocarbon (fluorinated)	1	1	A/C	Inhal	Int-A	2		
261ha	26 y M	hydrocarbon (lighter fluid/naphtha), N.O.S.	1	1	A	Ingst	Int-S	3		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
262h	30 y M	hydrocarbon (fluorinated)	1	1	A	Inhal	Int-A	2		
263ha	32 y M	hydrocarbon (fluorinated)	1	1	C	Ingst + Inhal	Int-A	1	1,1-difluoroethane @ Unknown	5 mcg/mL In Whole Blood
		clonazepam	2	2					7-aminoclonazepam @ Unknown	49 ng/mL In Whole Blood
		clonazepam	2	2					clonazepam @ Unknown	5.2 ng/mL In Whole Blood
		alprazolam (ER)	3	3					alprazolam @ Unknown	34 ng/mL In Whole Blood
		marijuana	4	4					delta-9-thc @ Unknown	1 ng/mL In Whole Blood
		marijuana	4	4					11-oh-thc @ Unknown	2.7 ng/mL In Whole Blood
		marijuana	4	4					(11-hydroxy-delta-9-tetrahydrocannabinol) @ Unknown	51 ng/mL In Whole Blood
264ha	34 y M	hydrocarbon (fluorinated)	1	1	A	Ingst + Unk	Int-A	2	1,1-difluoroethane (unspecified) @ Unknown	0.59 mcg/mL In Blood
		methamphetamine	2	2					methamphetamine (unspecified) @ Unknown	35 ng/mL In Blood
265h	34 y F	hydrocarbon (fluorinated)	1	1	A/C	Inhal	Int-A	2		
266pha	35 y M	hydrocarbon (halogenated), N.O.S.	1	1	A	Ingst	Int-S	3		
		ethanol (beverage)	2	2					ethanol (unspecified) @ Unknown	10.6 mg/dL In Blood
[267h]	39 y M	hydrocarbon (fluorinated)	1	1	A	Inhal	Int-A	1		
[268h]	39 y M	hydrocarbon (fluorinated)	1	1	A	Inhal	Int-A	2		
269pha	41 y M	hydrocarbon (fluorinated)	1	1	A	Inhal	Int-A	1		
270ph	42 y M	hydrocarbon (fluorinated)	1	1	A	Inhal	Unk	2		
271ai	43 y M	hydrocarbon (fluorinated)	1	1	U	Inhal	Int-S	1		
272pha	48 y M	hydrocarbon (fluorinated)	1	1	A	Ingst + Inhal	Int-A	2	1,1-difluoroethane (quantitative only) @ Unknown	3.6 mcg/mL In Urine
		ethanol (beverage)	2	2					ethanol (quantitative only) @ Unknown	233 mg/dL In Urine
		ethanol (beverage)	2	2					ethanol (quantitative only) @ Unknown	236 mg/dL In Blood
273ph	49 y M	hydrocarbon (fluorinated)	1	1	U	Inhal	Int-A	2		
274pai	50 y M	hydrocarbon (fluorinated)	1	1	A	Inhal	Int-A	3		
275ai	57 y M	hydrocarbon (fluorinated)	1	1	U	Inhal	Int-A	1		
276ai	59 y F	hydrocarbon (fluorinated)	1	1	U	Unk	Int-A	1		
		hydrocarbon (fluorinated)	1	1						
		marijuana, N.O.S.	2	2						
		trazodone	3	3						
277ha	65 y M	hydrocarbon	1	1	A	Ingst + Aspir	Int-U	1		
278p	74 y M	hydrocarbon	1	1	A/C	Ingst + Inhal	Int-S	2		
279ha	85 y M	hydrocarbon, N.O.S.	1	1	A	Ingst + Aspir	Int-S	1		
See Also case 40										
Industrial Cleaners										
280h	34 y M	cleaner (cationic)	1	1	A/C	Ingst	Int-S	1		
281	78 y F	cleaner (alkali)	1	1	A	Ingst	Unt-G	2		
See Also case 299										
Infectious and Toxin-Mediated Diseases										
282h	72 y F	botulism	1	1	U	Unk	Unt-F	3		
		arsenic	2	2						
[283h]	74 y M	botulism	1	1	A	Ingst	AR-F	1		
See Also case 1955, 2217										
Miscellaneous Foods										
[284ha]	11 y F	water	1	1	A	Ingst	Unt-T	2		
		hydroxyzine	2	2						
		sertraline	3	3						
		acetaminophen	4	4						
		ibuprofen	5	5						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
285	48 y F	sodium bicarbonate	1	1	C	Ingst	Int-M	1		
[286h]	57 y M	sodium bicarbonate	1	1	U	Ingst	Int-M	2		
Mushrooms, Naturally Occurring										
[287ha]	64 y F	Morchella sextelata	1	1	A	Ingst	Unt-G	2		
See Also case 2322										
Other/Unknown Nondrug Substances										
288ph	23 y F				A	Ingst + Unk	Unk	3		
		substance (non-drug), N.O.S.	1	1						
		ethanol (beverage)	2	2					ethanol	173 mg/dL In Blood (unspecified) @ Unknown
See Also case 36, 51, 216, 334, 406, 407, 451, 528, 537, 604, 609, 718, 759, 763, 769, 770, 920, 954, 1001, 1010, 1031, 1255, 1329, 1478, 1543, 2387, 2409, 2417, 2423, 2440, 2448, 2454, 2475, 2490, 2499, 2505, 2506, 2510, 2513, 2519, 2525, 2531, 2533, 2578, 2586, 2599, 2602, 2606, 2610, 2699										
Pesticides										
289ha	25 y M				A/C	Ingst	Int-S	1		
		glyphosate	1	1						
		valproic acid (ER)	2	2						
		melatonin	3	3						
290pha	35 y M				A	Ingst	Int-S	1		
[291h]	50 y M	diclorvos	1	1	A	Ingst	Unt-M	2		
[292]	51 y F	paraquat	1	1	A	Ingst	Int-S	2		
[293ha]	51 y M	zinc phosphide	1	1	A	Ingst	Unt-M	1		
294h	57 y M	diquat	1	1	A	Ingst	Int-S	2		
		pesticide, N.O.S.	1	1						
		carbon monoxide	2	2						
295h	60 y M				A	Ingst	Int-S	1		
		diclorvos	1	1						
		cetirizine	2	2						
		boric acid	3	3						
[296h]	66 y M				A	Ingst	Int-S	2		
		diquat/glyphosate	1	1						
297h	67 y M				A	Ingst	Int-S	2		
		insecticide, N.O.S.	1	1						
[298]	75 y M				A	Ingst	Int-S	1		
		malathion	1	1						
See Also case 352, 1522, 2084										
Plants										
[299ha]	6 y M				A	Ingst	Unt-G	2		
		amygdalin	1	1						
		cleaner (acid)	2	2						
See Also case 377										
Tobacco/Nicotine/eCigarette Products										
300ph	50 y F				A	Ingst	Int-S	2		
		nicotine (liquid)	1	1						
301h	56 y M				A	Derm	Int-U	2		
		nicotine	1	1						
		nitroglycerin	2	2						
		amlodipine	3	3						
Pharmaceutical Exposures										
Analgesics										
302ai	1 y M				U	Unk	Unt-G	1		
		fentanyl (non-prescription)	1	1						
[303ph]	15 m M				A	Ingst	Unt-G	2		
		fentanyl (non-prescription)	1	1					norfentanyl	42 ng/mL In Urine (quantitative only) @ Unknown
		fentanyl (non-prescription)	1	1					fentanyl	5 ng/mL In Urine (quantitative only) @ Unknown
		tramadol	2	2						
304ph	2 y F				C	Ingst	Unt-G	2		
		oxycodone	1	1						
		fentanyl (non-prescription)	2	2						
305i	2 y M				A	Unk	Unt-G	2		
		fentanyl (prescription)	1	1						
306h	3 y M				A	Ingst	Unt-U	2		
		fentanyl (non-prescription)	1	1						
307p	4 y M				A	Ingst	Unt-G	1		
		fentanyl (non-prescription)	1	1						
308pha	11 y M				A	Ingst	Int-S	1		
		fentanyl (non-prescription)	1	1					4-anpp (despropionyl fentanyl)	0.53 ng/mL In Blood (unspecified) @ Autopsy
		fentanyl (non-prescription)	1	1					4-anpp (despropionyl fentanyl)	0.58 ng/mL In Blood (unspecified) @ Autopsy
		fentanyl (non-prescription)	1	1					fentanyl	3.7 ng/mL In Blood (unspecified) @ Autopsy
		fentanyl (non-prescription)	1	1					fentanyl	4.1 ng/mL In Blood (unspecified) @ Autopsy
		potassium	4	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		carvedilol	3	3						
		labetalol	2	3						
309ai	12 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
310ai	13 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
311ha	14 y M	fentanyl (prescription)	1	1	A	Ingst + Unk	Unk	1		
		fentanyl (prescription)	1	1					norfentanyl	0.55 ng/mL In Whole Blood @ Unknown
		fentanyl (prescription)	1	1					4-anpp (despropionyl fentanyl)	0.71 ng/mL In Whole Blood @ Unknown
		fentanyl (prescription)	1	1					fentanyl	22 ng/mL In Urine (quantitative only) @ Unknown
		fentanyl (prescription)	1	1					norfentanyl	26 ng/mL In Urine (quantitative only) @ Unknown
		fentanyl (prescription)	1	1					fentanyl	7 ng/mL In Whole Blood @ Unknown
		marijuana, N.O.S.	2	2					carboxy-thc	39 ng/mL In Urine (quantitative only) @ Unknown
312ai	14 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
313h	14 y F	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	30.2 mcg/mL In Serum @ 19 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	65.8 mcg/mL In Serum @ 0 h (pe)
314h	14 y F	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	120 mcg/mL In Serum @ 19 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	208 mcg/mL In Serum @ 12 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	68 mcg/mL In Serum @ 29.5 h (pe)
315hi	15 y F	acetaminophen	1	1	U	Ingst	Int-S	1	acetaminophen (apap)	44 mcg/mL In Blood (unspecified) @ Unknown
316pha	15 y M	fentanyl (non-prescription)	1	1	A	Ingst	Int-S	1		
317pi	15 y M	fentanyl (non-prescription)	1	1	A	Inhal	Int-A	2		
318ha	15 y F	fentanyl (non-prescription)	1	1	U	Ingst	Int-S	1		
		cocaine	2	2					fentanyl	6.8 ng/mL In Blood (unspecified) @ Unknown
									cocaine	24 ng/mL In Blood (unspecified) @ Unknown
319ai	16 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		marijuana, N.O.S.	3	3						
320ai	16 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
321pi	16 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
322ai	17 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
323ai	17 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
324h	17 y F	acetaminophen/caffeine/salicylate	1	1	A	Ingst	Int-S	2		
		acetaminophen/caffeine/pyrilamine	2	2						
325ha	17 y F	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	115 mcg/mL In Serum @ 15 m (pe)
		acetaminophen	1	1					acetaminophen (apap)	28 mcg/mL In Serum @ 18 h (pe)
		melatonin	2	2						
326ai	18 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
327ai	18 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
328ai	19 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
329ai	19 y F	oxycodone	1	1	U	Unk	Int-A	1		
		bromazolam	2	2						
330ai	19 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
331ai	19 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
332i	19 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
333ai	19 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
		olanzapine	2	2						
		gabapentin	3	3						
334ai	19 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
335i	19 y M	opioid, N.O.S.	1	1	A/C	Ingst	Int-A	2		
336ha	19 y F	fentanyl (non-prescription)	1	1	A	Ingst	Int-S	1	4-anpp (despropionyl fentanyl)	1.6 ng/mL In Blood (unspecified) @ Unknown
		fentanyl (non-prescription)	1	1					norfentanyl	100 ng/mL In Blood (unspecified) @ Unknown
		fentanyl (non-prescription)	1	1					fentanyl	44 ng/mL In Blood (unspecified) @ Unknown
		amphetamine/dextroamphetamine	2	2					amphetamine	31 ng/mL In Blood (unspecified) @ Unknown
		fluoxetine	3	3					norfluoxetine	260 ng/mL In Blood (unspecified) @ Unknown
		fluoxetine	3	3					fluoxetine	370 ng/mL In Blood (unspecified) @ Unknown
		baclofen	4	4						
		alprazolam	5	5						
		ropinirole	6	6						
		spironolactone	7	7						
		oxycodone	8	8						
		ondansetron	9	9						
337ai	20 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
338ai	20 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
		marijuana, N.O.S.	3	3						
339ai	20 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
340h	20 y F	colchicine	1	1	A	Ingst	Int-S	1		
341ha	21 y M	salicylate	2	1	A	Ingst	Int-S	1	salicylate	141 mg/dL In Blood (unspecified) @ 1 m (pe)
		salicylate	2	1					salicylate	1800 mcg/mL In Blood (unspecified) @ Autopsy
		diphenhydramine	1	2					diphenhydramine	1300 ng/mL In Blood (unspecified) @ Autopsy
342pha	21 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	1	norfentanyl	0.81 ng/mL In Serum @ Unknown
		fentanyl (non-prescription)	1	1					fentanyl	14 ng/mL In Serum @ Unknown
		clonazepam	2	2					clonazepam	5.5 ng/mL In Serum @ Unknown
343ai	21 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
344ai	21 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		bupropion	2	2						
		venlafaxine	3	3						
345pha	21 y M	fentanyl analog (acetyl)	1	1	A	Inhal	Int-A	1		
		fentanyl (non-prescription)	2	2						
		methamphetamine	3	3						
		xylazine	4	4						
346ph	21 y M	fentanyl (prescription)	1	1	A	Ingst	Int-U	1		
347ai	21 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
		marijuana, N.O.S.	3	3						
348ai	21 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
349ph	21 y F	heroin	1	1	U	Unk	Int-S	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
350h	21 y M	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	307 mcg/mL In Serum @ Unknown
		cleaner (hypochlorite)	2	2						
		bupropion (ER)	3	3						
351i	21 y M	opioid, N.O.S.	1	1	A	Inhal + Unk	Int-A	2		
352h	22 y M	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	196.4 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen/dextromethorphan/ doxylamine	2	2						
		pyrethroids	3	3						
353ai	22 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
354ph	22 y M	opioid, N.O.S.	1	1	A	Inhal	Int-A	2		
		cocaine	2	2						
		amphetamine, N.O.S.	3	3						
355ai	22 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
356ai	22 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		marijuana, N.O.S.	3	3						
357ai	22 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
358i	22 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
359ai	22 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
360ai	22 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
361i	22 y F	fentanyl (prescription)	1	1	U	Unk	Int-A	2		
362ai	22 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
363i	22 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
364ai	22 y F	acetaminophen	1	1	U	Unk	Int-S	1		
		diphenhydramine	2	2						
365ph	22 y M	metonitazene	1	1	U	Unk	Int-S	2		
366ph	22 y F	fentanyl (non-prescription)	1	1	U	Inhal	Int-U	2		
		drug, N.O.S.	2	2						
367ph	23 y M	fentanyl (non-prescription)	1	1	U	Inhal + Unk	Int-A	1		
		cocaine	2	2						
		marijuana	3	3						
368ph	23 y F	oxycodone	1	1	A	Ingst	Unk	2		
		acetaminophen	2	2					acetaminophen (apap)	58 mcg/mL In Blood (unspecified) @ Unknown
369i	23 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
370ai	23 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
371i	23 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
372ai	23 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
373ai	23 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
374h	23 y F	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	100.1 mcg/mL In Blood (unspecified) @ 16.2 h (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		acetaminophen	1	1					acetaminophen (apap)	21 mcg/mL In Blood (unspecified) @ 42 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	30 mcg/mL In Blood (unspecified) @ 33 h (pe)
375p	23 y M	methadone	1	1	A	Ingst	Int-A	2		
376h	23 y F	acetaminophen	1	1	A/C	Ingst	Int-M	1		
		ethanol (beverage)	2	2						
[377h]	23 y F-Pregnant	acetaminophen	1	1	A	Ingst	Int-S	1		
		acetaminophen	1	1					acetaminophen (apap)	139 mcg/mL In Blood (unspecified) @ 14 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	162 mcg/mL In Blood (unspecified) @ 8 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	458 mcg/mL In Blood (unspecified) @ 0 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	55 mcg/mL In Blood (unspecified) @ 34 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	75 mcg/mL In Blood (unspecified) @ 25.5 h (pe)
		isopropanol	2	2						
		ibuprofen	3	3						
		Piper nigrum	4	4						
378i	24 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
379ai	24 y F	opioid, N.O.S.	1	1	U	Inhal + Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		carbon monoxide	3	3						
380ai	24 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
381ai	24 y F	heroin	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
382i	24 y M	alprazolam	2	2	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		cocaine	2	2						
		alprazolam	3	3						
383ai	24 y M	alprazolam	3	3	U	Unk	Int-M	1		
		fentanyl (non-prescription)	1	1						
		marijuana, N.O.S.	2	2						
384ai	24 y M	marijuana, N.O.S.	2	2	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		marijuana	3	3						
385ai	24 y M	marijuana	3	3	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		marijuana, N.O.S.	2	2						
386ai	24 y F	marijuana, N.O.S.	2	2	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
387h	24 y F	methamphetamine	2	2	A	Unk	Int-U	1		
		acetaminophen	1	1					acetaminophen (apap)	32 mcg/mL In Serum @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	42.9 mcg/mL In Serum @ Unknown
		drug, N.O.S.	2	1						
388i	24 y F	drug, N.O.S.	2	1	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
389	24 y M	methamphetamine	2	2	A	Ingst	Int-S	1		
		acetaminophen	1	1					acetaminophen (apap)	37.3 mcg/mL In Blood (unspecified) @ Unknown
390ai	24 y F	acetaminophen	1	1	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		risperidone	3	3						
391ai	24 y F	risperidone	3	3	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		fentanyl analogs (para-fluoro)	3	3						
392i	24 y M	fentanyl analogs (para-fluoro)	3	3	A	Unk	Int-A	2		
		opioid, N.O.S.	1	1						
393i	24 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
		heroin	1	1						
394ha	24 y M	heroin	1	1	A	Ingst	Int-S	1		
		acetaminophen	1	1					acetaminophen (apap)	567 mg/mL In Serum @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
395h	24 y F	acetaminophen	1	1	A/C	Ingst	Int-S	1	acetaminophen (apap)	44 mcg/mL In Blood (unspecified) @ 26 h (pe)
396ai	25 y M	ibuprofen	2	2	U	Unk	Int-A	1		
397ai	25 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
398ai	25 y F	fentanyl (non-prescription) methamphetamine cocaine	1 2 3	1 2 3	U	Unk	Int-A	1		
399ai	25 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
400i	25 y M	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
401h	25 y M	salicylate	1	1	A	Ingst	Int-S	1	salicylate	93 mg/dL In Serum @ Unknown
402ai	25 y F	ethanol (beverage)	2	2					ethanol	95 mg/dL In Serum @ Unknown
403ai	25 y M	fentanyl (non-prescription) hydroxyzine ethanol (beverage)	1 2 3	1 2 3	U	Unk	Int-A	1		
404ai	25 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
405ai	25 y M	fentanyl (non-prescription) marijuana, N.O.S.	1 2	1 2	U	Unk	Int-A	1		
406ai	25 y M	fentanyl (non-prescription) methamphetamine substance (non-drug), N.O.S.	1 2 3	1 2 3	U	Unk	Int-A	1		
407ai	25 y M	fentanyl (non-prescription) methamphetamine substance (non-drug), N.O.S.	1 2 3	1 2 3	U	Unk	Int-A	1		
408i	25 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
409	25 y M	salicylate	1	1	A	Ingst	Int-S	1	salicylate	119 mg/dL In Blood (unspecified) @ Unknown
410ai	26 y M	fentanyl (non-prescription) cocaine amphetamine (hallucinogenic), 3,4-methylenedioxy- methamphetamine (MDMA)	1 2 3	1 2 3	U	Unk	Int-A	1		
411ai	26 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
412ai	26 y M	fentanyl (non-prescription) chlorpromazine	1 2	1 2	U	Unk	Int-A	1		
413ai	26 y M	fentanyl (non-prescription) cocaine bromazolam	1 2 3	1 2 3	U	Unk	Int-A	1		
414ai	26 y M	fentanyl (non-prescription) ethanol (beverage)	1 2	1 2	U	Unk	Int-A	1		
415ai	26 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
416ai	26 y F	fentanyl (non-prescription) methamphetamine marijuana, N.O.S.	1 2 3	1 2 3	U	Unk	Int-A	1		
417ai	26 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
418ai	26 y F	fentanyl (non-prescription) methamphetamine sertraline	1 2 3	1 2 3	U	Unk	Int-A	1		
419ai	26 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
420ai	26 y M	fentanyl (non-prescription) cocaine	1 2	1 2	U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
421ai	26 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
422h	26 y M	acetaminophen/hydrocodone	1	1	A/C	Ingst	Int-S	1		
		amphetamine/dextroamphetamine	2	2						
		benzodiazepine, N.O.S.	3	3						
423ai	26 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
424ai	26 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
425ai	26 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
426ph	26 y F	fentanyl (non-prescription)	1	1	U	Ingst	Int-A	1		
									fentanyl 152.5ng/mL In Urine (quantitative only) @ Unknown	
427ai	26 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
428ph	26 y M	fentanyl (non-prescription)	1	1	A	Ingst	Int-A	1		
		cocaine	2	2						
429	26 y F	acetaminophen	1	1	C	Ingst	Int-M	2		
		ethanol (beverage)	2	2						
430ai	26 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
431ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
		ethanol (beverage)	3	3						
432ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
433ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
434ai	27 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		alprazolam	3	3						
435ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
436ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
437ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
438ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
439ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
440ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		morphine	3	3						
441pa	27 y F	fentanyl (non-prescription)	1	1	U	Ingst	Int-M	1		
									norfentanyl 1 ng/mL In Blood (unspecified) @ Unknown	
		fentanyl (non-prescription)	1	1					fentanyl 1.3ng/mL In Blood (unspecified) @ Unknown	
		ethanol (beverage)	2	2					ethanol 43mg/dL In Blood (unspecified) @ Unknown	
442i	27 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
443ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
444ai	27 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
445ai	27 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
446i	27 y M	fentanyl (prescription)	1	1	A	Unk	Int-A	2		
		opioid, N.O.S.	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
447ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
448i	27 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		marijuana, N.O.S.	3	3						
449i	27 y F	heroin	1	1	U	Unk	Int-A	2		
450ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
451ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
452ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		methadone	3	3						
453ha	27 y M	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	56 mcg/mL In Blood (unspecified) @ Unknown
		methamphetamine	2	2					methamphetamine	103 ng/mL In Urine (quantitative only) @ 2 d (pe)
		methamphetamine	2	2					amphetamine	20507 ng/mL In Urine (quantitative only) @ Unknown
		methamphetamine	2	2					methamphetamine	28 ng/mL In Blood (unspecified) @ 1 d (pe)
		methamphetamine	2	2					methamphetamine	2961 ng/mL In Urine (quantitative only) @ Unknown
		methamphetamine	2	2					methamphetamine	6.5 ng/mL In Blood (unspecified) @ 4 d (pe)
		methamphetamine	2	2					amphetamine	7.1 ng/mL In Blood (unspecified) @ 1 d (pe)
		marijuana, N.O.S.	3	3					delta-9-carboxy-thc	155 ng/mL In Urine (quantitative only) @ Unknown
		marijuana, N.O.S.	3	3					delta-8-thc	6 ng/mL In Urine (quantitative only) @ 2 d (pe)
		marijuana, N.O.S.	3	3					delta-9-carboxy-thc	96 ng/mL In Urine (quantitative only) @ 2 d (pe)
454i	27 y F	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
455ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		hydroxyzine	3	3						
456ph	27 y M	heroin	1	1	A	Inhal	Int-A	2		
457ai	27 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
458ai	28 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
459ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
460ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
461ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		bromazolam	3	3						
462ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
		methamphetamine	2	2						
463ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
464ai	28 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		marijuana, N.O.S.	3	3						
465ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
466ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
467ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
		marijuana, N.O.S.	3	3						
468h	28 y M	acetaminophen	1	1	A	Ingst	Unt-U	2	acetaminophen (apap)	224.6 mcg/mL In Serum @ Unknown
		drug, N.O.S.	2	2						
		ethanol (beverage)	3	3					ethanol	29.8 mg/dL In Serum @ Unknown
		salicylate	4	4					salicylate	5.8 mg/dL In Serum @ Unknown
469ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
470ph	28 y F	fentanyl (prescription)	1	1	A	Inhal	Unt-G	2		
471ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
472ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
473ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
474ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
475pha	28 y M	fentanyl (prescription)	1	1	U	Ingst + Unk	Int-A	1	4-anpp (despropionyl fentanyl)	0.69 mcg/mL In Blood (unspecified) @ Unknown
		fentanyl (prescription)	1	1					fentanyl	8.3 ng/mL In Blood (unspecified) @ Unknown
		amphetamine	2	2					amphetamine	35 ng/mL In Blood (unspecified) @ Unknown
		cocaine	3	3						
		ethanol (beverage)	4	4					ethanol	117 mg/dL In Blood (unspecified) @ Unknown
476i	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
477ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
478i	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
479ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
480ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
481i	28 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	1		
		methamphetamine	2	2						
		bromazolam	3	3						
482ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
483i	28 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
484ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
485i	28 y F	heroin	1	1	A	Unk	Int-A	2		
486ha	28 y F	fentanyl (non-prescription)	1	1	A	Unk	Int-A	1	fentanyl	4.4 ng/mL In Blood (unspecified) @ 1.5 h (pe)
		methamphetamine	2	2					methamphetamine	0.4 mg/L In Blood (unspecified) @ 1.5 m (pe)
		xylazine	3	3						
487ai	28 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
488ph	28 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	2		
		methamphetamine	2	2						
489h	28 y F	fentanyl (prescription)	1	1	A	Par	Int-A	2		
		cocaine	2	2						
490i	28 y F	heroin	1	1	A/C	Unk	Int-A	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
491ph	28 y M	fentanyl (non-prescription)	1	1	C	Ingst + Inhal	Int-A	2		
		gabapentin	2	2						
492ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
493ha	29 y F	fentanyl (prescription)	1	1	U	Unk	Unk	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
494ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
495ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
496ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
497ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
498ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
499ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
500ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		gabapentin	2	2						
		ethanol (beverage)	3	3						
501ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-M	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
502ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
503pi	29 y F	opioid, N.O.S.	1	1	A/C	Unk	Unt-U	2		
504ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
505ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
506ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
507ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
508ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		fentanyl analogs (para-fluoro)	2	2						
		methamphetamine	3	3						
509ai	29 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
510h	29 y M	colchicine	1	1	A	Ingst + Inhal	Int-A	2		
		carvedilol	2	2						
		cocaine	3	3						
		methamphetamine	4	4						
511ph	29 y F	acetaminophen/oxycodone	1	1	U	Unk	Int-U	2	acetaminophen (apap)	28 mcg/mL In Blood (unspecified) @ Unknown
512ai	29 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		alcohol, N.O.S.	3	3						
513h	30 y F	acetaminophen/diphenhydramine	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	9 mcg/mL In Blood (unspecified) @ Unknown
514ha	30 y F	acetaminophen/hydrocodone	2	2	C	Ingst	Unt-T	1		
		acetaminophen	1	1						
		benzodiazepine, N.O.S.	2	2						
515ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
516ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
517ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
518ai	30 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
519ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
520ai	30 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
521ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
522ph	30 y F	fentanyl (non-prescription)	1	1	A	Ingst	Int-A	2		
		THC homolog	2	2						
523ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		fluoxetine	2	2						
524i	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
525ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		marijuana, N.O.S.	3	3						
526ph	30 y M	methadone	1	1	A	Ingst	Int-A	2		
		alprazolam	2	2						
527ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
528i	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		substance (non-drug), N.O.S.	3	3						
529i	30 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
530ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
531ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
532i	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
533ai	30 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		alprazolam	3	3						
534i	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
535ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		oxycodone	2	2						
		alprazolam	3	3						
536ph	30 y M	acetaminophen	1	1	A	Ingst	Unk	1		
		salicylate	2	2						
537ai	30 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
538h	30 y F	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	32 mcg/mL In Serum @ 1 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	81.3 mcg/mL In Serum @ 15 m (pe)
539h	30 y F	acetaminophen	1	1	C	Ingst	Int-U	3	acetaminophen (apap)	85 mcg/mL In Blood (unspecified) @ Unknown
540ai	31 y M				U	Inhal + Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		foreign body	2	2						
541ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		olanzapine	2	2						
542ai	31 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
		alprazolam	2	2						
543ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
544ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
545ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
546ai	31 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
		ethanol (beverage)	3	3						
547ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
548ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
549ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		methadone	3	3						
550ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		gabapentin	2	2						
		ethanol (beverage)	3	3						
551i	31 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
552ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
553	31 y F	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	74mcg/mL In Serum @ Unknown
554ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
		methamphetamine	2	2						
		cocaine	3	3						
555ai	31 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		trazodone	2	2						
		ethanol (beverage)	3	3						
556ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
557ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
558ha	31 y M	colchicine	1	1	A/C	Ingst	Int-S	1		
		pantoprazole	2	2						
559i	31 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
560ai	31 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		amphetamine	2	2						
		amitriptyline	3	3						
561h	31 y F	acetaminophen	1	1	U	Unk	Unk	2	acetaminophen (apap)	63.4mcg/mL In Blood (unspecified) @ Unknown
		drug, N.O.S.	2	2						
562ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
563ai	31 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		hydroxyzine	2	2						
		ethanol (beverage)	3	3						
564ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		bromazolam	2	2						
		cocaine	3	3						
565ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
566ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
567ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		fluoxetine	3	3						
568ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		Mitragyna speciosa korthals	3	3						
569ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
570h	31 y M	acetaminophen/hydrocodone	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	377mcg/mL In Blood (unspecified) @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
571ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
572i	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		aripiprazole	2	2						
573ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
574ai	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
575i	31 y M	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
576pha	31 y M	fentanyl (non-prescription)	1	1	A	Unk	Unk	1		
									fentanyl 25 ng/mL In Urine (quantitative only) @ Unknown	
		ethanol (beverage)	2	2					ethanol 82 mg/dL In Serum @ Unknown	
577	31 y F	acetaminophen	1	1	A	Ingst	Unk	2	acetaminophen (apap)	56 mcg/mL In Serum @ Unknown
578i	31 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
579h	31 y F	colchicine	1	1	A/C	Ingst	Int-S	2		
		amlodipine	2	2						
		apixaban	3	3						
580i	31 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
581ai	32 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
582ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
583ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
584ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
585ai	32 y M	acetaminophen	1	1	U	Unk	Int-A	1		
		diphenhydramine	2	2						
		ethanol (beverage)	3	3						
586ai	32 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		oxycodone	3	3						
587ai	32 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
588ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
589ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
590ai	32 y M	fentanyl analogs (para-fluoro)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
		cocaethylene	4	4						
591h	32 y F	acetaminophen	1	1	U	Ingst + Unk	Unk	2	alprazolam 13 mcg/L In Blood (unspecified) @ Unknown	
		acetaminophen	1	1					acetaminophen (apap)	39 mcg/mL In Blood (unspecified) @ Unknown
		salicylate	2	2						
		drug, N.O.S.	3	3						
		alprazolam	4	4						
592ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
593ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
594h	32 y F	acetaminophen	1	1	A/C	Ingst	Int-S	1	acetaminophen (apap)	7.1 mg/L In Serum @ Unknown
595ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
596ai	32 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
597h	32 y F	acetaminophen	1	1	C	Ingst	Int-S	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
598ai	32 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
599	32 y M	acetaminophen	1	1	A	Ingst	Int-S	2		
		ethanol (beverage)	2	2						
600ai	32 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
601ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
602ai	32 y M	acetaminophen	1	1	U	Unk	Int-S	1		
		sertraline	2	2						
		diphenhydramine	3	3						
603i	32 y F	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
604ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
605ai	32 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		amphetamine	2	2						
		gabapentin	3	3						
606ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		sertraline	3	3						
607ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
608ai	32 y M	methadone	1	1	U	Unk	Int-A	1		
		ketamine	2	2						
		diazepam	3	3						
609ai	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
610pha	32 y F	fentanyl (prescription)	1	1	U	Ingst+ Par	Unk	2	norfentanyl	24.1 ng/mL In Serum @ Unknown
		fentanyl (prescription)	1	1					fentanyl	9.4 ng/mL In Serum @ Unknown
		methamphetamine	2	2					methamphetamine	0.091 mg/L In Serum @ Unknown
		amphetamine	3	3					amphetamine	0.046 mg/L In Serum @ Unknown
		cocaine	4	4					ecgonine methyl ester	0.035 mg/L In Serum @ Unknown
		cocaine	4	4					benzoylecgonine	0.35 mg/L In Serum @ Unknown
		gabapentin	5	5					gabapentin	6.79 mg/L In Serum @ Unknown
611i	32 y M	opioid, N.O.S.	1	1	A	Par	Int-A	2		
612i	32 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
613pi	32 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
614pai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	3		
		amphetamine	2	2						
		phencyclidine	3	3						
		acetaminophen	4	4						
		benzoylecgonine	5	5						
615ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
616ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		diphenhydramine	2	2						
617ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
618i	33 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		fentanyl analog (acetyl)	2	2						
		methamphetamine	3	3						
619ai	33 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
		ethanol (beverage)	3	3						
620ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
621ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
622ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
623ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		diphenhydramine	2	2						
		hydroxyzine	3	3						
624i	33 y M	opioid, N.O.S.	1	1	U	Par	Int-A	2		
625i	33 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		xylazine	2	2						
626i	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		fentanyl analog (acetyl)	2	2						
627ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
628ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		trazodone	2	2						
		hydroxyzine	3	3						
629ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
630ai	33 y M	methadone	1	1	U	Unk	Int-A	1		
		quetiapine	2	2						
		marijuana, N.O.S.	3	3						
631ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
632ai	33 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		citalopram	2	2						
		gabapentin	3	3						
633ai	33 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
634ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
635ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
636ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
637pha	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		benzodiazepine, N.O.S.	2	2						
638i	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
639i	33 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
640h	33 y F	acetaminophen	1	1	C	Ingst	Unt-T	2	acetaminophen (apap)	16.6mg/L In Serum @ 15 m (pe)
641ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
642ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
643pai	33 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	2		
		morphine	2	2						
		gabapentin	3	3						
644i	33 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
645ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
646ai	33 y F-Pregnant	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		buprenorphine	3	3						
647i	33 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		bromazolam	2	2						
		diazepam	3	3						
648ai	33 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
649ph	33 y M	fentanyl (non-prescription)	1	1	A	Unk	Unk	1		
		methamphetamine	2	2						
650ai	33 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		Mitragyna speciosa korthals	2	2						
651h	33 y F	acetaminophen	1	1	C	Ingst	Int-M	2		
		ethanol (beverage)	2	2						
652h	33 y F	acetaminophen	1	1	C	Ingst	Unk	2		
653i	33 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
654ai	34 y M	opioid, N.O.S.	1	1	U	Unk	Int-S	1		
		fentanyl (non-prescription)	1	1						
		tramadol	2	2						
655ai	34 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
656ai	34 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
657ai	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
658i	34 y F	opioid, N.O.S.	1	1	A	Unk	Int-S	2		
659i	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
660ai	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
661ai	34 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
662ai	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
663ai	34 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
664h	34 y F	acetaminophen	1	1	A/C	Ingst	Int-S	2	acetaminophen (apap)	162 mcg/mL In Blood (unspecified) @ Unknown
		hydroxyzine	2	2						
		trazodone	3	3						
		bupropion	4	4						
		citalopram	5	5						
665ai	34 y M	hydrocodone	1	1	U	Unk	Unk	1		
		alprazolam	2	2						
666i	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
667ai	34 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-M	1		
		methamphetamine	2	2						
668ai	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
669ha	34 y F	acetaminophen (ER)	1	1	A	Ingst	Unk	1	acetaminophen (apap)	451 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	320 mg/dL In Blood (unspecified) @ Unknown
670ai	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
671ai	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
672ai	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
673a	34 y M	acetaminophen	1	1	A	Ingst	Unk	1	acetaminophen (apap)	15.5 mcg/mL In Blood (unspecified) @ Unknown
674ai	34 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
675ha	34 y M	acetaminophen	1	1	A/C	Ingst	Int-S	1	acetaminophen (apap)	162 mg/L In Serum @ 3 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	20 mg/L In Serum @ 6 d (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
676ai	34 y M	acetaminophen	1	1					acetaminophen (apap)	240 mg/L In Serum @ 2 d (pe)
677ai	34 y M	acetaminophen	1	1					acetaminophen (apap)	39 mg/L In Serum @ 5 d (pe)
678ai	34 y M	acetaminophen	1	1					acetaminophen (apap)	476 mg/L In Serum @ 15 m (pe)
679ai	34 y M	sertraline	2	2	U	Unk	Int-A	1		
680ai	34 y M	fentanyl (non-prescription)	1	1						
681ai	34 y M	marijuana, N.O.S.	2	2	U	Unk	Int-A	1		
682ai	34 y F	fentanyl (non-prescription)	1	1						
683i	34 y M	methamphetamine	2	2						
684ai	34 y M	bupropion	3	3	U	Unk	Int-A	1		
685ai	34 y M	fentanyl (non-prescription)	1	1						
686ai	34 y M	cocaine	2	2						
687i	34 y M	marijuana, N.O.S.	3	3	U	Unk	Int-A	1		
688i	34 y F	fentanyl (non-prescription)	1	1						
689i	34 y M	methamphetamine	2	2						
690h	34 y F	ethanol (beverage)	2	2	U	Unk	Int-A	1		
691ai	34 y M	marijuana, N.O.S.	3	3	U	Unk	Int-A	1		
692ai	34 y M	fentanyl (non-prescription)	1	1						
693ph	34 y F	ethanol (beverage)	2	2						
694i	34 y M	marijuana, N.O.S.	3	3	U	Unk	Int-A	1		
695ai	34 y M	opioid, N.O.S.	1	1	A	Inhal	Int-A	2		
696ai	35 y M	cocaine	2	2	U	Unk	Int-A	1		
697ai	35 y M	fentanyl (non-prescription)	1	1						
698ai	35 y F	ethanol (beverage)	2	2						
699ai	35 y M	marijuana, N.O.S.	3	3	U	Unk	Int-A	1		
700ai	35 y M	fentanyl (non-prescription)	1	1						
701i	35 y M	methamphetamine	2	2						
702ai	35 y M	marijuana, N.O.S.	3	3	U	Unk	Int-A	1		
703a	35 y M	heroin	1	1						
		bupropion	2	2	A/C	Par	Int-A	2		
		fentanyl (prescription)	1	1	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2	A	Ingst	Int-S	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		acetaminophen	1	1					acetaminophen (apap)	1400mcg/mL In Blood (unspecified) @ Unknown
704i	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		benzodiazepine, N.O.S.	2	2						
		ethanol (beverage)	3	3						
705h	35 y M	acetaminophen	1	1	A	Ingst	Int-S	3	acetaminophen (apap)	37mcg/mL In Blood (unspecified) @ 54 h (pe)
706h	35 y M	ethanol (beverage)	2	2	A	Ingst	Int-S	1	acetaminophen (apap)	373mcg/mL In Serum @ Unknown
		acetaminophen	1	1						
		drug, N.O.S.	2	2						
		ethanol (beverage)	3	3						
707ai	35 y M	acetaminophen	1	1	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		hydroxyzine	2	2						
		ethanol (beverage)	3	3						
708ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
709ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
710ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
711ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
712i	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		bromazolam	2	2						
		Mitragyna speciosa korthals	3	3						
713ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
714ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
715ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
716ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		diphenhydramine	2	2						
717ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
718ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
719ai	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
720ph	35 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
		methamphetamine	2	2						
721i	35 y F	fentanyl (prescription)	1	1	U	Ingst + Unk	Int-A	2		
		heroin	2	2						
		ethanol (beverage)	3	3						
722i	35 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
723	35 y M	salicylate	1	1	A	Ingst	Int-S	1	salicylate	125.8mg/dL In Serum @ Unknown
		salicylate	1	1					salicylate	64.4mg/dL In Serum @ Unknown
		quetiapine	2	2						
724h	35 y M	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	23.4mcg/mL In Blood (unspecified) @ 44 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	248.1mcg/mL In Blood (unspecified) @ 1 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	65.2mcg/mL In Blood (unspecified) @ 25 h (pe)
725ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		tadalafil	3	3						
726pi	36 y F	oxycodone	1	1	A	Unk	Int-A	2		
		marijuana, N.O.S.	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
727	36 y F	fentanyl (prescription)	1	1	A	Unk	Int-A	2		
		methamphetamine	2	2						
728ha	36 y F	acetaminophen	1	1	C	Ingst	Int-S	1	acetaminophen (apap)	137 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	28 mg/dL In Blood (unspecified) @ Unknown
		cocaine	3	3						
729ph	36 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
730ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
731ai	36 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
732h	36 y M	opioid, N.O.S.	1	1	C	Ingst	Int-S	2		
		diethylene glycol	2	2						
733ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
734pha	36 y F	oxycodone	1	1	A	Ingst + Par	Int-S	2	oxycodone	5.4 ng/mL In Blood (unspecified) @ 5 m (pe)
		lorazepam	2	2					lorazepam	22 ng/mL In Blood (unspecified) @ 5 m (pe)
		insulin, N.O.S.	3	3						
		tramadol	4	4					tramadol	43 ng/mL In Blood (unspecified) @ 5 m (pe)
		diphenhydramine	5	5					diphenhydramine	120 ng/mL In Blood (unspecified) @ 5 m (pe)
		hydroxyzine	6	6					hydroxyzine	26 ng/mL In Blood (unspecified) @ 5 m (pe)
735ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
736ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
737ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
738ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
739ai	36 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
740ph	36 y M	acetaminophen/diphenhydramine	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	385.3 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	197 mg/dL In Blood (unspecified) @ Unknown
741ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
742ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
743ha	36 y M	acetaminophen	1	1	A	Ingst	Unk	1	acetaminophen (apap)	122 mg/L In Serum @ 34 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	189 mg/L In Serum @ 15 m (pe)
		acetaminophen	1	1					acetaminophen (apap)	44 mg/L In Serum @ 3 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	55 mg/L In Serum @ 58 h (pe)
		ethanol (beverage)	2	2						
744ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
745ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
746pha	36 y M	fentanyl (non-prescription)	1	1	A/C	Unk	Int-A	1		
		benzodiazepine, N.O.S.	2	2						
		cocaine	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
747i	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
748ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
749ai	36 y M	fentanyl (prescription)	1	1	U	Unk	Int-A	1		
750ai	36 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
751pha	36 y M	fentanyl (prescription)	1	1	U	Ingst + Unk	Unk	1		
		cocaine	3	2					fentanyl 4.8ng/mL In Serum @	Unknown
		cocaine	3	2					benzoylecognine 0.065 mg/L In Serum @	Unknown
		ethanol (beverage)	2	3					ecgonine methyl ester 0.161 mg/L In Serum @	Unknown
									ethanol 107 mg/dL In Serum @	Unknown
752i	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
753ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
754ha	36 y F	acetaminophen	1	1	A	Ingst + Par	Int-S	1		
		metformin	2	2					acetaminophen (apap) 76 mcg/mL In Blood	(unspecified) @
		insulin, N.O.S.	3	3					Unknown	
755ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		tramadol	2	2						
		clonazepam	3	3						
756ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
757ai	36 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		hydroxyzine	2	2						
		ethanol (beverage)	3	3						
758i	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
759ai	36 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
760ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		gabapentin	2	2						
761i	36 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	1		
762ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
763ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
764ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
765ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
766ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
767ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		aripiprazole	3	3						
768ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
769ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
770ai	36 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
771h	36 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	2		
		ethanol (beverage)	2	2						
772ph	36 y F				A	Unk	Int-U	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
773i	36 y F	methamphetamine opioid, N.O.S. drug, N.O.S.	2 1 3	1 1 2						
774ha	36 y F	opioid, N.O.S. acetaminophen	1 1	1 1	A C	Unk Ingst	Int-A Int-M	2 1	acetaminophen (apap)	112mcg/mL In Blood (unspecified) @ Unknown
775ai	37 y M	ibuprofen	2	2						
776ai	37 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
777ai	37 y M	fentanyl (non-prescription) methamphetamine ethanol (beverage)	1 2 3	1 2 3						
778ai	37 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
779h	37 y F	fentanyl (non-prescription) methamphetamine ethanol (beverage)	1 2 3	1 2 3						
780ai	37 y M	acetaminophen/codeine	1	1					acetaminophen (apap)	72mcg/mL In Serum @ Unknown
781ai	37 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
782ai	37 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
783ai	37 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
784ai	37 y F	methamphetamine cocaine	2 3	2 3						
785ai	37 y M	fentanyl (non-prescription) aripiprazole	1 2	1 2	U	Unk	Int-A	1		
786ai	37 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
787ai	37 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
788ai	37 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
789ai	37 y M	cocaine oxycodone	2 3	2 3						
790ai	37 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
791ai	37 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
792ai	37 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
793ai	37 y M	fentanyl (non-prescription) methamphetamine ethanol (beverage)	1 2 3	1 2 3						
794ai	37 y M	fentanyl (non-prescription) methamphetamine buprenorphine	1 2 3	1 2 3	U	Unk	Int-A	1		
795ai	37 y M	fentanyl (non-prescription) methamphetamine buprenorphine	1 2 3	1 2 3						
796ai	37 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
797ai	37 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
798ai	37 y M	marijuana (edible)	2	2						
799ai	37 y M	heroin ethanol (beverage)	1 2	1 2	U	Ingst + Unk	Int-A	1		
800h	37 y M	fentanyl (non-prescription) acetaminophen	1 1	1 1	A	Ingst	Int-S	1	acetaminophen (apap)	600mcg/mL In Serum @ Unknown
801ai	37 y M				U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
802i	37 y M	fentanyl (non-prescription) methamphetamine methadone	1 2 3	1 2 3						
803ai	37 y M	acetaminophen/oxycodone	1	1	A	Ingst	Int-A	2		
804ai	37 y F	fentanyl (non-prescription) ethanol (beverage)	1 2	1 2	U	Unk	Int-A	1		
805ai	37 y M	fentanyl (non-prescription) ethanol (beverage)	1 2	1 2	U	Unk	Int-A	1		
806ai	37 y M	fentanyl (non-prescription) cocaine ethanol (beverage)	1 2 3	1 2 3	U	Unk	Int-A	1		
807ai	37 y F	fentanyl (non-prescription) cocaine	1 2	1 2	U	Unk	Int-A	1		
808ai	37 y M	fentanyl (non-prescription) Mitragyna speciosa korthals cyclobenzaprine	1 2 3	1 2 3	U	Unk	Int-A	2		
809ai	37 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
810i	37 y F	fentanyl (non-prescription) opioid, N.O.S.	1 1	1 1	A/C	Unk	Int-A	2		
811h	37 y M	fentanyl (non-prescription) methamphetamine fentanyl/xylazine	1 2 3	1 2 3	A	Ingst	Int-A	2		
812i	37 y M	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
813p	37 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	2		
814i	37 y M	opioid, N.O.S.	1	1	A	Inhal	Int-A	2		
815i	37 y F	opioid, N.O.S. cocaine	1 2	1 2	U	Unk	Int-A	2		
816ai	38 y M	fentanyl (non-prescription) methamphetamine ethanol (beverage)	1 2 3	1 2 3	U	Unk	Int-A	1		
817	38 y F	colchicine	1	1	A	Ingst	Int-S	2		
818ai	38 y M	fentanyl (non-prescription) methamphetamine ethanol (beverage)	1 2 3	1 2 3	U	Unk	Int-A	2		
819ai	38 y M	fentanyl (non-prescription) marijuana, N.O.S.	1 2	1 2	U	Unk	Int-A	1		
820ai	38 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
821ai	38 y M	hydrocodone oxycodone cyclobenzaprine	1 2 3	1 2 3	U	Unk	Int-A	1		
822ha	38 y M	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap) 5mcg/mL In Blood (unspecified) @ 3 d (pe)	
823ai	38 y M	acetaminophen	1	1	U	Unk	Int-A	1	acetaminophen (apap) 95mcg/mL In Blood (unspecified) @ 1 d (pe)	
824ai	38 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
825i	38 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	A	Inhal	Int-A	2		
826i	38 y M	opioid, N.O.S. ethanol (beverage)	1 2	1 2	U	Unk	Int-A	2		
827ai	38 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	1		
828h	38 y F	fentanyl (non-prescription) methamphetamine ethanol (beverage)	1 2 3	1 2 3	A	Ingst	Unt-G	1	acetaminophen (apap) 74mcg/mL In Blood (unspecified) @ Unknown	
829i	38 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
830	38 y F	acetaminophen	1	1	A	Ingst	Unt-U	3	acetaminophen (apap)	55.1 mcg/mL In Blood (unspecified) @ Unknown
831ai	38 y F	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
832ai	38 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
833i	38 y F	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
834h	38 y F	acetaminophen	1	1	U	Ingst	Int-S	2	acetaminophen (apap)	102.5 mcg/mL In Blood (unspecified) @ 14 h (pe)
835ai	38 y M	acetaminophen	1	1	U	Unk	Int-A	1	acetaminophen (apap)	45.2 mcg/mL In Blood (unspecified) @ 2 d (pe)
836ai	38 y M	fentanyl (non-prescription) methamphetamine hydroxyzine	1 2 3	1 2 3	U	Unk	Int-A	1		
837ai	38 y F	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
838ai	38 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
839ai	38 y M	fentanyl (non-prescription) cocaine trazodone	1 2 3	1 2 3	U	Unk	Int-A	1		
840ai	38 y M	fentanyl (non-prescription) methamphetamine hydroxyzine	1 2 3	1 2 3	U	Unk	Int-A	1		
841ai	38 y M	fentanyl (non-prescription) acetaminophen	1 2	1 2	U	Unk	Int-A	3		
842h	38 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	3		
843i	38 y F	heroin	1	1	U	Unk	Int-A	2		
844ph	38 y M	fentanyl (non-prescription) ethanol (beverage)	1 2	1 2	A	Ingst	Int-U	2	ethanol	328 mg/dL In Blood (unspecified) @ Unknown
845	38 y M	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	565 mcg/mL In Blood (unspecified) @ Unknown
846h	38 y F	tramadol gabapentin	2 3	2 3	C	Ingst	Int-M	2	acetaminophen (apap)	59.2 mcg/mL In Blood (unspecified) @ Unknown
847i	38 y M	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
848h	38 y F	acetaminophen/oxycodone	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	23.4 mcg/mL In Blood (unspecified) @ Unknown
849ai	39 y M	clonazepam ethanol (beverage) Mitragyna speciosa korthals	2 3 4	2 3 4	U	Unk	Int-A	1		
850ai	39 y M	fentanyl (non-prescription) ethanol (beverage) diazepam	1 2 3	1 2 3	U	Unk	Int-A	1		
851i	39 y M	fentanyl (non-prescription) ethanol (beverage)	1 2	1 2	U	Unk	Int-A	1		
852h	39 y F	acetaminophen/diphenhydramine	1	1	A	Ingst	Int-S	1	pregabalin	3600 mcg/L In Blood (unspecified) @ 5 m (pe)
		acetaminophen/diphenhydramine	1	1					acetaminophen (apap)	499 mcg/dL In Blood (unspecified) @ 24 h (pe)
		acetaminophen/diphenhydramine	1	1					acetaminophen (apap)	690 mcg/dL In Blood (unspecified) @ 5 m (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		acetaminophen/diphenhydramine	1	1					diphenhydramine	9200mcg/L In Blood (unspecified) @ 5 m (pe)
		pregabalin	2	2						
853i	39 y F	heroin	1	1	A	Par	Int-A	2		
854ai	39 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		quetiapine	3	3						
855ai	39 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		clonazepam	3	3						
856ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
857pa	39 y M	opioid, N.O.S.	1	1	A	Ingst	Unk	2		
858h	39 y F	acetaminophen	1	1	A/C	Ingst	Unt-T	2	acetaminophen (apap)	99mcg/mL In Blood (unspecified) @ Unknown
859ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		lamotrigine	2	2						
860ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
861ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
862ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
863ai	39 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
864ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
865ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
866ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
867ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
868ai	39 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
869h	39 y F	acetaminophen	1	1	A	Ingst	Int-S	2		
870i	39 y F	heroin	1	1	A	Unk	Int-A	2		
871i	39 y M	opioid, N.O.S.	1	1	U	Inhal	Int-A	2		
872ai	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
873ha	40 y F	tramadol	1	1	U	Ingst	Int-S	1	o-desmethyiltramadol	210ng/mL In Serum @ Unknown
		tramadol	1	1					tramadol	2300ng/mL In Serum @ Unknown
		trazodone	2	2						
		cyclobenzaprine	3	3						
		acetaminophen/dextromethorphan/ doxylamine	4	4						
874ai	40 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
875ai	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
876ai	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
877ai	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
878i	40 y M	fentanyl (prescription)	1	1	U	Unk	Int-A	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
879ai	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
880h	40 y F	acetaminophen	1	1	C	Ingst	Unk	2	acetaminophen (apap)	61 mcg/mL In Blood (unspecified) @ Unknown
881i	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
882i	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
883ai	40 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
884i	40 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
		methamphetamine	2	2						
885ai	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		Mitragyna speciosa korthals	3	3						
886ai	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
887ai	40 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		oxycodone	3	3						
888h	40 y F	acetaminophen	1	1	A	Ingst	Int-S	1		
889ai	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		fentanyl analog (acetyl)	2	2						
		methamphetamine	3	3						
890ai	40 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
891i	40 y M	fentanyl (prescription)	1	1	A	Inhal	Int-A	2		
892i	40 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
893i	40 y M	opioid, N.O.S.	1	1	U	Par	Int-A	2		
[894h]	40 y F-Pregnant	salicylate	1	1	A	Ingst	Int-S	3	salicylate	66.4 mg/dL In Blood (unspecified) @ Unknown
		methamphetamine	2	2	A/C	Ingst	Int-S	2		
895h	40 y F	oxycodone	1	1						
		amitriptyline	2	2						
		pregabalin	3	3						
896i	40 y M	opioid, N.O.S.	1	1	U	Par	Int-A	2		
897ha	40 y F	acetaminophen	1	1	C	Ingst	Unt-M	1	acetaminophen (apap)	79 mcg/mL In Serum @ Unknown
		acetaminophen/dextromethorphan/phenylephrine	2	2						
		acetaminophen/dextromethorphan/doxylamine	3	3						
898h	40 y M	methadone	1	1	A	Ingst	Int-A	2		
		amphetamine/dextroamphetamine	2	2						
899h	40 y M	acetaminophen	1	1	C	Ingst	Int-U	2	acetaminophen (apap)	20.5 mcg/mL In Serum @ Unknown
900h	40 y F	acetaminophen	1	1	U	Ingst	Int-S	2	acetaminophen (apap)	28 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2						
901ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
902ai	41 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		fentanyl analog (acetyl)	2	2						
		methylphenidate	3	3						
903ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		marijuana, N.O.S.	3	3						
904ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
905ph	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
906ai	41 y M	methamphetamine	2	2	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
907i	41 y M	opioid, N.O.S.	1	1	U	Par	Int-A	2		
908ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
909ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
910h	41 y M	acetaminophen	1	1	A	Ingst	Int-S	3		
									ethanol	118 mg/dL In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	301.3 mcg/mL In Blood (unspecified) @ Unknown
911pai	41 y M	ethanol (beverage)	2	2	A	Unk	Int-A	3		
		heroin	1	1						
		alprazolam	2	2						
		buprenorphine	3	3						
		marijuana, N.O.S.	4	4						
		fentanyl (non-prescription)	5	5						
		methamphetamine	6	6						
		morphine	7	7						
912ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
913h	41 y M	acetaminophen	1	1	C	Ingst	Unt-T	3		
									acetaminophen (apap)	58 mcg/mL In Serum @ Unknown
914ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
[915pha]	41 y M	fentanyl (prescription)	1	1	A	Ingst+Par	Int-A	1		
									norfentanyl	0.43 ng/mL In Blood (unspecified) @ Unknown
		fentanyl (prescription)	1	1					4-anpp (despropionyl fentanyl)	0.46 ng/mL In Blood (unspecified) @ Unknown
		fentanyl (prescription)	1	1					fentanyl	3.1 ng/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	142 mg/dL In Blood (unspecified) @ Unknown
916ai	41 y M	methadone	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
917i	41 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
918ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
919ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		heroin	2	2						
		methamphetamine	3	3						
920ai	41 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		substance (non-drug), N.O.S.	3	3						
921h	41 y M	acetaminophen	1	1	C	Ingst	Int-M	2		
									acetaminophen (apap)	13.5 mcg/mL In Blood (unspecified) @ 24 h (pe)
		ibuprofen	2	2						
922i	41 y F	opioid, N.O.S.	1	1	A	Par	Int-A	2		
923i	41 y F	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
924i	41 y F	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
925ha	41 y F	opioid, N.O.S.	1	1	U	Ingst	Unk	1		
		acetaminophen	1	1					acetaminophen (apap)	110 mg/L In Blood (unspecified) @ 1.5 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	47 mcg/mL In Serum @ 13 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	85 mcg/mL In Serum @ 5 h (pe)
926	41 y M	salicylate	1	1	A	Ingst	Int-S	2		
		ethanol (beverage)	2	2					salicylate	86 mg/dL In Serum @ Unknown
927ph	41 y M				U	Par+Unk	Int-A	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		heroin	1	1						
		fentanyl (prescription)	2	2						
		cocaine	3	3						
928ai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		cocaine	3	3						
929ai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		cocaine	2	2						
930pai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		ethanol (beverage)	2	2						
931ai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		diphenhydramine	2	2						
		alprazolam	3	3						
932pha	42 y M				A	Inhal	Int-A	1		
		fentanyl (non-prescription)	1	1					4-anpp (despropionyl fentanyl)	0.83 ng/mL In Blood (unspecified) @ Unknown
		fentanyl (non-prescription)	1	1					fentanyl	5 ng/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	119 mg/dL In Blood (unspecified) @ Unknown
933i	42 y F				A/C	Unk	Int-S	2		
		opioid, N.O.S.	1	1						
934ai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
935ai	42 y F				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
936ai	42 y F				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
937i	42 y M				A/C	Unk	Int-A	2		
		heroin	1	1						
938i	42 y M				A/C	Inhal	Int-A	2		
		opioid, N.O.S.	1	1						
939ai	42 y F				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		diazepam	2	2						
		ethanol (beverage)	3	3						
940phai	42 y F				A/C	Inhal + Unk	Int-A	1		
		fentanyl (non-prescription)	1	1					4-anpp (despropionyl fentanyl)	0.65 ng/mL In Blood (unspecified) @ Unknown
		fentanyl (non-prescription)	1	1					norfentanyl	1.5 ng/mL In Blood (unspecified) @ Unknown
		fentanyl (non-prescription)	1	1					fentanyl	5.3 ng/mL In Blood (unspecified) @ Unknown
		amphetamine (hallucinogenic), cathinone	2	2						
		cocaine	3	3					benzoyllecognine	860 ng/mL In Blood (unspecified) @ Unknown
		marijuana, N.O.S.	4	4					delta-9-thc	0.73 ng/mL In Blood (unspecified) @ Unknown
941ai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		Mitragyna speciosa korthals	3	3						
942ai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		alprazolam	2	2						
		marijuana, N.O.S.	3	3						
943ai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		diazepam	3	3						
944ai	42 y M				U	Unk	Int-A	1		
		fentanyl (prescription)	1	1						
		fentanyl analogs (para-fluoro)	2	2						
		methamphetamine	3	3						
945ai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
946ai	42 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
947pha	42 y F				U	Unk	Int-A	1		
		fentanyl (prescription)	1	1						
		cocaine	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
948i	42 y M	opioid, N.O.S.	1	1	U	Unk	Unk	2		
949ai	42 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	1		
950ph	42 y F	opioid, N.O.S.	2	2	A	Unk	Int-A	2		
951ai	42 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	1		
952i	42 y F	opioid, N.O.S.	2	2	A	Unk	Int-A	2		
953a	42 y M	opioid, N.O.S.	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	91.7 mcg/mL In Blood (unspecified) @ Unknown
954ai	42 y M	opioid, N.O.S.	2	2	U	Unk	Int-A	1		
955i	42 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
956i	42 y M	opioid, N.O.S.	2	2	A/C	Unk	Int-A	2		
957h	42 y F	opioid, N.O.S.	1	1	C	Ingst	Unt-M	2		
958h	42 y M	opioid, N.O.S.	2	2	A/C	Ingst + Par	Int-S	3		
959	42 y F	opioid, N.O.S.	3	3	A	Ingst	Int-S	2		
960pha	42 y M	opioid, N.O.S.	1	1	U	Ingst + Unk	Int-S	1		
961ai	43 y F	opioid, N.O.S.	2	2	U	Unk	Int-A	1		
962ai	43 y M	opioid, N.O.S.	3	3	U	Unk	Int-A	1		
963i	43 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
964ai	43 y M	opioid, N.O.S.	2	2	U	Unk	Int-A	1		
965ai	43 y M	opioid, N.O.S.	3	3	U	Unk	Int-A	1		
966ai	43 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	1		
967i	43 y M	opioid, N.O.S.	2	2	U	Unk	Int-A	1		
968h	43 y F	opioid, N.O.S.	3	3	A	Ingst + Unk	Int-S	1		
969ai	43 y F	opioid, N.O.S.	1	1	U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		morphine	2	2						
		oxycodone	3	3						
970i	43 y M	heroin	1	1	U	Unk	Int-A	2		
971ai	43 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
		marijuana, N.O.S.	2	2						
972ai	43 y F	methadone	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
973ai	43 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		Mitragyna speciosa korthals	3	3						
974ai	43 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
975h	43 y F	methamphetamine	2	2	U	Ingst + Par	Unk	2		
		acetaminophen	1	1					acetaminophen (apap)	40 mcg/mL In Blood (unspecified) @ Unknown
		baclofen	2	2						
976ai	43 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
977i	43 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
978ai	43 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
979ha	43 y M	heroin	1	1	A	Unk	Int-A	1		
		fentanyl (non-prescription)	2	2						
		fentanyl analog (acetyl)	3	3						
		fentanyl analogs (methyl)	4	4						
		fentanyl analogs (para-fluoro)	5	5						
		cocaine	6	6						
[980]	43 y M	salicylate	1	1	A	Ingst	Int-S	1		
									salicylate	77.2 mg/dL In Blood (unspecified) @ Unknown
981i	43 y F	opioid, N.O.S.	1	1	A	Inhal	Int-A	2		
		xylazine	2	2						
982	43 y M	buprenorphine/naloxone (sublingual film)	1	1	A	Ingst + Par	Int-A	2		
		methamphetamine	2	2						
		alcohol, N.O.S.	3	3						
983ai	44 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
984ai	44 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
985pai	44 y M	fentanyl (non-prescription)	1	1	U	Ingst + Unk	Int-A	3		
		ethanol (beverage)	2	2						
986ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
987pha	44 y M	tramadol	1	1	U	Ingst	Int-S	1		
		tramadol	1	1					tramadol	2408 ng/mL In Serum @ Unknown
									o-desmethytramadol	485 ng/mL In Serum @ Unknown
		zolpidem	2	2					zolpidem	526 ng/mL In Serum @ Unknown
		clonazepam	3	3					clonazepam	0.537 mg/L In Serum @ Unknown
		clonazepam	3	3					7-aminoclonazepam	789 ng/mL In Serum @ Unknown
		clonidine	4	4					clonidine	17.2 ng/mL In Serum @ Unknown
		diphenhydramine	5	5					diphenhydramine	58 ng/mL In Serum @ Unknown
		morphine	6	6					morphine	62.1 ng/mL In Serum @ Unknown
988ai	44 y M	heroin	1	1	U	Unk	Int-A	1		
989ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
990ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		marijuana (edible)	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
991ai	44 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	1		
		alprazolam	2	2						
992ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
993ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
994ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
995i	44 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
		cocaine	2	2						
996ai	44 y F	oxycodone	1	1	U	Unk	Unk	1		
997ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
		hydroxyzine	3	3						
998i	44 y F	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
999ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1000i	44 y M	heroin	1	1	A	Unk	Int-A	2		
1001ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
1002pai	44 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1					norfentanyl 3.3 ng/mL In Blood (unspecified) @ Autopsy	
		fentanyl (non-prescription)	1	1					4-anpp (despropionyl) 8.4 ng/mL In Blood (unspecified) @ Autopsy	
		fentanyl (non-prescription)	1	1					fentanyl (unspecified) @ Autopsy	
		methamphetamine	2	2					fentanyl 85 ng/mL In Blood (unspecified) @ Autopsy	
		methamphetamine	2	2					methamphetamine 280 ng/mL In Blood (unspecified) @ Autopsy	
		ethanol (beverage)	3	3					amphetamine 5.3 ng/mL In Blood (unspecified) @ Autopsy	
									ethanol 52 mg/dL In Blood (unspecified) @ Autopsy	
1003ai	44 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
1004ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1005ai	44 y F	oxycodone	1	1	U	Unk	Int-S	1		
		ethanol (beverage)	2	2						
		alprazolam	3	3						
1006ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1007i	44 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1008pha	44 y M	fentanyl (prescription)	1	1	A	Ingst+ Par	Int-A	1		
		fentanyl (prescription)	1	1					4-anpp (despropionyl) 0.92 ng/mL In Serum @ Unknown	
		fentanyl (prescription)	1	1					fentanyl 13 ng/mL In Serum @ Unknown	
		cocaine	2	2					norfentanyl 7.4 ng/mL In Serum @ Unknown	
		xylazine	3	3					benzoyllecognine 360 ng/mL In Serum @ Unknown	
		clonazepam	4	4					7-aminoclonazepam 13 ng/mL In Serum @ Unknown	
		clonazepam	4	4					clonazepam 3 ng/mL In Serum @ Unknown	
		buprenorphine	6	5					levetiracetam 6.1 mcg/mL In Serum @ Unknown	
		levetiracetam	5	7						
		marijuana	7	7						
1009ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1010ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		fentanyl analog (acetyl)	2	2						
		substance (non-drug), N.O.S.	3	3						
1011	44 y F	acetaminophen	1	1	A	Ingst	Int-S	3		
		drug, N.O.S.	2	2					acetaminophen (apap) 247 mcg/mL In Blood (unspecified) @ Unknown	
		diphenhydramine	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1012h	44 y M	acetaminophen	1	1	A	Ingst	Int-U	3	acetaminophen (apap)	82 mcg/mL In Blood (unspecified) @ Unknown
1013i	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
1014h	44 y F	acetaminophen	1	1	C	Ingst	AR-D	1	acetaminophen (apap)	16 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	36 mcg/mL In Blood (unspecified) @ 42 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	55 mcg/mL In Blood (unspecified) @ 24 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	76 mcg/mL In Blood (unspecified) @ 12 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	78 mcg/mL In Blood (unspecified) @ 18 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	97 mcg/mL In Blood (unspecified) @ 8 h (pe)
		ethanol (beverage)	2	2						
		salicylate	3	3					salicylate	16 mg/dL In Blood (unspecified) @ Unknown
		salicylate	3	3					salicylate	23 mg/dL In Blood (unspecified) @ Unknown
1015i	44 y M	heroin	1	1	U	Inhal	Int-A	2		
1016ai	44 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1017ai	45 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		oxycodone	2	2						
		cyclobenzaprine	3	3						
		trazodone	4	4						
1018ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1019ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1020ha	45 y F	acetaminophen	1	1	U	Ingst	Unt-U	1	acetaminophen (apap)	32 mcg/mL In Serum @ Unknown
		salicylate	2	2					salicylate	10.9 mg/dL In Serum @ Unknown
1021ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		promethazine	3	3						
1022ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1023ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1024ai	45 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		alprazolam	2	2						
		ethanol (beverage)	3	3						
1025h	45 y F	acetaminophen	1	1	A	Ingst	Unk	2	acetaminophen (apap)	18.7 mcg/mL In Serum @ Unknown
		ibuprofen	2	2						
		ethylene glycol (antifreeze)	3	3						
1026i	45 y M	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
1027ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		gabapentin	3	3						
1028ai	45 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1029ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1030ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1031ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
1032h	45 y F	acetaminophen/diphenhydramine	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	368 mg/L In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2						
1033i	45 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
		cocaine	2	2						
1034ph	45 y F	methadone	1	1	C	Ingst	Int-U	2	acetaminophen (apap)	75 mcg/mL In Blood (unspecified) @ 1 h (pe)
		acetaminophen	2	2						
1035h	45 y F	salicylate	1	1	U	Ingst	Int-S	2	salicylate	49.2 mg/dL In Blood (unspecified) @ Unknown
		glipizide	3	2						
		metformin	2	3						
		alprazolam	4	4						
1036ai	45 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		oxycodone	2	2						
		cyclobenzaprine	3	3						
1037ai	46 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
1038h	46 y M	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	248 mcg/mL In Serum @ Unknown
		ethanol (beverage)	2	2						
1039i	46 y F	fentanyl (prescription)	1	1	A/C	Inhal	Int-A	2		
1040ai	46 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
1041h	46 y F	acetaminophen	1	1	A/C	Ingst	Int-A	1	ethanol	14 mg/dL In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	46.4 mg/L In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2						
		acetaminophen/hydrocodone	3	3						
1042ai	46 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1043ai	46 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1044ai	46 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
1045ai	46 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		tramadol	2	2						
1046ai	46 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	3		
		methamphetamine	2	2						
1047ai	46 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1048ai	46 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1049ai	46 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1050pa	46 y F	oxycodone	1	1	A	Ingst	Int-S	2		
		methocarbamol	2	2						
		mirtazapine	3	3						
		hydroxyzine	4	4						
		gabapentin	5	5						
		paroxetine	6	6						
		lorazepam	7	7						
		ethanol (beverage)	8	8						
1051i	46 y M	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
1052i	46 y M	opioid, N.O.S.	1	1	U	Inhal + Unk	Int-A	2		
		cocaine	2	2						
1053ai	46 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		xylazine	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1054i	46 y M				U	Unk	Int-A	2		
		fentanyl (non-prescription)	1	1						
		cocaine	2	2						
		marijuana, N.O.S.	3	3						
1055i	46 y M				U	Unk	Int-A	2		
		opioid, N.O.S.	1	1						
1056h	46 y M				C	Ingst	Unt-T	2		
		acetaminophen	1	1					acetaminophen (apap)	26 mcg/mL In Serum @ Unknown
1057i	46 y M				U	Unk	Int-A	2		
		opioid, N.O.S.	1	1						
1058ai	47 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
1059i	47 y M				U	Ingst	AR-D	2		
		oxycodone	1	1						
1060pai	47 y M				U	Unk	Oth-M	3		
		fentanyl (non-prescription)	2	1						
		benzoylcegonine	1	2						
1061ai	47 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
1062ai	47 y F				U	Unk	Unk	1		
		oxycodone	1	1						
		acetaminophen	2	2						
1063ph	47 y M				A	Ingst + Unk	Int-A	2		
		fentanyl (non-prescription)	1	1						
		ethanol (beverage)	2	2					ethanol	121 mg/dL In Blood (unspecified) @ Unknown
1064ai	47 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		mirtazapine	2	2						
1065ai	47 y M				U	Unk	Int-A	1		
		fentanyl analogs (para-fluoro)	1	1						
		methamphetamine	2	2						
		tramadol	3	3						
1066i	47 y M				U	Unk	Int-A	2		
		opioid, N.O.S.	1	1						
1067pha	47 y F				A/C	Ingst	Unk	2		
		acetaminophen/oxycodone	1	1						
		acetaminophen	2	2						
1068h	47 y M				A/C	Unk	Int-A	3		
		fentanyl (non-prescription)	1	1						
		ethanol (beverage)	2	2					ethanol	139 mg/dL In Blood (unspecified) @ Unknown
1069ai	47 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
1070ai	47 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
1071h	47 y M				A	Ingst	Unk	2		
		acetaminophen	1	1					acetaminophen (apap)	109 mcg/mL In Serum @ Unknown
1072	47 y M				A	Ingst	Int-S	1		
		acetaminophen	1	1					acetaminophen (apap)	350 mcg/mL In Blood (unspecified) @ Unknown
1073pa	47 y F				A/C	Ingst	Int-S	1		
		fentanyl (prescription)	1	1					fentanyl	9.7 ng/mL In Blood (unspecified) @ Unknown
		tramadol	3	1						
		escitalopram	4	2						
		phencyclidine	2	2					phencyclidine	38 ng/mL In Blood (unspecified) @ Unknown
		quetiapine	5	3						
1074i	47 y M				A	Unk	Int-A	2		
		fentanyl (prescription)	1	1						
1075i	47 y M				A/C	Unk	Int-A	2		
		fentanyl (non-prescription)	1	1						
1076i	47 y M				A	Unk	Int-A	2		
		fentanyl (prescription)	1	1						
1077pi	48 y M				U	Unk	Oth-M	2		
		fentanyl (non-prescription)	1	1						
		gabapentin	3	2						
		marijuana, N.O.S.	2	3						
		narcotic antagonist, N.O.S.	4	4						
1078h	48 y F				C	Ingst	Int-M	2		
		acetaminophen	1	1					acetaminophen (apap)	230 mcg/mL In Blood (unspecified) @ Unknown
1079i	48 y F				U	Unk	Int-S	1		
		fentanyl (non-prescription)	1	1						
		fluoxetine	2	2						
		promethazine	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1080ai	48 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1081ai	48 y F	oxycodone	1	1	U	Unk	Int-A	1		
		bromazolam	2	2						
		gabapentin	3	3						
1082ai	48 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
1083ai	48 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		bupropion	2	2						
		clonazepam	3	3						
1084i	48 y F	fentanyl (prescription)	1	1	U	Unk	Int-A	2		
		benzodiazepine, N.O.S.	2	2						
1085i	48 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1086ha	48 y M	acetaminophen	1	1	U	Ingst	Int-S	3	acetaminophen (apap)	60 mcg/mL In Plasma @ Unknown
1087ai	48 y F	morphine	1	1	U	Unk	Int-A	1		
		oxycodone	2	2						
		marijuana, N.O.S.	3	3						
1088ai	48 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
1089ai	48 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
1090ha	48 y F	acetaminophen	1	1	U	Unk	Int-S	1	acetaminophen (apap)	11.5 mcg/mL In Blood (unspecified) @ 4 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	20 mcg/mL In Blood (unspecified) @ 1 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	67 mg/mL In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	84 mcg/mL In Blood (unspecified) @ Unknown
1091h	48 y M	acetaminophen	1	1	C	Ingst	Unt-T	3		
1092ha	48 y F	acetaminophen	1	1	U	Ingst	Int-M	1	acetaminophen (apap)	101.5 mcg/mL In Serum @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	182 mcg/mL In Serum @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	24.1 mcg/mL In Serum @ Unknown
		acetaminophen/hydrocodone	2	2						
		acetaminophen/oxycodone	3	3						
1093i	48 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1094i	48 y M	acetaminophen/oxycodone	1	1	A/C	Unk	Int-A	2		
1095pha	48 y M	fentanyl (non-prescription)	1	1	A	Par	Int-A	1		
		cocaine	2	2						
1096h	48 y F	tramadol	1	1	A/C	Ingst	Int-S	1	tramadol	30000 ng/mL In Blood (unspecified) @ Unknown
		tramadol	1	1					o-desmethyiltramadol	3100 ng/mL In Blood (unspecified) @ Unknown
		amphetamine/dextroamphetamine	2	2					amphetamine	42 ng/mL In Blood (unspecified) @ Unknown
		clonazepam	3	3					clonazepam	21 ng/mL In Blood (unspecified) @ Unknown
		clonazepam	3	3					7-aminoclonazepam	66 ng/mL In Blood (unspecified) @ Unknown
		ropinirole	4	4						
		levothyroxine	5	5						
1097i	48 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1098ai	48 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		bromazolam	3	3						
1099h	49 y F	acetaminophen	1	1	C	Ingst	Unk	2	acetaminophen (apap)	88.1 mcg/mL In Blood (unspecified) @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1100h	49 y F	acetaminophen	2	1	C	Ingst	AR-D	2		
		lithium	1	2					lithium 2.1 mEq/L In Blood (unspecified) @ Unknown	
		lithium	1	2					lithium 2.9 mEq/L In Blood (unspecified) @ Unknown	
1101ai	49 y F	cough and cold preparation, N.O.S.	3	3	U	Unk	Int-A	1		
		heroin	1	1						
		morphine	2	2						
		codeine	3	3						
1102i	49 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1103ai	49 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		sertraline	3	3						
1104ai	49 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1105ai	49 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		Mitragyna speciosa korthals	2	2						
		gabapentin	3	3						
1106ai	49 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		clonazepam	2	2						
		ethanol (beverage)	3	3						
1107i	49 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1108ai	49 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
1109p	49 y M	fentanyl (non-prescription)	1	1	A	Ingst	Int-S	2		
		ethanol (beverage)	2	2					ethanol 160mg/dL In Serum @ 3h (pe)	
		ethanol (beverage)	2	2					ethanol 210mg/dL In Serum @ 1h (pe)	
		clonazepam	3	3						
1110i	49 y M	opioid, N.O.S.	1	1	A/C	Par	Int-A	2		
1111h	49 y M	acetaminophen	1	1	A	Ingst	Int-S	1		
		naproxen	2	2						
1112ha	49 y F	acetaminophen	1	1	U	Ingst	Int-S	1		
		acetaminophen	1	1					acetaminophen (apap) 54.5mcg/mL In Blood (unspecified) @ 1 d (pe)	
1113h	49 y M	acetaminophen/diphenhydramine	1	1	C	Ingst	Int-A	2		
		acetaminophen	1	1					acetaminophen (apap) 14mcg/mL In Blood (unspecified) @ Unknown	
		ethanol (beverage)	2	2						
1114i	49 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1115ha	49 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-U	1		
		fentanyl (non-prescription)	1	1					4-anpp (despropionyl fentanyl) 0.49ng/mL In Blood (unspecified) @ Unknown	
		fentanyl (non-prescription)	1	1					norfentanyl 0.68ng/mL In Blood (unspecified) @ Unknown	
		fentanyl (non-prescription)	1	1					fentanyl 5.2ng/mL In Blood (unspecified) @ Unknown	
		tadalafil	2	2					tadalafil 150ng/mL In Blood (unspecified) @ Unknown	
		marijuana, N.O.S.	3	3					delta-9-thc 0.71 ng/mL In Blood (unspecified) @ Unknown	
1116h	49 y F	acetaminophen	1	1	A	Ingst	Int-S	1		
		salicylate	2	2					acetaminophen (apap) 234.4mcg/mL In Blood (unspecified) @ 4h (pe)	
		drug, N.O.S.	3	3					salicylate 103.4mg/dL In Blood (unspecified) @ 4h (pe)	
1117ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1118ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
1119ai	50 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1120ai	50 y F	oxycodone	1	1	U	Unk	Int-S	1		
		sertraline	2	2						
		gabapentin	3	3						
1121ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1122ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
1123	50 y M	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	187 mcg/mL In Blood (unspecified) @ Unknown
1124h	50 y F	acetaminophen/oxycodone	1	1	A/C	Ingst	Int-S	3	acetaminophen (apap)	6.4 mcg/mL In Blood (unspecified) @ Unknown
1125ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1126ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1127	50 y M	acetaminophen	1	1	U	Ingst	AR-D	2		
		metformin	2	2						
1128p	50 y F	acetaminophen/butalbital/cafeine	1	1	A/C	Ingst	Int-S	2		
1129ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
1130ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		acetaminophen	3	3						
1131ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		diphenhydramine	2	2						
		hydroxyzine	3	3						
1132ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1133ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		heroin	2	2						
1134pa	50 y M	acetaminophen	1	1	A	Ingst	Int-A	1	acetaminophen (apap)	184 mcg/mL In Blood (unspecified) @ Unknown
		oxycodone	2	2						
		heroin	3	3						
1135pha	50 y F	fentanyl (non-prescription)	1	1	A	Par	Int-A	1		
		methamphetamine	2	2						
1136pha	50 y F	fentanyl (prescription)	1	1	A/C	Ingst	Int-S	2	fentanyl	2.2 ng/mL In Urine (quantitative only) @ Unknown
		fentanyl (prescription)	1	1					norfentanyl	80.2 ng/mL In Urine (quantitative only) @ Unknown
		hydrocodone	2	2					hydromorphone	138 ng/mL In Unknown @ Autopsy
		hydrocodone	2	2					hydrocodone	393 ng/mL In Urine (quantitative only) @ Unknown
		cyclic antidepressant, N.O.S.	3	3						
		alprazolam	4	4					alpha-oh-alprazolam	6250 ng/mL In Urine (quantitative only) @ Unknown
1137h	50 y F	salicylate	1	1	A	Ingst	Int-S	2	salicylate	52.1 mg/dL In Serum @ Unknown
		ethanol (beverage)	2	2					ethanol	240 mg/dL In Serum @ Unknown
1138ai	50 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1139i	50 y M	opioid, N.O.S.	1	1	A	Ingst + Unk	Int-A	2		
1140ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		fentanyl analog (acetyl)	2	2						
		methamphetamine	3	3						
1141ai	51 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1142ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1143ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1144ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1145ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
		hydromorphone	2	2						
		morphine	3	3						
1146ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
1147i	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		oxycodone	2	2						
1148i	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1149ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
1150	51 y F	acetaminophen	1	1	U	Ingst + Unk	Unk	2		
		ibuprofen	2	2						
		antacid (aluminum hydroxide/ magnesium hydroxide)	3	3						
1151ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1152h	51 y M	salicylate	1	1	A	Ingst	Int-S	2		
1153ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
1154ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
1155ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1156ai	51 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1157ai	51 y M	hydromorphone	1	1	U	Unk	Int-A	1		
		clonazepam	2	2						
		ethanol (beverage)	3	3						
1158i	51 y M	oxycodone	1	1	U	Unk	Int-A	2		
1159i	51 y M	heroin	1	1	U	Unk	Int-A	2		
1160i	51 y M	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
1161ai	51 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1162ph	52 y M	heroin	1	1	A	Unk	Int-A	2		
1163i	52 y M	heroin	1	1	A	Unk	Int-A	2		
1164i	52 y M	heroin	1	1	U	Inhal + Unk	Int-A	2		
1165	52 y M	opioid, N.O.S.	1	1	C	Ingst	AR-D	2		
		acetaminophen	1	1						
		ethanol (beverage)	2	2						
1166ai	52 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		lorazepam	3	3						
1167ai	52 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
		cyclobenzaprine	2	2						
		ethanol (beverage)	3	3						
1168ai	52 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1169i	52 y F	morphine	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1170i	52 y M	tramadol	1	1	U	Unk	Int-S	1		
		alprazolam	2	2						
		ethanol (beverage)	3	3						
1171ai	52 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		diazepam	2	2						
		bupropion	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1172ai	52 y M	1	1	U	Unk	Int-A	1			
		2	2							
1173ai	52 y M	1	1	U	Unk	Int-A	1			
		2	2							
		3	3							
1174ai	52 y M	1	1	U	Unk	Int-A	1			
		2	2							
		3	3							
1175h	52 y F	1	1	A	Ingst	Int-S	1		salicylate	64.2 mg/dL In Blood (unspecified) @ Unknown
1176i	52 y F	1	1	U	Unk	Int-A	1			
		2	2							
1177ai	52 y F	1	1	U	Unk	Int-M	1			
		2	2							
1178ai	52 y M	1	1	U	Unk	Int-M	1			
		2	2							
		3	3							
1179ai	52 y M	1	1	U	Unk	Int-A	1			
		2	2							
		3	3							
1180ha	52 y M	1	1	C	Ingst	Int-S	2		acetaminophen (apap)	45 mcg/mL In Blood (unspecified) @ Unknown
1181h	52 y F	1	1	U	Ingst	Unk	2		acetaminophen (apap)	22.1 mg/mL In Blood (unspecified) @ Unknown
1182i	52 y M	1	1	A/C	Unk	Int-A	2			
1183h	52 y M	1	1	A/C	Ingst + Inhal	Int-A	1			
		2	2							
		3	3							
1184ai	53 y M	1	1	U	Unk	Int-A	1			
		2	2							
		3	3							
1185ai	53 y M	1	1	U	Unk	Int-A	1			
		2	2							
1186pai	53 y M	1	1	U	Unk	Int-A	1			
		2	2							
1187ai	53 y M	1	1	U	Unk	Int-A	1			
		2	2							
1188ai	53 y M	1	1	U	Unk	Int-A	1			
		2	2							
1189i	53 y M	1	1	A	Unk	Int-A	2			
1190ai	53 y M	1	1	U	Unk	Int-A	1			
		2	2							
		3	3							
1191ai	53 y M	1	1	U	Unk	Int-A	1			
		2	2							
		3	3							
1192h	53 y F	1	1	A/C	Ingst + Unk	Int-M	3		benzoyllecognine	10 mcg/L In Blood (unspecified) @ 1 h (pe)
		1	1						acetaminophen (apap)	120 mg/mL In Blood (unspecified) @ Unknown
		1	1						diazepam	29 mcg/L In Blood (unspecified) @ 1 h (pe)
		1	1						nordiazepam	460 mcg/L In Blood (unspecified) @ 1 h (pe)
		1	1						lorazepam	8.7 mcg/L In Blood (unspecified) @ 1 h (pe)
		2	2							
		3	3							
		4	4							
1193ai	53 y M	1	1	U	Unk	Int-A	1			
		2	2							

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1194ai	53 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		marijuana, N.O.S.	3	3						
1195ai	53 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1196ai	53 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1197h	53 y M	acetaminophen	1	1	C	Ingst	Int-M	2	acetaminophen (apap)	18 mcg/mL In Blood (unspecified) @ 2 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	79 mcg/mL In Blood (unspecified) @ Unknown
		ibuprofen	2	2						
		ethanol (beverage)	3	3					ethanol	80 mg/dL In Blood (unspecified) @ Unknown
1198pha	53 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2					benzoylcognine	310 ng/mL In Blood (unspecified) @ Unknown
1199pha	53 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1					norfentanyl	2.5 ng/mL In Blood (unspecified) @ Unknown
		fentanyl (non-prescription)	1	1					fentanyl	29 ng/mL In Blood (unspecified) @ Unknown
		fentanyl (non-prescription)	1	1					4-anpp (despropionyl fentanyl)	3.1 ng/mL In Blood (unspecified) @ Unknown
		methamphetamine	2	2					amphetamine	57 ng/mL In Blood (unspecified) @ Unknown
		methamphetamine	2	2					methamphetamine	610 ng/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	3	3					ethanol	34 mg/dL In Blood (unspecified) @ Unknown
1200ai	53 y F	oxycodone	1	1	U	Unk	Unk	1		
		diphenhydramine	2	2						
		cyclobenzaprine	3	3						
1201h	53 y F	acetaminophen	1	1	A/C	Ingst	Int-M	3	acetaminophen (apap)	12.2 mcg/mL In Blood (unspecified) @ 45 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	121.7 mcg/mL In Blood (unspecified) @ 18 m (pe)
		acetaminophen	1	1					acetaminophen (apap)	18.9 mcg/mL In Blood (unspecified) @ 33 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	52.3 mcg/mL In Blood (unspecified) @ 17 h (pe)
1202i	53 y M	fentanyl (prescription)	1	1	U	Unk	Int-A	2		
		opioid, N.O.S.	2	2						
		ethanol (beverage)	3	3						
1203h	53 y F	salicylate	1	1	A	Ingst	Int-S	1	salicylate	70 mg/dL In Serum @ 12 h (pe)
		salicylate	1	1					salicylate	70 mg/dL In Serum @ 16 h (pe)
		salicylate	1	1					salicylate	70 mg/dL In Serum @ 20 h (pe)
		quetiapine (ER)	2	2						
1204h	53 y F	acetaminophen/hydrocodone	1	1	U	Ingst	Int-S	1	acetaminophen (apap)	366 mcg/mL In Serum @ Unknown
		gabapentin	2	2						
		methocarbamol	3	3						
1205ai	53 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		gabapentin	3	3						
1206ha	53 y M	acetaminophen	1	1	A	Ingst	Unk	1		
1207h	53 y F	salicylate (EC)	1	1	A	Ingst	Int-S	2		
									salicylate	130 mg/dL In Serum @ Unknown
1208h	53 y F	acetaminophen/oxycodone	1	1	A	Ingst	Oth-W	3		
		salicylate	2	1						
		ethanol (beverage)	3	2						
		cyclic antidepressant, N.O.S.	4	3						
		marijuana, N.O.S.	5	4						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1209ha	53 y F	salicylate	1	1	A/C	Ingst	Int-S	1	salicylate	240 mcg/mL In Blood (unspecified) @ Unknown
		naproxen	2	2					naproxen	880 mcg/mL In Blood (unspecified) @ Unknown
		diphenhydramine	3	3					diphenhydramine	110 ng/mL In Blood (unspecified) @ Unknown
		propranolol	4	4						
		escitalopram	5	5						
		benztropine	6	6						
		hydroxyzine	7	7						
		olanzapine	8	8						
1210	53 y M	salicylate	1	1	U	Ingst	Int-S	1	salicylate	98 mg/dL In Blood (unspecified) @ Unknown
1211ha	53 y F	tramadol	1	1	A/C	Ingst + Unk	Unk	1		
		amitriptyline	2	2					nortriptyline	60 ng/mL In Blood (unspecified) @ Autopsy
		methocarbamol	4	2						
		clonazepam	3	3						
		levetiracetam	5	5						
1212h	53 y F	acetaminophen	1	1	U	Ingst	Int-U	2	acetaminophen (apap)	112 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	19 mg/mL In Blood (unspecified) @ 2 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	87 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2						
1213ph	53 y M	fentanyl (non-prescription)	1	1	U	Inhal	Int-A	2		
		marijuana, N.O.S.	2	2						
1214i	53 y M	heroin	1	1	A/C	Inhal	Int-A	2		
1215pai	54 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
1216ai	54 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
1217	54 y F	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	14.7 mcg/mL In Blood (unspecified) @ Unknown
1218i	54 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
		cocaine	2	2						
1219ai	54 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
1220ai	54 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1221p	54 y M	tramadol	1	1	A	Ingst	Int-S	2		
1222ai	54 y F	morphine	1	1	U	Unk	Int-A	1		
		diazepam	2	2						
		bupropion	3	3						
1223i	54 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1224h	54 y F	acetaminophen	1	1	U	Ingst	Int-S	2	acetaminophen (apap)	37.7 mcg/mL In Blood (unspecified) @ Unknown
1225i	54 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		amphetamine	3	3						
1226ai	54 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
1227h	54 y F	acetaminophen	1	1	U	Ingst	AR-D	3	acetaminophen (apap)	11.1 mg/L In Serum @ 3 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	17.5 mg/L In Serum @ 2 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	25.5 mg/L In Serum @ 24 h (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		acetaminophen	1	1					acetaminophen (apap)	35.5 mg/L In Serum @ 12 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	45.5 mg/L In Serum @ 2 h (pe)
1228ai	54 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
1229ai	54 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		oxycodone	2	2						
		fluoxetine	3	3						
1230ai	54 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		amphetamine	3	3						
1231ai	54 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
1232ai	54 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1233ai	54 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		venlafaxine	2	2						
		ethanol (beverage)	3	3						
1234p	54 y F	acetaminophen	3	1	A	Ingst	Unk	2	acetaminophen (apap)	47 mcg/mL In Blood (unspecified) @ Unknown
		drug, N.O.S.	1	1						
		ethanol (beverage)	2	2					ethanol	102 mg/dL In Blood (unspecified) @ Unknown
1235ai	55 y F	oxycodone	1	1	U	Unk	Int-S	1		
		morphine	2	2						
		bupropion	3	3						
1236ai	55 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1237	55 y M	acetaminophen	1	1	A	Ingst	Unk	2	acetaminophen (apap)	25.5 mcg/mL In Blood (unspecified) @ Unknown
1238ai	55 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
1239ai	55 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
1240i	55 y M	oxycodone	1	1	U	Unk	Int-A	1		
		methadone	2	2						
		marijuana, N.O.S.	3	3						
1241i	55 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1242ai	55 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1243ai	55 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cyclobenzaprine	3	3						
1244ai	55 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1245i	55 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1246ai	55 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1247ha	55 y M	acetaminophen	1	1	A	Ingst	Int-U	1		
		ethanol (beverage)	2	2						
1248ai	55 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1249ai	55 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
1250ai	55 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1251ai	55 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		hydroxyzine	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1252h	55 y M	acetaminophen	1	1	A/C	Ingst	Int-M	1	acetaminophen (apap)	158 mcg/mL In Blood (unspecified) @ Unknown
1253ai	55 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1254ai	55 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1255ai	55 y M	fentanyl (non-prescription) methamphetamine substance (non-drug), N.O.S.	1 2 3	1 2 3	U	Unk	Int-A	1		
1256ph	55 y M	fentanyl (non-prescription) cocaine	1 2	1 2	A	Ingst	Int-A	2		
1257ph	55 y F	diphenhydramine/ibuprofen	1	1	A	Ingst	Int-S	2		
1258h	55 y M	salicylate	1	1	U	Ingst	Int-S	2	salicylate	61 mg/dL In Serum @ 4h (pe)
1259h	56 y M	ethanol (beverage) acetaminophen/hydrocodone	2 1	2 1	A	Ingst + Par	Int-S	1	acetaminophen (apap)	202 mcg/mL In Blood (unspecified) @ Unknown
1260ai	56 y M	fentanyl (non-prescription) methamphetamine	2 1 2	2 1 2	U	Unk	Int-A	1		
1261i	56 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1262ai	56 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1263ai	56 y F	tramadol risperidone	1 2	1 2	U	Unk	Int-S	1		
1264i	56 y F	acetaminophen morphine hydrocodone	1 2 3	1 2 3	U	Unk	Int-S	1		
1265h	56 y M	fentanyl (prescription)	1	1	A	Par	Unt-T	1		
1266i	56 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
1267ai	56 y M	fentanyl (non-prescription) morphine methamphetamine	1 2 3	1 2 3	U	Unk	Int-A	1		
1268i	56 y M	fentanyl (non-prescription) cocaine	1 2	1 2	U	Unk	Int-A	1		
1269ai	56 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1270ai	56 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1271i	56 y M	fentanyl (prescription) cocaine	1 2	1 2	U	Ingst + Inhal	Int-A	2		
1272ph	56 y M	fentanyl (prescription) ethanol (beverage) cocaine	1 2 3	1 2 3	U	Ingst + Unk	Int-U	2		
1273ha	56 y F	acetaminophen	1	1	A/C	Ingst	Int-S	1	acetaminophen (apap)	583 mcg/mL In Serum @ Unknown
1274ha	56 y M	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	784 mcg/mL In Blood (unspecified) @ Unknown
1275h	56 y F	acetaminophen	1	1	C	Ingst	Int-M	2	acetaminophen (apap)	199 mcg/mL In Blood (unspecified) @ Unknown
1276i	56 y M	opioid, N.O.S. cocaine benzodiazepine, N.O.S.	1 2 3	1 2 3	A/C	Unk	Int-A	2		
1277i	56 y F	fentanyl (prescription)	1	1	A/C	Unk	Int-A	2		
1278ha	56 y F	acetaminophen/hydrocodone acetaminophen/oxycodone ethanol (beverage)	1 2 3	1 2 3	A	Ingst	Int-S	2	acetaminophen (apap)	92.8 mcg/mL In Serum @ Unknown
									ethanol	0.314 % In Serum @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1279h	56 y M	acetaminophen	1	1	A/C	Ingst	Int-S	2	acetaminophen (apap)	14.5 mg/L In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	79.4 mg/dL In Blood (unspecified) @ Unknown
1280	56 y F	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	150 mcg/mL In Blood (unspecified) @ Unknown
1281ai	57 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1282ai	57 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1283ai	57 y F	fentanyl (non-prescription) fentanyl analog (acetyl)	1 2	1 2	U	Unk	Int-A	1		
1284h	57 y M	acetaminophen	1	1	U	Ingst + Unk	Unk	3	acetaminophen (apap)	52.9 mcg/mL In Blood (unspecified) @ Unknown
		drug, N.O.S.	3	1						
		amphetamine, N.O.S.	2	2						
1285i	57 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1286ai	57 y M	fentanyl (non-prescription) lacosamide levetiracetam	1 2 3	1 2 3	U	Unk	Int-A	1		
1287ai	57 y F	fentanyl (non-prescription) methamphetamine alprazolam	1 2 3	1 2 3	U	Unk	Int-A	1		
1288i	57 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
1289i	57 y F	opioid, N.O.S.	1	1	U	Inhal	Int-A	2		
1290h	57 y M	acetaminophen	1	1	A/C	Ingst	Unt-M	2	acetaminophen (apap)	38 mcg/mL In Serum @ Unknown
1291h	57 y F	acetaminophen	1	1	A/C	Ingst	Int-S	2	acetaminophen (apap)	10 mcg/mL In Serum @ 2 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	32 mcg/mL In Serum @ 1 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	46 mcg/mL In Serum @ 15 m (pe)
		opioid, N.O.S.	2	2						
		trazodone	3	3						
		aripiprazole	4	4						
		lamotrigine	5	4						
		methocarbamol	7	4						
		suvorexant	8	4						
		vilazodone	6	4						
1292i	57 y M	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
1293i	57 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1294h	57 y F	acetaminophen	1	1	C	Ingst	Int-M	1	acetaminophen (apap)	82.9 mcg/mL In Serum @ Unknown
1295h	57 y F	acetaminophen ethanol (beverage)	1 2	1 2	A/C	Ingst	Int-M	3		
1296ai	57 y F	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1297ai	58 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1298ai	58 y M	fentanyl (non-prescription) cyclobenzaprine diphenhydramine	1 2 3	1 2 3	U	Unk	Int-A	1		
1299ai	58 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1300ai	58 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1301h	58 y F	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	125 mcg/mL In Serum @ 31 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	163 mcg/mL In Plasma @ 28 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	321 mcg/mL In Serum @ 16 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	345 mcg/mL In Serum @ 7 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	357 mcg/mL In Serum @ 20 h (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1302ai	58 y M	acetaminophen	1	1					acetaminophen (apap)	46 mcg/mL In Serum @ 39 h (pe)
1303h	58 y M	acetaminophen	1	1					acetaminophen (apap)	496 mcg/mL In Serum @ 0 h (pe)
1304p	58 y M	acetaminophen	1	1					acetaminophen (apap)	66 mcg/mL In Serum @ 37 h (pe)
1305ai	58 y M	oxycodone	2	2	U	Unk	Int-A	1		
1306ai	58 y M	fentanyl (non-prescription)	1	1						
1307i	58 y F	methamphetamine	2	2						
1308h	58 y M	methamphetamine	2	2	U	Unk	Int-U	2	acetaminophen (apap)	300 mcg/mL In Serum @ Unknown
1309i	58 y F	acetaminophen	1	1						
1310ph	58 y M	oxycodone	1	1	A/C	Ingst	Int-S	2		
1311ph	58 y F	oxycodone	1	1	U	Unk	Int-A	1		
1312ph	58 y F	fentanyl (non-prescription)	1	1						
1313h	58 y F	methamphetamine	2	2						
1314ph	58 y F	clonazepam	3	3	U	Unk	Int-A	1		
1315h	58 y F	fentanyl (non-prescription)	1	1						
1316ai	58 y F	methamphetamine	2	2	A/C	Inhal	Int-A	2		
1317ai	58 y F	opioid, N.O.S.	1	1	C	Ingst	Int-U	1	acetaminophen (apap)	91.2 mcg/dL In Serum @ Unknown
1318ai	58 y F	acetaminophen	1	1						
1319i	58 y F	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
1320ai	58 y M	opioid, N.O.S.	1	1	A	Ingst + Unk	Int-A	2		
1321ai	58 y F	ethanol (beverage)	2	2					ethanol	213 mg/dL In Serum @ Unknown
1322ai	58 y F	acetaminophen	1	1	A	Ingst	Int-S	2		
1323ai	58 y F	drug, N.O.S.	2	2						
1324h	58 y F	acetaminophen	1	1	A	Ingst	Unk	2		
1325ai	58 y F	fentanyl (non-prescription)	1	1						
1326h	58 y F	cocaine	2	2						
1327ai	58 y F	cocaine	2	2	A/C	Ingst	Int-M	3	acetaminophen (apap)	60.1 mcg/mL In Serum @ 40 h (pe)
1328ai	58 y F	acetaminophen	1	1					ethanol	11 mg/dL In Serum @ 40 h (pe)
1329ai	58 y F	ethanol (beverage)	2	2						
1330ai	58 y F	acetaminophen/hydrocodone	1	1	A/C	Ingst	Int-S	2		
1331ai	58 y F	alprazolam (ER)	2	2						
1332ai	58 y F	buprenorphine/naloxone (sublingual film)	1	1	U	Ingst	Int-S	2		
1333ai	58 y F	ethanol (beverage)	2	2						
1334ai	58 y F	ethanol (beverage)	2	2	U	Unk	Int-A	1		
1335ai	58 y F	fentanyl (non-prescription)	1	1						
1336ai	58 y F	methamphetamine	2	2						
1337ai	58 y F	cocaine	3	3						
1338ai	58 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1339ai	58 y F	fentanyl analog (acetyl)	2	2						
1340ai	58 y F	fentanyl (non-prescription)	1	1						
1341ai	58 y F	heroin	2	2						
1342ai	58 y F	codeine	3	3						
1343ai	58 y F	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1344ai	58 y F	opioid, N.O.S.	1	1	U	Unk	Int-A	1		
1345ai	58 y F	fentanyl (non-prescription)	1	1						
1346ai	58 y F	carisoprodol	2	2						
1347ai	58 y F	carisoprodol	2	2	U	Unk	Int-A	1		
1348ai	58 y F	fentanyl (non-prescription)	1	1						
1349ai	58 y F	methamphetamine	2	2						
1350ai	58 y F	methamphetamine	2	2	U	Unk	Int-A	1		
1351ai	58 y F	oxycodone	1	1						
1352ai	58 y F	ethanol (beverage)	2	2						
1353ai	58 y F	ethanol (beverage)	2	2	U	Unk	Int-A	1		
1354ai	58 y F	fentanyl (non-prescription)	1	1						
1355ai	58 y F	methamphetamine	2	2						
1356ai	58 y F	methamphetamine	2	2	U	Unk	Int-A	1		
1357ai	58 y F	metformin	2	2						
1358ai	58 y F	metformin	2	2	C	Ingst	Unt-M	1		
1359ai	58 y F	acetaminophen	1	1						
1360ai	58 y F	acetaminophen	1	1						
1361ai	58 y F	acetaminophen	1	1	U	Unk	Int-A	1		
1362ai	58 y F	acetaminophen	1	1						
1363ai	58 y F	acetaminophen	1	1						
1364ai	58 y F	acetaminophen	1	1	U	Unk	Int-A	1		
1365ai	58 y F	acetaminophen	1	1						
1366ai	58 y F	acetaminophen	1	1						
1367ai	58 y F	acetaminophen	1	1						
1368ai	58 y F	acetaminophen	1	1						
1369ai	58 y F	acetaminophen	1	1						
1370ai	58 y F	acetaminophen	1	1						
1371ai	58 y F	acetaminophen	1	1						
1372ai	58 y F	acetaminophen	1	1						
1373ai	58 y F	acetaminophen	1	1						
1374ai	58 y F	acetaminophen	1	1						
1375ai	58 y F	acetaminophen	1	1						
1376ai	58 y F	acetaminophen	1	1						
1377ai	58 y F	acetaminophen	1	1						
1378ai	58 y F	acetaminophen	1	1						
1379ai	58 y F	acetaminophen	1	1						
1380ai	58 y F	acetaminophen	1	1						
1381ai	58 y F	acetaminophen	1	1						
1382ai	58 y F	acetaminophen	1	1						
1383ai	58 y F	acetaminophen	1	1						
1384ai	58 y F	acetaminophen	1	1						
1385ai	58 y F	acetaminophen	1	1						
1386ai	58 y F	acetaminophen	1	1						
1387ai	58 y F	acetaminophen	1	1						
1388ai	58 y F	acetaminophen	1	1						
1389ai	58 y F	acetaminophen	1	1						
1390ai	58 y F	acetaminophen	1	1						
1391ai	58 y F	acetaminophen	1	1						
1392ai	58 y F	acetaminophen	1	1						
1393ai	58 y F	acetaminophen	1	1						
1394ai	58 y F	acetaminophen	1	1						
1395ai	58 y F	acetaminophen	1	1						
1396ai	58 y F	acetaminophen	1	1						
1397ai	58 y F	acetaminophen	1	1						
1398ai	58 y F	acetaminophen	1	1						
1399ai	58 y F	acetaminophen	1	1						
1400ai	58 y F	acetaminophen	1	1						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1328i	59 y M	opioid, N.O.S.	1	1	A	Ingst	Int-A	2		
1329ai	59 y M	fentanyl (non-prescription) substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
1330hi	59 y M	acetaminophen	1	1	A	Ingst	Int-M	2		
1331i	59 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
1332i	59 y F	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
1333ph	59 y F	opioid, N.O.S. benzodiazepine, N.O.S. gabapentin	1 2 3	1 2 3	A	Ingst	Int-S	2		
1334h	59 y F	acetaminophen	1	1	A/C	Ingst	Unt-M	2	acetaminophen (apap)	9 mcg/mL In Blood (unspecified) @ Unknown
1335i	60 y M	acetaminophen/oxycodone	2	2	U	Unk	Int-A	2		
1336ai	60 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	1		
1337i	60 y F	fentanyl (non-prescription) methamphetamine cocaine	1 2 3	1 2 3	U	Unk	Int-A	1		
1338ai	60 y M	fentanyl (non-prescription) fentanyl analog (acetyl) methamphetamine	1 2 3	1 2 3	U	Unk	Unk	1		
1339i	60 y F	oxycodone hydromorphone diazepam	1 2 3	1 2 3	U	Unk	Int-A	1		
1340h	60 y M	fentanyl (non-prescription) methamphetamine ethanol (beverage)	1 2 3	1 2 3	A	Ingst	Int-S	2	acetaminophen (apap)	18 mcg/mL In Serum @ 6 h (pe)
1341ai	60 y M	oxycodone	2	1					acetaminophen (apap)	5 mcg/mL In Serum @ 27 h (pe)
1342ai	60 y M	acetaminophen/hydrocodone	1	2	U	Unk	Int-A	1		
1343h	60 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1344ai	60 y M	acetaminophen	1	1	U	Ingst	Unt-G	2	acetaminophen (apap)	137 mcg/mL In Serum @ Unknown
1345i	60 y M	fentanyl (non-prescription) ethanol (beverage)	1 2	1 2	U	Unk	Int-A	1		
1346h	60 y F	methadone marijuana, N.O.S.	1 2	1 2	C	Ingst	Unt-T	2		
1347ai	60 y M	acetaminophen/hydrocodone	1	1					acetaminophen (apap)	48 mcg/mL In Serum @ Unknown
1348ai	60 y M	acetaminophen salicylate	2 3	2 3					salicylate	17.6 mg/dL In Serum @ Unknown
1349ai	60 y M	acetaminophen	1	1	U	Unk	Int-A	1		
1350ai	60 y M	fentanyl (non-prescription) methamphetamine cyclobenzaprine	1 2 3	1 2 3	U	Unk	Int-A	1		
1351h	60 y F	acetaminophen	1	1	A	Ingst	Int-U	1		
1352ha	60 y F	acetaminophen	1	1	A/C	Ingst	Int-S	1	acetaminophen (apap)	296 mg/L In Serum @ 43 h (pe)
1353	60 y M	acetaminophen	1	1					acetaminophen (apap)	440 mg/L In Blood (unspecified) @ 1 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	549 mg/L In Serum @ 15 m (pe)
		acetaminophen/hydrocodone	1	1	C	Ingst	Unk	2		
		ethanol (beverage)	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1354pha	60 y F	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	64.8mcg/mL In Blood (unspecified) @ Unknown
		oxycodone	2	3						
		benzodiazepine, N.O.S.	3	4						
		ethanol (beverage)	4	4					ethanol	47 mg/dL In Blood (unspecified) @ Unknown
1355h	60 y M	acetaminophen	1	1	U	Ingst	Unk	2	acetaminophen (apap)	38 mcg/mL In Serum @ Unknown
1356ai	60 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		fentanyl analogs (para-fluoro)	2	2						
		methamphetamine	3	3						
1357pa	60 y M	fentanyl (prescription)	1	1	A	Unk	Int-A	2		
1358pha	60 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	2		
1359h	60 y F	acetaminophen	1	1	A	Ingst	Int-S	3	acetaminophen (apap)	89 mcg/mL In Blood (unspecified) @ Unknown
1360h	60 y F	methadone	1	1	U	Ingst	Int-A	3		
1361h	60 y F	acetaminophen/diphenhydramine	1	1	A	Ingst	Int-S	1		
1362ai	61 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1363i	61 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1364pha	61 y M	acetaminophen/oxycodone	1	1	A	Ingst	Int-S	1	oxycodone (free)	590 ng/mL In Whole Blood @ Unknown
		acetaminophen/oxycodone	1	1					acetaminophen (apap)	60 mcg/mL In Whole Blood @ Unknown
		acetaminophen/oxycodone	1	1					oxymorphone (free)	9 ng/mL In Whole Blood @ Unknown
		acetaminophen/hydrocodone	2	2					hydrocodone (free)	34 ng/mL In Whole Blood @ Unknown
		tramadol	3	3					o-desmethyiltramadol	1200 ng/mL In Whole Blood @ Unknown
		tramadol	3	3					tramadol	3900 ng/mL In Whole Blood @ Unknown
		marijuana, N.O.S.	4	4					delta-9-thc	3.6 ng/mL In Whole Blood @ Unknown
		marijuana, N.O.S.	4	4					delta-9-carboxy-thc	30 ng/mL In Whole Blood @ Unknown
1365ai	61 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1366ai	61 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1367ha	61 y F	morphine	1	1	A/C	Ingst + Unk	Int-S	3	morphine	51 ng/mL In Serum @ Unknown
		baclofen	2	2						
		hydrocodone	3	3					hydrocodone	40 ng/mL In Serum @ Unknown
1368ai	61 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		trazodone	2	2						
1369h	61 y F	acetaminophen	1	1	U	Ingst	Unk	2	acetaminophen (apap)	178 mcg/mL In Serum @ Unknown
1370i	61 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		diphenhydramine	2	2						
		temazepam	3	3						
1371i	61 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
1372ai	61 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1373ai	61 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1374ai	61 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		trazodone	3	3						
1375ai	61 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1376ai	61 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1377i	61 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1378p	61 y M	heroin	1	1	A	Unk	Int-A	2		
1379ph	61 y F	ethanol (beverage)	2	2	U	Ingst	Unk	3		
		acetaminophen	1	1					acetaminophen (apap)	12 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	22 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	32 mcg/mL In Blood (unspecified) @ Unknown
1380h	61 y M	acetaminophen	1	1	C	Ingst	Unk	2		
		botanical (Garcinia cambogia)	2	2						
1381h	61 y F	acetaminophen	1	1	C	Ingst + Par	Unt-T	2		
		acetaminophen	2	2					acetaminophen (apap)	39 mcg/mL In Serum @ 15 m (pe)
1382h	61 y F	acetaminophen	1	1	C	Ingst	Int-M	1		
		acetaminophen							acetaminophen (apap)	60.9 mcg/mL In Blood (unspecified) @ Unknown
1383h	61 y M	acetaminophen	1	1	A	Ingst	Int-S	3		
		ethanol (beverage)	2	2					acetaminophen (apap)	3.1 mcg/mL In Serum @ Unknown
									ethanol	228 mg/dL In Serum @ Unknown
1384h	62 y F	acetaminophen	1	1	C	Ingst	Int-M	2		
1385h	62 y F	fentanyl (non-prescription)	1	1	A	Unk	Int-A	2		
		cocaine	2	2						
1386ai	62 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1387ph	62 y F	acetaminophen/codeine	1	1	U	Ingst + Unk	Unk	2		
									acetaminophen (apap)	7.4 mcg/mL In Blood (unspecified) @ 7.5 h (pe)
1388a	62 y F	diazepam	2	2	A	Ingst	Int-S	1		
		acetaminophen	1	1					acetaminophen (apap)	134 mcg/mL In Blood (unspecified) @ Unknown
		metoprolol	2	2						
		losartan	3	3						
		medizine	4	4						
		ketorolac	5	5						
		spironolactone	6	6						
		ethanol (beverage)	7	7						
		ondansetron	8	8						
		omeprazole	9	9						
1389ai	62 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
1390ai	62 y M	heroin	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1391ai	62 y F	oxycodone	1	1	U	Unk	Unk	1		
		acetaminophen	2	2						
1392ai	62 y F	methadone	1	1	U	Unk	Int-A	1		
1393ai	62 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
1394ai	62 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		oxycodone	3	3						
1395ai	62 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1396ai	62 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
1397ai	62 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1398h	62 y F	acetaminophen	1	1	U	Ingst	Int-M	3		
		acetaminophen	1	1					acetaminophen (apap)	165 mcg/mL In Serum @ 9 h (pe)
									acetaminophen (apap)	18 mcg/mL In Serum @ 65 h (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1399h	62 y F	acetaminophen	1	1					acetaminophen (apap)	253 mcg/mL In Serum @ 10 m (pe)
		acetaminophen	1	1					acetaminophen (apap)	50 mcg/mL In Serum @ 41 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	85 mcg/mL In Serum @ 29 h (pe)
1400ha	62 y M	oxycodone	1	1	A	Ingst	Int-S	2		
		duloxetine (ER)	2	2						
		alprazolam	3	3						
		methocarbamol	4	4						
1401	62 y F	acetaminophen/hydrocodone	1	1	A	Ingst + Unk	Int-A	1	acetaminophen (apap)	17.8mcg/mL In Serum @ Unknown
		methocarbamol	2	2						
		amphetamine, N.O.S. drug, N.O.S.	3	3						
			4	4						
1402i	63 y F	acetaminophen (ER)	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	111 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	22 mg/dL In Blood (unspecified) @ Unknown
1403ai	63 y F	ethanol (beverage)	2	2						
1404ai	63 y M	ethanol (beverage)	2	2						
1405i	63 y F	ethanol (beverage)	2	2						
1406pha	63 y F	ethanol (beverage)	2	2						
1407	63 y F	ethanol (beverage)	2	2						
1408p	63 y M	ethanol (beverage)	2	2						
1409ai	63 y M	ethanol (beverage)	2	2						
1410i	63 y M	ethanol (beverage)	2	2						
1411ph	63 y M	ethanol (beverage)	2	2						
1412ai	63 y M	ethanol (beverage)	2	2						
1413ai	63 y M	ethanol (beverage)	2	2						
1414ai	63 y F	ethanol (beverage)	2	2						
1415ph	63 y M	ethanol (beverage)	2	2						
1416h	63 y M	ethanol (beverage)	2	2						
1417h	63 y M	ethanol (beverage)	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1418h	63 y F	acetaminophen	1	1	C	Ingst	Int-M	1	acetaminophen (apap)	12 mcg/mL In Blood (unspecified) @ 31 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	18 mcg/mL In Blood (unspecified) @ 24 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	22 mcg/mL In Blood (unspecified) @ 19 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	27 mcg/mL In Blood (unspecified) @ 15 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	49 mcg/mL In Blood (unspecified) @ 1 h (pe)
1419i	63 y M	opioid, N.O.S.	1	1	A/C	Inhal	Int-A	2		
		alprazolam	2	2						
1420	63 y F	colchicine	1	1	A/C	Ingst	Unt-T	1		
		atorvastatin	2	2						
		meloxicam	3	3						
1421	63 y M	acetaminophen	1	1	A	Ingst	Int-U	1	acetaminophen (apap)	134 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2						
		ethanol (non-beverage)	3	3						
1422h	63 y M	acetaminophen	1	1	U	Ingst	Unk	3	acetaminophen (apap)	11.4 mcg/mL In Blood (unspecified) @ 25 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	164 mcg/mL In Blood (unspecified) @ Unknown
		ibuprofen	2	2						
1423h	63 y M	acetaminophen	1	1	C	Ingst	Int-M	3	acetaminophen (apap)	37 mcg/mL In Serum @ Unknown
1424h	63 y F	acetaminophen/codeine	1	1	U	Ingst	Unk	2	acetaminophen (apap)	7.5 mcg/mL In Blood (unspecified) @ Unknown
1425i	63 y M	opioid, N.O.S.	1	1	U	Inhal	Int-A	2		
1426ai	64 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-S	1		
		diphenhydramine	2	2						
1427pha	64 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1428ai	64 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1429h	64 y M	acetaminophen	1	1	U	Ingst	Int-U	1	acetaminophen (apap)	167 mcg/mL In Blood (unspecified) @ Unknown
1430h	64 y F	ibuprofen/diphenhydramine	1	1	U	Ingst	Int-S	3		
		diphenhydramine	2	2						
		ethanol (beverage)	3	3						
1431ai	64 y F	morphine	1	1	U	Unk	Unk	1		
		gabapentin	2	2						
		duloxetine (ER)	3	3						
1432h	64 y F	acetaminophen	1	1	A/C	Ingst	Unk	3	acetaminophen (apap)	78.3 mcg/mL In Blood (unspecified) @ Unknown
		drug, N.O.S.	2	2						
1433h	64 y M	acetaminophen	1	1	C	Ingst	Unt-T	2		
		naproxen	2	2						
1434ai	64 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1435ai	64 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1436	64 y M	acetaminophen/hydrocodone	1	1	C	Ingst + Aspir	Int-A	3	acetaminophen (apap)	40.6 mcg/mL In Blood (unspecified) @ Unknown
1437ai	64 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
		marijuana, N.O.S.	2	2						
1438h	64 y M	salicylate	1	1	A	Unk	Int-S	1	salicylate	66 mg/dL In Blood (unspecified) @ Unknown
		acetaminophen	2	2					acetaminophen (apap)	236 mcg/mL In Blood (unspecified) @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1439ai	64 y M	morphine	1	1	U	Unk	Int-A	1		
		codeine	2	2						
		oxymorphone	3	3						
1440ai	64 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		cocaine	3	3						
1441ai	64 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1442ai	64 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1443i	64 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1444i	64 y M	fentanyl (prescription)	1	1	A	Unk	Int-A	2		
1445i	64 y M	opioid, N.O.S.	1	1	U	Ingst	Int-A	2		
1446h	64 y F	acetaminophen	1	1	C	Ingst	Unt-M	3	acetaminophen (apap)	125 mcg/mL In Serum @ 15 m (pe)
1447i	64 y M	opioid, N.O.S.	1	1	A/C	Unk	Int-A	2		
1448h	64 y F	acetaminophen	1	1	C	Ingst	Unk	3	acetaminophen (apap)	28 mcg/mL In Serum @ Unknown
		acetaminophen/oxycodone	2	2						
1449ai	65 y F	acetaminophen	1	1	U	Unk	Int-A	1		
		salicylate	2	2						
		Mitragyna speciosa korthals	3	3						
1450	65 y F	acetaminophen/hydrocodone	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	47.5 mcg/mL In Blood (unspecified) @ Unknown
		lorazepam	2	2						
1451ai	65 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
1452h	65 y M	acetaminophen	1	1	U	Ingst	Unk	3	acetaminophen (apap)	31 mcg/mL In Blood (unspecified) @ Unknown
1453ai	65 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1454ai	65 y M	acetaminophen	1	1	U	Unk	Unk	1		
		hydrocodone	2	2						
		oxycodone	3	3						
1455ai	65 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		cyclobenzaprine	2	2						
		clonazepam	3	3						
1456ai	65 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1457ai	65 y M	oxycodone	1	1	U	Unk	Int-M	1		
1458	65 y F	salicylate	1	1	A	Ingst	Int-S	3	salicylate	42.2 mg/dL In Serum @ Unknown
		acetaminophen	2	2					acetaminophen (apap)	29.5 mg/mL In Serum @ Unknown
		medizine	3	3						
1459ai	65 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1460ph	65 y M	fentanyl (non-prescription)	1	1	A	Unk	Int-A	2		
		cocaine	2	2						
1461h	65 y F	acetaminophen	1	1	U	Ingst	Unk	2	acetaminophen (apap)	100.1 mcg/mL In Blood (unspecified) @ 5.5 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	17 mcg/mL In Blood (unspecified) @ 27.5 h (pe)
1462i	66 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1463ai	66 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1464ha	66 y F	acetaminophen	1	1	A	Ingst + Aspir	Int-S	3	acetaminophen (apap)	470 mcg/mL In Blood (unspecified) @ Autopsy
		hydrocodone, N.O.S.	2	2					hydrocodone (free)	1900 ng/mL In Blood (unspecified) @ Autopsy
1465ai	66 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1466i	66 y F	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1467h	66 y F	acetaminophen	1	1	A	Ingst	Int-M	1	acetaminophen (apap)	319 mcg/mL In Blood (unspecified) @ Unknown
		ibuprofen	2	2						
1468ai	66 y M	heroin	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
1469i	66 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1470ai	66 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		metoprolol	2	2						
		gabapentin	3	3						
1471ai	66 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1472ha	66 y M	acetaminophen	1	1	C	Ingst	Int-U	1	acetaminophen (apap)	30 mg/L In Serum @ 2 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	70 mg/L In Serum @ 1 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	81 mg/L In Serum @ 15 m (pe)
1473ai	66 y F	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1474i	66 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
1475ai	66 y F	morphine	1	1	U	Unk	Unk	1		
		oxycodone	2	2						
1476h	66 y F	acetaminophen	1	1	U	Ingst + Unk	Int-U	2	acetaminophen (apap)	23 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	36.9 mcg/mL In Blood (unspecified) @ Unknown
		benzodiazepine, N.O.S.	2	2						
		opioid, N.O.S.	3	3						
1477a	66 y M	acetaminophen	1	1	A	Ingst	Int-S	3	acetaminophen (apap)	305 mcg/mL In Blood (unspecified) @ Unknown
1478ai	66 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
1479ha	66 y F	morphine	1	1	A	Ingst	Int-S	1	morphine	204 ng/mL In Blood (unspecified) @ Autopsy
		metformin	2	2						
		fentanyl (non-prescription)	3	3						
		marijuana, N.O.S.	4	4					carboxy-thc	10 ng/mL In Blood (unspecified) @ Autopsy
		benzodiazepine, N.O.S.	5	5					midazolam	24 ng/mL In Blood (unspecified) @ Autopsy
1480i	66 y M	opioid, N.O.S.	1	1	A	Unk	Int-A	2		
1481ph	66 y M	fentanyl (non-prescription)	1	1	A	Ingst + Unk	Int-A	2		
		ethanol (beverage)	2	2					ethanol	186 mg/dL In Blood (unspecified) @ Unknown
1482i	66 y M	heroin	1	1	U	Inhal	Int-A	2		
1483ai	67 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		lorazepam	3	3						
1484ai	67 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1485ai	67 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1486i	67 y F	opioid, N.O.S.	1	1	U	Inhal	Int-A	2		
1487ai	67 y F	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Int-A	1		
1488ai	67 y M	fentanyl (non-prescription) methamphetamine diphenhydramine	1 2 3	1 2 3	U	Unk	Int-A	1		
1489ai	67 y M	morphine methadone codeine	1 2 3	1 2 3	U	Unk	Int-A	1		
1490i	67 y M	oxycodone ethanol (beverage)	1 2	1 2	A/C	Ingst	Int-U	2		
1491	67 y F	acetaminophen	1	1	U	Ingst	Int-S	2	acetaminophen (apap)	281 mcg/mL In Blood (unspecified) @ Unknown
1492	67 y F	drug, N.O.S.	2	2	U	Ingst	Int-S	2		
1493i	67 y M	tramadol	1	1	A/C	Inhal	Int-A	2		
1494i	68 y M	opioid, N.O.S.	1	1	U	Par	Int-A	2		
1495ai	68 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	1		
1496ai	68 y M	heroin methadone ethanol (beverage)	1 2 3	1 2 3	U	Unk	Int-A	1		
1497h	68 y F	fentanyl (non-prescription) cocaine	1 2	1 2	A	Ingst	Int-S	1	acetaminophen (apap)	475 mcg/mL In Serum @ Unknown
1498h	68 y M	acetaminophen	1	1	U	Ingst	Int-U	3	acetaminophen (apap)	60 mcg/mL In Blood (unspecified) @ Unknown
1499h	68 y M	acetaminophen	1	1	A/C	Ingst	Unk	2		
1500	68 y F	acetaminophen ethanol (beverage)	1 2	1 2	A	Ingst	Int-S	3		
1501	68 y F	acetaminophen nonsteroidal antiinflammatory drug, N.O.S.	1 2	1 2	C	Ingst	Int-T	2		
1502h	68 y F	acetaminophen (ER)	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	175 mcg/mL In Blood (unspecified) @ Unknown
1503ai	69 y F	ethanol (beverage)	2	2					ethanol	10 mg/dL In Blood (unspecified) @ Unknown
1504ai	69 y M	fentanyl (non-prescription) morphine methamphetamine	1 2 3	1 2 3	U	Unk	Int-A	1		
1505h	69 y F	fentanyl (non-prescription) methamphetamine	1 2	1 2	C	Ingst	Int-S	1	acetaminophen (apap)	543.2 mcg/mL In Blood (unspecified) @ Unknown
1506	69 y F	acetaminophen naproxen	1 2	1 2	A	Ingst	Int-S	3		
1507h	69 y F	acetaminophen oxycodone	1 2	1 2	U	Ingst	Int-U	2	acetaminophen (apap)	11 mcg/mL In Serum @ 22 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	27 mcg/mL In Serum @ 1 h (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1508ai	69 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1509h	69 y F	acetaminophen	1	1	U	Ingst	Unk	2	acetaminophen (apap)	61 mcg/mL In Blood (unspecified) @ Unknown
1510ai	69 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		hydroxyzine	3	3						
1511h	69 y F	salicylate	1	1	A	Ingst	Int-S	1	salicylate	96.6 mg/dL In Blood (unspecified) @ 8 h (pe)
1512	69 y F	acetaminophen (ER)	1	1	C	Ingst	Unt-T	2	acetaminophen (apap)	39 mcg/mL In Blood (unspecified) @ Unknown
1513i	69 y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1514h	69 y F	acetaminophen	1	1	A/C	Ingst	Int-A	1	acetaminophen (apap)	151 mcg/mL In Blood (unspecified) @ Unknown
1515h	69 y F	salicylate	1	1	U	Ingst	Int-S	2	salicylate	70 mg/dL In Serum @ Unknown
1516h	69 y F	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	285 mcg/dL In Serum @ Unknown
1517h	69 y M	acetaminophen	1	1	C	Ingst	Unt-M	2	acetaminophen (apap)	46 mcg/mL In Blood (unspecified) @ 1 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	63.1 mcg/mL In Blood (unspecified) @ 1 h (pe)
1518ai	70 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
1519ai	70 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		heroin	2	2						
		methamphetamine	3	3						
1520	70 y M	acetaminophen	1	1	A	Ingst	Int-M	1	acetaminophen (apap)	6.9 mcg/mL In Serum @ Unknown
1521h	70 y M	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	600 mcg/mL In Serum @ Unknown
1522ha	70 y M	fentanyl (non-prescription)	1	1	U	Ingst+Inhal+Unk	Int-S	1	fentanyl	2.7 ng/mL In Blood (unspecified) @ Unknown
		cocaine	2	2					benzoyllecognine	1.5 mcg/mL In Blood (unspecified) @ Unknown
		cypermethrin	4	2						
		methamphetamine	3	3					methamphetamine	0.17 mcg/mL In Blood (unspecified) @ Unknown
1523ai	70 y F	naloxone	5	3	U	Unk	Int-S	1		
		acetaminophen	1	1						
		diphenhydramine	2	2						
		topiramate	3	3						
1524h	70 y M	colchicine	1	1	A/C	Ingst	Int-S	2		
		ethanol (beverage)	2	2					ethanol	125 g/dL In Serum @ Unknown
1525h	70 y F	naproxen	1	1	A/C	Ingst	Int-S	2		
		loperamide	2	2						
1526ai	70 y M	hydrocodone	1	1	U	Unk	Int-S	1		
		acetaminophen	2	2						
		diphenhydramine	3	3						
1527ha	70 y F	acetaminophen	1	1	C	Ingst	Int-M	2	acetaminophen (apap)	45 mcg/mL In Blood (unspecified) @ Unknown
		morphine	2	2						
		duloxetine (ER)	3	3						
1528h	70 y F	acetaminophen	1	1	C	Ingst	Int-M	1	acetaminophen (apap)	31.6 mcg/mL In Serum @ Unknown
1529h	71 y F	salicylate	1	1	U	Ingst	Int-S	3	salicylate	288.1 mcg/mL In Blood (unspecified) @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1530h	71 y F	acetaminophen	1	1	A	Ingst + Unk	Int-S	1	acetaminophen (apap)	171 mcg/mL In Blood (unspecified) @ Unknown
		salicylate	2	2					salicylate	6.7 mg/dL In Blood (unspecified) @ Unknown
		ethanol (beverage)	3	3					ethanol	12 mg/dL In Serum @ Unknown
1531h	71 y F	acetaminophen	1	1	U	Ingst	Unk	3	acetaminophen (apap)	100 mcg/mL In Serum @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	120 mcg/mL In Serum @ Unknown
1532ha	71 y M	acetaminophen/codeine	1	1	A/C	Ingst	Int-S	3	codeine (free)	3000 ng/mL In Serum @ Unknown
		acetaminophen/codeine	1	1					acetaminophen (apap)	81 mcg/mL In Serum @ Unknown
		alprazolam (ER)	2	2					alprazolam	28 ng/mL In Serum @ Unknown
1533ai	71 y M	methadone	1	1	U	Unk	Unk	1		
		gabapentin	2	2						
		alprazolam	3	3						
1534ai	71 y M	acetaminophen	1	1	U	Unk	Int-S	1		
		oxycodone	2	2						
		clonidine	3	3						
1535h	71 y F	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	133 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	250 mcg/mL In Blood (unspecified) @ Unknown
1536ai	71 y M	hydromorphone	2	2	U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		cocaine	2	2						
1537ai	71 y F	fentanyl (non-prescription)	1	1	U	Inhal + Unk	Int-A	1		
		carbon monoxide	2	2						
		iron	3	3						
1538h	71 y M	caffeine/salicylamide/salicylate	1	1	A/C	Ingst	Int-M	3	salicylate	31.8 mg/dL In Blood (unspecified) @ Unknown
1539ha	71 y F	acetaminophen	1	1	U	Ingst	Int-S	1	ethanol	13 mg/dL In Serum @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	168 mcg/mL In Serum @ Unknown
		ethanol (beverage)	2	2						
1540i	72 y F	hydrocodone	1	1	U	Unk	Int-S	1		
		oxycodone	2	2						
		diphenhydramine	3	3						
1541	72 y M	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	222 mcg/mL In Blood (unspecified) @ 12 h (pe)
1542h	72 y F	acetaminophen	1	1	C	Ingst	Int-M	3	acetaminophen (apap)	44 mcg/mL In Blood (unspecified) @ Unknown
1543ai	72 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		substance (non-drug), N.O.S.	3	3						
1544ph	72 y F	tramadol	1	1	A	Ingst	Int-S	2		
		alprazolam (ER)	2	2						
		escitalopram	3	3						
		cyclobenzaprine	4	4						
		quetiapine	5	5						
		clonazepam	6	6						
		ondansetron	7	7						
		methocarbamol	8	8						
1545h	72 y M	acetaminophen/hydrocodone	1	1	A	Ingst	Int-U	2	acetaminophen (apap)	52 mcg/mL In Serum @ Unknown
1546h	72 y F	acetaminophen	1	1	A/C	Ingst	Int-S	2	acetaminophen (apap)	19 mcg/mL In Blood (unspecified) @ 22 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	75 mcg/mL In Blood (unspecified) @ 5 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	95 mcg/mL In Blood (unspecified) @ 1 h (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		acetaminophen/hydrocodone	2	2						
		tramadol	3	3						
		diazepam	4	4						
1547ai	73 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
1548hi	73 y F				C	Ingst	AR-D	3		
		acetaminophen	1	1						
1549h	73 y F				U	Ingst	Unk	3		
		acetaminophen	1	1					acetaminophen (apap)	75 mcg/mL In Plasma @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	89 mcg/mL In Plasma @ Unknown
1550ai	73 y M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
1551ai	73 y F				U	Unk	Int-S	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		trazodone	3	3						
1552ph	73 y F				A/C	Ingst	Unk	2		
		acetaminophen/hydrocodone	1	1					acetaminophen (apap)	75 mcg/mL In Serum @ Unknown
		ethanol (beverage)	2	2					ethanol	47 g/dL In Serum @ Unknown
1553h	73 y F				A	Ingst	Int-S	1		
		acetaminophen	1	1					acetaminophen (apap)	327 mcg/mL In Serum @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	71 mcg/mL In Serum @ Unknown
1554ha	73 y F				A/C	Ingst	Int-M	3		
		acetaminophen	1	1					acetaminophen (apap)	505 mcg/mL In Serum @ Unknown
1555h	73 y F				C	Ingst	AR-D	2		
		acetaminophen	1	1					acetaminophen (apap)	10 mcg/mL In Blood (unspecified) @ Unknown
1556ai	73 y F				U	Unk	Int-A	1		
		pembrolizumab	2	2						
		metformin	3	3						
		oxycodone	1	1						
1557	73 y F				A	Ingst	Int-U	2		
		olanzapine	2	2						
		acetaminophen	1	1					acetaminophen (apap)	113 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	46 mg/dL In Blood (unspecified) @ Unknown
1558ha	73 y M				A	Ingst	Int-S	2		
		acetaminophen/hydrocodone	1	1					dihydrocodeine/hydrocodol (free)	19 ng/mL In Blood (unspecified) @ Unknown
		acetaminophen/hydrocodone	1	1					acetaminophen (apap)	40 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen/hydrocodone	1	1					hydrocodone (free)	430 ng/mL In Blood (unspecified) @ Unknown
		acetaminophen/hydrocodone	1	1					acetaminophen (apap)	57.5 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	154 mg/dL In Blood (unspecified) @ Unknown
1559ph	73 y M				A/C	Ingst	Int-S	3		
		oxycodone	1	1						
		ethanol (beverage)	2	2					ethanol	286 mg/dL In Serum @ Unknown
1560h	73 y F				U	Ingst	Unk	3		
		acetaminophen	1	1					acetaminophen (apap)	39.9 mcg/mL In Blood (unspecified) @ Unknown
1561h	73 y F				A	Ingst	Int-S	2		
		acetaminophen	1	1					acetaminophen (apap)	187 mcg/mL In Blood (unspecified) @ 23 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	352 mcg/mL In Blood (unspecified) @ 3 h (pe)
1562h	73 y M				C	Ingst	Unt-M	2		
		acetaminophen	1	1					acetaminophen (apap)	28 mcg/mL In Blood (unspecified) @ Unknown
1563	73 y F				A	Ingst + Aspir	Unk	2		
		acetaminophen	1	1					acetaminophen (apap)	52 mcg/mL In Blood (unspecified) @ Unknown
1564i	74 y M				U	Unk	Unk	2		
		oxycodone	1	1						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1565	74 y F	acetaminophen	1	1	C	Ingst	Unt-T	2	acetaminophen (apap)	32.2mcg/mL In Serum @ Unknown
		dietary supplement/homeopathic agent, N.O.S.	2	2						
1566h	74 y F	acetaminophen/hydrocodone	1	1	U	Ingst	Int-S	3	acetaminophen (apap)	64.4mcg/mL In Blood (unspecified) @ Unknown
1567pha	74 y M	oxycodone (ER)	1	1	A/C	Ingst	Int-U	2		
		benzodiazepine, N.O.S.	2	2						
		baclofen	3	3						
1568h	74 y M	opioid, N.O.S.	1	1	A/C	Ingst	Unk	3		
		metformin	2	2						
1569h	74 y M	acetaminophen/codeine	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	541 mcg/mL In Blood (unspecified) @ Unknown
		hydrochlorothiazide	2	2						
		carisoprodol	3	3						
		hypnotic (nonbenzodiazepine), N.O.S.	4	4						
1570ai	74 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
1571h	74 y F	acetaminophen	1	1	C	Ingst	Int-U	1		
1572ha	75 y M	acetaminophen/hydrocodone	1	1	A	Ingst	Int-U	1	hydrocodone (free)	350 ng/mL In Blood (unspecified) @ Unknown
		acetaminophen/hydrocodone	1	1					acetaminophen (apap)	45 mcg/mL In Blood (unspecified) @ Unknown
		diphenhydramine	2	2					diphenhydramine	600 ng/mL In Blood (unspecified) @ Unknown
1573ha	75 y F	acetaminophen	1	1	A	Ingst	Unk	3	acetaminophen (apap)	36 mcg/mL In Blood (unspecified) @ 2 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	67 mcg/mL In Blood (unspecified) @ Unknown
1574h	76 y F	acetaminophen/oxycodone	1	1	U	Ingst + Par	Int-S	3	acetaminophen (apap)	367.3 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen/oxycodone	1	1					acetaminophen (apap)	417 mcg/mL In Blood (unspecified) @ 4 h (pe)
		acetaminophen/oxycodone	1	1					acetaminophen (apap)	44.6 mcg/mL In Blood (unspecified) @ 3 d (pe)
		acetaminophen/oxycodone	1	1					acetaminophen (apap)	63 mcg/mL In Blood (unspecified) @ 2 d (pe)
		insulin (degludec) (ER)	2	2						
		metoprolol	3	3						
1575h	76 y M	acetaminophen	1	1	A	Ingst	Int-S	3		
		calcium antagonist, N.O.S.	2	2						
		antihyperlipidemic, N.O.S.	3	3						
		beta blocker, N.O.S.	4	4						
		allopurinol	5	5						
1576a	76 y F	acetaminophen/hydrocodone	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	25.5 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen/hydrocodone	1	1					hydrocodone (free)	59 ng/mL In Blood (unspecified) @ Autopsy
		lorazepam	2	2					lorazepam	110 ng/mL In Blood (unspecified) @ Autopsy
1577ha	76 y F	acetaminophen (ER)	1	1	C	Ingst	Int-M	1	acetaminophen (apap)	32 mcg/mL In Blood (unspecified) @ Unknown
1578ha	76 y M	salicylate	1	1	U	Unk	Unk	3		
1579h	76 y F	acetaminophen/drugs, N.O.S.	1	1	A/C	Unk	Int-S	2		
		metformin	4	2						
		potassium	6	3						
		bupropion	3	4						
		oxycodone	5	5						
		methamphetamine	2	6						
1580h	76 y M	acetaminophen/hydrocodone	1	1	A	Ingst	Int-S	2		
		lisinopril	2	2						
		dextromethorphan/guaifenesin	3	3						
		marijuana, N.O.S.	4	4						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1581i	77 y M	fentanyl (prescription) heroin	1 2	1 2	U	Inhal	Int-A	2		
1582ai	77 y F	acetaminophen hydrocodone	1 2	1 2	U	Unk	Int-S	1		
1583h	77 y F	acetaminophen/hydrocodone zolidem ethanol (beverage)	1 2 3	1 2 3	A	Ingst	Int-S	3		
1584ai	77 y M	fentanyl (non-prescription) heroin methamphetamine	1 2 3	1 2 3	U	Unk	Int-A	1		
1585h	78 y F	acetaminophen	1	1	C	Ingst	Unt-T	2	acetaminophen (apap)	154 mcg/mL In Blood (unspecified) @ Unknown
1586p	78 y F	oxycodone primidone	1 2	1 2	A	Ingst	Int-S	2		
1587h	78 y F	ibuprofen gabapentin	1 2	1 2	A	Ingst + Unk	Unt-U	2		
1588ha	78 y M	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	29.1 mcg/mL In Blood (unspecified) @ Unknown
[1589ha]	78 y M	trazodone colchicine colchicine	2 1 1	2 1 1	A	Ingst	Int-S	1		
1590	78 y M	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	301 mcg/mL In Blood (unspecified) @ Unknown
1591h	78 y F	colchicine rivaroxaban	1 2	1 2	A/C	Ingst	AR-D	3		
1592h	78 y F	acetaminophen	1	1	A	Ingst	Int-S	3	acetaminophen (apap)	32 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	99 mg/dL In Blood (unspecified) @ Unknown
		lorazepam sedative-hypnotic-anti-anxiety- antipsychotic, N.O.S.	3 4	3 4						
1593h	78 y M	acetaminophen	1	1	C	Ingst	Unt-M	3	acetaminophen (apap)	25 mcg/mL In Blood (unspecified) @ Unknown
1594h	78 y F	acetaminophen acetaminophen	1 1	1 1	C	Ingst	Int-M	1	acetaminophen (apap)	173 mcg/mL In Serum @ Unknown
									acetaminophen (apap)	200 mcg/mL In Serum @ Unknown
1595ai	79 y F	fentanyl (non-prescription) sertraline	1 2	1 2	U	Unk	Int-A	1		
1596h	79 y F	acetaminophen	1	1	U	Ingst	Int-U	3	acetaminophen (apap)	107 mcg/mL In Blood (unspecified) @ Unknown
1597h	79 y F	acetaminophen	1	1	U	Ingst	Unk	3	acetaminophen (apap)	63 mcg/mL In Serum @ Unknown
1598ha	80 y F	acetaminophen/hydrocodone	1	1	U	Ingst + Unk	Unk	1	acetaminophen (apap)	10.2 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen/hydrocodone	1	1					hydrocodone (free)	180 ng/mL In Blood (unspecified) @ Autopsy
		acetaminophen/hydrocodone	1	1					dihydrocodeine/hydrocodol (free)	40 ng/mL In Blood (unspecified) @ Autopsy
		acetaminophen/hydrocodone	1	1					hydrocodone (free)	420 ng/mL In Vitreous @ Autopsy
		acetaminophen/hydrocodone	1	1					dihydrocodeine/hydrocodol (free)	65 ng/mL In Vitreous @ Autopsy
		fentanyl (non-prescription)	2	2					fentanyl	11 ng/mL In Blood (unspecified) @ Autopsy
		fentanyl (non-prescription)	2	2					fentanyl	16 ng/mL In Vitreous @ Autopsy
		fentanyl (non-prescription)	2	2					fentanyl	54 ng/mL In Gastric (stomach content) @ Autopsy

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1599h	80 y F	acetaminophen/butalbital/caffeine	1	1	A	Ingst	Int-S	2	butalbital	10000 ng/mL In Urine (quantitative only) @ 2 d (pe)
		acetaminophen/butalbital/caffeine	1	1					acetaminophen (apap)	32 mcg/mL In Blood (unspecified) @ 3 h (pe)
		acetaminophen/butalbital/caffeine	1	1					acetaminophen (apap)	40 mcg/mL In Blood (unspecified) @ 10 m (pe)
		acetaminophen/butalbital/caffeine	1	1					acetaminophen (apap)	40 mcg/mL In Serum @ 10 m (pe)
		salicylate	2	2					salicylate	17.5 mg/dL In Blood (unspecified) @ 10 m (pe)
		salicylate	2	2					salicylate	23.7 mg/dL In Blood (unspecified) @ 2 d (pe)
		salicylate	2	2					salicylate	30.6 mg/dL In Blood (unspecified) @ 3 h (pe)
		salicylate	2	2					salicylate	7.2 mg/dL In Blood (unspecified) @ 3 d (pe)
		alprazolam	3	3						
1600h	80 y F	acetaminophen	1	1	A	Ingst	Int-M	1	acetaminophen (apap)	88 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen/oxycodone	2	2						
1601h	80 y M	acetaminophen	1	1	C	Ingst	Unt-T	2		
1602h	80 y F	acetaminophen/hydrocodone	1	1	A	Ingst + Par	Int-S	3	acetaminophen (apap)	36 mcg/mL In Blood (unspecified) @ 1 d (pe)
		acetaminophen/hydrocodone	1	1					acetaminophen (apap)	56 mcg/mL In Blood (unspecified) @ 1 h (pe)
		alprazolam	2	2						
		heparin	3	3						
1603h	80 y M	salicylate	1	1	C	Ingst	Int-S	1		
1604h	80 y M	acetaminophen	1	1	C	Ingst	Unt-T	3	acetaminophen (apap)	156 mcg/mL In Serum @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	167 mcg/mL In Serum @ Unknown
1605ph	80 y F	acetaminophen/hydrocodone	1	1	U	Ingst + Derm	Int-S	2		
		fentanyl (prescription) (TD)	2	2						
1606	80 y F	oxycodone (ER)	1	1	C	Ingst	Int-A	2		
		temazepam	2	2						
		acetaminophen	3	3						
1607	81 y F	acetaminophen	1	1	C	Ingst	Int-S	1		
		ethanol (beverage)	2	2						
1608ph	81 y F	acetaminophen/hydrocodone	1	1	U	Ingst	Int-S	2	acetaminophen (apap)	202 mcg/mL In Blood (unspecified) @ Unknown
1609ph	81 y M	acetaminophen/hydrocodone	1	1	A	Ingst	Int-S	3	acetaminophen (apap)	50.2 mcg/mL In Blood (unspecified) @ Unknown
		benzodiazepine, N.O.S.	2	2						
1610h	81 y M	acetaminophen	1	1	U	Ingst	Int-U	2		
		vitamins (multiple)/iron, N.O.S.	2	2						
1611h	81 y F	acetaminophen	1	1	U	Unk	Int-M	1	acetaminophen (apap)	82 mcg/mL In Serum @ Unknown
1612	82 y M	fentanyl (prescription) (TD)	1	1	C	Derm	AR-D	3		
1613h	82 y M	morphine	1	1	A	Ingst	Int-S	2		
		oxycodone	2	2						
		oral hypoglycemic (sulfonylurea), N.O.S.	3	3						
1614h	82 y F	acetaminophen	1	1	A/C	Ingst	Int-M	3	acetaminophen (apap)	27 mcg/mL In Blood (unspecified) @ 2 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	77 mcg/mL In Blood (unspecified) @ Unknown
1615h	82 y F	acetaminophen	1	1	C	Ingst	Int-U	2		
		metformin	2	2						
1616h	82 y F	acetaminophen	1	1	C	Ingst	Int-M	2	acetaminophen (apap)	19 mcg/mL In Blood (unspecified) @ Unknown
1617	82 y F	acetaminophen	1	1	C	Ingst	Int-A	2	acetaminophen (apap)	48.4 mcg/mL In Serum @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
[1618h]	82 y M				A	Par	Unt-T	1		
1619	82 y M	sumatriptan	1	1						
		acetaminophen	1	1	A	Ingst	Unk	2	acetaminophen (apap)	56 mcg/mL In Blood (unspecified) @ Unknown
1620h	82 y F	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	1075 mg/mL In Serum @ Unknown
1621h	83 y F	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	130 mcg/mL In Serum @ Unknown
		diphenhydramine	2	2						
		oxycodone	3	3						
1622	83 y M	tramadol	1	1	A/C	Ingst	Int-S	2		
1623	83 y F	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	87 mcg/dL In Serum @ Unknown
1624i	84 y F	oxycodone	1	1	A	Ingst	AR-D	2		
1625h	84 y M	acetaminophen	1	1	U	Ingst	Int-S	1	acetaminophen (apap)	163 mcg/mL In Blood (unspecified) @ 31 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	185.5 mcg/mL In Blood (unspecified) @ 27 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	294.9 mcg/mL In Blood (unspecified) @ 24 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	329.9 mcg/mL In Blood (unspecified) @ 20 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	357.2 mcg/mL In Blood (unspecified) @ 43 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	366.4 mcg/mL In Blood (unspecified) @ 18 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	384.3 mcg/mL In Blood (unspecified) @ 66 h (pe)
1626h	84 y F	acetaminophen/hydrocodone	1	1	U	Ingst	Unk	3		
1627ha	84 y F	tramadol	1	1	A/C	Ingst	Unk	1	tramadol	1700 ng/mL In Whole Blood @ Autopsy
		tramadol	1	1					o-desmethyiltramadol	450 ng/mL In Blood (unspecified) @ Autopsy
		gabapentin	2	2					gabapentin	19 mcg/mL In Blood (unspecified) @ Autopsy
		clonidine	3	3						
		clonazepam	4	4					7-aminoclonazepam	8.1 ng/mL In Blood (unspecified) @ Autopsy
1628ai	85 y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		methadone	3	3						
1629h	85 y F	acetaminophen	1	1	U	Ingst	Int-U	2	acetaminophen (apap)	601 mcg/mL In Blood (unspecified) @ Unknown
1630	85 y F	acetaminophen	1	1	U	Ingst	Int-S	2	acetaminophen (apap)	139 mg/mL In Serum @ Unknown
1631h	85 y M	acetaminophen	1	1	C	Ingst	Unt-T	2		
1632h	85 y F	acetaminophen	1	1	A	Ingst	Unk	2	acetaminophen (apap)	337 mcg/mL In Serum @ Unknown
1633h	86 y M	acetaminophen/diphenhydramine	1	1	A/C	Ingst	Unk	2	acetaminophen (apap)	319 mcg/mL In Blood (unspecified) @ Unknown
		tramadol	2	2						
1634ha	86 y M	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	706 mg/L In Plasma @ Unknown
1635h	86 y F	acetaminophen	1	1	C	Ingst	Unk	3	acetaminophen (apap)	13 mcg/mL In Serum @ Unknown
1636	87 y F	acetaminophen	1	1	A	Ingst	Int-S	1	acetaminophen (apap)	250 mcg/mL In Serum @ Unknown
1637h	87 y M	acetaminophen	1	1	C	Ingst	Unt-T	3	acetaminophen (apap)	13.4 mcg/mL In Serum @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	22.8 mcg/mL In Serum @ 4.5 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	7.9 mcg/mL In Serum @ 1 d (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1638h	88 y M	acetaminophen	1	1	C	Ingst	Unk	3		
1639ha	88 y F	salicylate	1	1	A	Ingst	Int-S	3	salicylate	54.6 mg/dL In Blood (unspecified) @ Unknown
		acetaminophen/salicylate	2	2					acetaminophen (apap)	283 mcg/mL In Blood (unspecified) @ Unknown
1640h	88 y M	acetaminophen	1	1	A	Ingst	Int-U	1	acetaminophen (apap)	195 mcg/mL In Blood (unspecified) @ 5 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	197 mcg/mL In Blood (unspecified) @ 9.5 h (pe)
		acetaminophen	1	1					acetaminophen (apap)	250 mcg/mL In Urine (quantitative only) @ 2 h (pe)
1641h	89 y F	acetaminophen	1	1	A/C	Ingst	Unt-T	1	acetaminophen (apap)	28.4 mcg/mL In Blood (unspecified) @ 20 h (pe)
1642h	90 y F	acetaminophen	1	1	A	Ingst	Unt-T	2	acetaminophen (apap)	16 mcg/mL In Serum @ Unknown
1643i	90 y M	oxycodone	1	1	A	Ingst	Int-S	2		
1644h	91 y F	acetaminophen	1	1	A	Ingst	Unk	1	acetaminophen (apap)	95 mcg/mL In Blood (unspecified) @ Unknown
1645h	92 y F	salicylate	1	1	A	Ingst	Int-S	1	salicylate	65 mg/dL In Blood (unspecified) @ 1.5 h (pe)
1646h	92 y F	salicylate	1	1	A/C	Ingst	Int-S	1	salicylate	105 mg/dL In Serum @ Unknown
1647h	93 y M	acetaminophen	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	418 mcg/mL In Serum @ Unknown
1648	94 y M	acetaminophen	1	1	C	Ingst	Unt-T	1	acetaminophen (apap)	507 mcg/mL In Blood (unspecified) @ Unknown
1649ph	9 m F	fentanyl (non-prescription) cocaine	1 2	1 2	A	Ingst + Unk	Unk	1		
1650i	10 m U	fentanyl (prescription) cocaine xylazine	1 2 3	1 2 3	A	Ingst	Unk	2		
1651p	11 m F	fentanyl (non-prescription) xylazine	1 2	1 2	A	Unk	Unt-G	1		
1652pha	14 m F	fentanyl (non-prescription)	1	1	A	Ingst	Unk	1		
1653pha	23 m M	morphine fentanyl (non-prescription)	1 2	1 2	A	Ingst	Unt-G	1		
1654ai	≤ 5 y F	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Oth-C	1		
1655ai	≤ 5 y M	fentanyl (non-prescription) methamphetamine	1 2	1 2	U	Unk	Unt-G	1		
1656ha	30+ y F	acetaminophen	1	1	A	Ingst + Unk	Int-S	1	acetaminophen (apap)	113 mg/L In Blood (unspecified) @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	117 mcg/mL In Serum @ Unknown
		acetaminophen	1	1					acetaminophen (apap)	13 mcg/mL In Serum @ 1 d (pe)
		acetaminophen	1	1					acetaminophen (apap)	35 mcg/mL In Serum @ 1 d (pe)
		amphetamine (hallucinogenic), n-ethyl pentylone	2	2					n-ethyl pentylone	24 ng/mL In Blood (unspecified) @ Unknown
		amphetamine (hallucinogenic), n-ethyl pentylone	2	2					n,n-dimethylpentylone	63 ng/mL In Serum @ Unknown
1657ph	30+ y M	fentanyl (non-prescription)	1	1	U	Unk	Int-A	2		
1658i	30+ y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1659i	40+ y F	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1660p	40+ y M	fentanyl (non-prescription) cocaine quinine	1 2 3	1 2 3	A	Unk	Unk	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1661i	50+ y F	heroin	1	1	A	Unk	Int-A	2		
		cocaine	2	2						
		fentanyl (prescription)	3	3						
1662i	50+ y M	opioid, N.O.S.	1	1	U	Inhal	Int-A	2		
1663i	60+ y M	opioid, N.O.S.	1	1	U	Unk	Int-A	2		
1664pi	80+ y F	acetaminophen/hydrocodone	1	1	A	Ingst	Int-S	1		
		ethanol (beverage)	2	2						
1665i	Unknown adult (≥ 20 yrs) M				A	Unk	Int-A	2		
		opioid, N.O.S.	1	1						
1666p	Unknown adult (≥ 20 yrs) M				A	Unk	Int-U	2		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
1667i	Unknown adult (≥ 20 yrs) M				A/C	Unk	Int-A	2		
		opioid, N.O.S.	1	1						
1668i	Unknown adult (≥ 20 yrs) M				A/C	Unk	Unk	2		
		opioid, N.O.S.	1	1						
1669i	Unknown adult (≥ 20 yrs) M				A/C	Inhal	Int-A	2		
		heroin	1	1						
1670i	Unknown adult (≥ 20 yrs) M				A/C	Unk	Int-A	2		
		opioid, N.O.S.	1	1						
1671i	Unknown adult (≥ 20 yrs) M				U	Unk	Int-A	2		
		opioid, N.O.S.	1	1						
1672ai	Unknown age M				U	Unk	Unt-G	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
1673ai	Unknown age M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
1674ai	Unknown age M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
1675ai	Unknown age M				U	Unk	Int-A	1		
		fentanyl (non-prescription)	1	1						
		methamphetamine	2	2						
		ethanol (beverage)	3	3						
See Also case 16, 20, 37, 39, 74, 75, 78, 79, 88, 91, 94, 97, 156, 157, 169, 284, 1684, 1690, 1692, 1694, 1701, 1706, 1717, 1725, 1731, 1732, 1736, 1749, 1756, 1761, 1765, 1772, 1775, 1776, 1778, 1782, 1783, 1784, 1791, 1800, 1804, 1823, 1831, 1834, 1846, 1867, 1874, 1875, 1881, 1882, 1893, 1895, 1902, 1912, 1920, 1923, 1931, 1932, 1933, 1939, 1948, 1951, 1956, 1976, 1977, 1978, 1987, 1991, 2009, 2010, 2029, 2048, 2049, 2052, 2055, 2056, 2072, 2077, 2079, 2081, 2087, 2106, 2122, 2128, 2129, 2138, 2143, 2150, 2153, 2155, 2156, 2161, 2164, 2175, 2180, 2188, 2189, 2191, 2193, 2196, 2200, 2201, 2203, 2212, 2213, 2218, 2224, 2225, 2230, 2232, 2233, 2246, 2254, 2258, 2266, 2267, 2269, 2271, 2273, 2274, 2278, 2286, 2289, 2290, 2299, 2301, 2305, 2309, 2317, 2330, 2335, 2339, 2343, 2344, 2346, 2348, 2357, 2371, 2377, 2386, 2399, 2402, 2425, 2426, 2427, 2443, 2448, 2460, 2479, 2501, 2521, 2522, 2532, 2534, 2569, 2588, 2594, 2622, 2627, 2635, 2649, 2650, 2651, 2653, 2655, 2662, 2668, 2669, 2684										
Anesthetics										
1676ph	17 y F	lidocaine	1	1	C	Derm	AR-D	3		
1677h	25 y M	nitrous oxide	1	1	A	Inhal	Int-A	2		
		ethanol (beverage)	2	2						
1678pai	30 y M	sevoflurane	1	1	U	Inhal	Int-A	1		
		propofol	2	2						
1679ph	32 y F	nitrous oxide	1	1	A	Oth	Int-A	2		
1680ph	33 y F				A	Par	AR-D	2		
		lidocaine	1	1						
1681	42 y M				A	Inhal	Int-A	2		
		nitrous oxide	1	1						
		nitrites (amyl-butyl)	2	2						
		paint (aerosol)	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1682	65 y M	ketamine	1	1	A	Ingst	Int-A	2	ketamine	980 ng/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	161 mg/dL In Blood (unspecified) @ Unknown
1683	69 y M	lidocaine	1	1	A	Par	AR-D	3		
See Also case 608, 1800, 1845, 2334, 2379, 2649										
Anticoagulants										
1684h	66 y F	rivaroxaban	1	1	A/C	Ingst	Int-S	3		
		acetaminophen	2	2					acetaminophen (apap)	12.7 mcg/mL In Blood (unspecified) @ 13 h (pe)
		acetaminophen	2	2					acetaminophen (apap)	47.8 mcg/mL In Blood (unspecified) @ Unknown
1685h	82 y F	apixaban	1	1	A/C	Ingst	Unt-G	2		
See Also case 579, 959, 1591, 1602, 1775, 1785, 1806, 1854, 1894, 1910, 1973, 1977, 1987, 2007, 2045, 2084, 2102, 2106, 2112, 2113, 2128, 2213, 2218, 2268										
Anticonvulsants										
[1686ha]	25 y M	cenobamate	1	1	A/C	Ingst	Int-S	2	cenobamate	48 ng/mL In Blood (unspecified) @ Unknown
		clobazam	2	2					clobazam	470 ng/mL In Blood (unspecified) @ Unknown
1687p	28 y F	gabapentin	1	1	A	Ingst	Int-S	2		
		quetiapine	2	2						
		buspirone	3	3						
1688ph	31 y M	valproic acid (ER)	1	1	U	Ingst	Int-S	2	valproic acid	167.2 mcg/mL In Serum @ Unknown
		lacosamide	2	2						
		ethanol (beverage)	3	3					ethanol	209 mg/dL In Serum @ Unknown
1689	32 y M	valproic acid	1	1	C	Ingst	Int-S	3		
		carbamazepine	2	2						
1690	33 y F	valproic acid (ER)	1	1	A	Ingst	Int-S	2		
		benztropine	2	2						
		ibuprofen	3	3						
1691ph	38 y F	lamotrigine	1	1	A	Ingst	Int-S	1	lamotrigine	140 mg/L In Blood (unspecified) @ 4 h (pe)
		lacosamide	2	2					lacosamide	24 mg/L In Blood (unspecified) @ 4 h (pe)
		diazepam	3	3					diazepam	0.69 mg/L In Serum @ 4 h (pe)
		diazepam	3	3					nordiazepam	0.74 mg/L In Serum @ 4 h (pe)
1692	45 y F	gabapentin	1	1	A	Ingst	Int-S	2		
		buprenorphine/naloxone (sublingual film)	2	2						
		hydroxyzine	3	3						
1693h	60 y F	gabapentin	1	1	A	Ingst	Int-S	2		
		ethanol (beverage)	2	2						
		quetiapine	3	3						
1694h	60 y F	primidone	1	1	U	Ingst	Int-S	2		
		acetaminophen/diphenhydramine	2	2					acetaminophen (apap)	3.7 mcg/mL In Blood (unspecified) @ Unknown
		salicylate	3	3					salicylate	6.3 mg/dL In Blood (unspecified) @ Unknown
1695ha	80 y M	gabapentin	1	1	A	Ingst	Int-S	3	gabapentin	11 mcg/mL In Whole Blood @ Unknown
		gabapentin	1	1					gabapentin	7.7 mcg/mL In Blood (unspecified) @ Autopsy
		ethanol (beverage)	2	2					ethanol	172 mg/dL In Plasma @ Unknown
		ethanol (beverage)	2	2					ethanol	20 mg/dL In Blood (unspecified) @ Autopsy
1696ha	85 y M	gabapentin	1	1	A/C	Ingst	Unk	2		
		metformin	2	2						
See Also case 68, 94, 289, 333, 491, 500, 550, 605, 610, 632, 643, 694, 760, 845, 852, 859, 895, 959, 1008, 1027, 1050, 1077, 1081, 1105, 1120, 1204, 1205, 1211, 1286, 1291, 1333, 1414, 1431, 1470, 1523, 1533, 1586, 1587, 1627, 1707, 1721, 1723, 1724, 1731, 1732, 1744, 1755, 1765, 1768, 1771, 1772, 1783, 1790, 1792, 1793, 1818, 1825, 1897, 1898, 1899, 1901, 1902, 1910, 1913, 1927, 1932, 1956, 1969, 1973, 1988, 1996, 2009, 2019, 2036, 2045, 2049, 2063, 2070, 2079, 2106, 2114, 2161, 2168, 2183, 2189, 2203, 2229, 2230, 2243, 2248, 2250, 2254, 2256, 2262, 2263, 2270, 2272, 2275, 2277, 2282, 2286, 2300, 2301, 2334, 2402, 2569, 2591, 2613, 2665										

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
Antidepressants										
1697ha	15 y F	bupropion (ER)	1	1	A/C	Ingst	Int-S	1	bupropion	5500ng/mL In Blood (unspecified) @ Autopsy
		escitalopram	3	2					aripiprazole	180 ng/mL In Blood (unspecified) @ Autopsy
		escitalopram	3	2					citalopram	3.1 mg/L In Blood (unspecified) @ Autopsy
		aripiprazole	4	3					fluoxetine	830 ng/mL In Blood (unspecified) @ Autopsy
		fluoxetine	2	4						
1698h	15 y M	desipramine	1	1	A/C	Ingst	Int-S	2		
		lithium	2	2					lithium	1.6 mmol/L In Serum @ 5 m (pe)
1699ph	15 y F	bupropion	1	1	U	Ingst	Int-S	1		
1700h	16 y M	amitriptyline	1	1	A/C	Ingst	Int-S	1	nortriptyline	1900ng/mL In Blood (unspecified) @ Unknown
		amitriptyline	1	1					amitriptyline	4500ng/mL In Blood (unspecified) @ Unknown
1701ph	18 y F	venlafaxine (ER)	1	1	U	Ingst	Int-S	1		
		atomoxetine	2	2						
		acetaminophen	3	3						
1702h	19 y M	venlafaxine (ER)	1	1	A/C	Ingst	Int-S	2		
		ethanol (beverage)	2	2						
1703	19 y F	bupropion	1	1	A/C	Ingst	Int-S	2		
1704h	19 y F	amitriptyline	1	1	A	Ingst	Int-S	1		
1705hi	20 y M	amitriptyline	1	1	A	Ingst	Int-S	1		
		bupropion	2	2						
		hydrochlorothiazide	3	3						
1706a	20 y M	bupropion	1	1	A/C	Ingst	Int-S	2		
		escitalopram	2	2						
		ethanol (beverage)	3	3					ethanol	147 mg/dL In Blood (unspecified) @ Unknown
		acetaminophen	4	4					acetaminophen (apap)	75 mcg/mL In Blood (unspecified) @ Unknown
[1707p]	20 y F	tianeptine	1	1	A	Ingst	Int-U	2	tianeptine	1900ng/mL In Blood (unspecified) @ Autopsy
		gabapentin	2	2					gabapentin	32 mcg/mL In Blood (unspecified) @ Autopsy
1708ph	20 y M	bupropion (ER)	1	1	A	Ingst	Int-S	2		
		escitalopram	2	2						
		mirtazapine	3	3						
		amitriptyline	4	4						
		propranolol	5	5						
		marijuana	6	6						
		cocaine	7	7						
		amphetamine (hallucinogenic), 3,4-methylenedioxymethamphetamine (MDMA)	8	8						
1709h	21 y F	doxepin	1	1	U	Ingst	Int-S	2		
1710ha	21 y M	bupropion	1	1	A/C	Ingst	Int-S	1	bupropion	0.95 mg/L In Blood (unspecified) @ 4 h (pe)
		bupropion	1	1					hydroxybupropion	4.1 mg/L In Blood (unspecified) @ 4 h (pe)
		bupropion	1	1					bupropion	40 mg/kg In Liver @ Autopsy
		bupropion	1	1					hydroxybupropion	67 mg/kg In Liver @ Autopsy
		quetiapine	2	2						
1711	21 y F	bupropion	1	1	A/C	Ingst	Int-S	1		
1712ph	22 y F	bupropion	1	1	A/C	Ingst	Int-S	2		
		escitalopram	2	2						
1713ph	23 y F	bupropion	1	1	A/C	Ingst	Int-S	2		
		vilazodone	2	2						
1714h	23 y F	bupropion	1	1	A/C	Ingst	Int-S	1	bupropion	1.9 mg/L In Blood (unspecified) @ Autopsy
		olanzapine	2	2						
		hydroxyzine	3	3					hydroxyzine	0.058 mg/L In Blood (unspecified) @ Autopsy

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1715h	23 y F	bupropion (ER)	1	1	A/C	Ingst	Int-S	1		
		escitalopram	2	2						
1716pha	24 y F	bupropion	1	1	A	Ingst	Int-S	1		
		bupropion	1	1					bupropion 150 mcg/mL In Blood (unspecified) @ Autopsy	
									hydroxybupropion 1600 ng/mL In Blood (unspecified) @ Autopsy	
1717h	24 y F	bupropion (ER)	1	1	A/C	Ingst	Int-S	2		
		escitalopram	2	2						
		acetaminophen/diphenhydramine	3	3					acetaminophen (apap) 116.9 mcg/mL In Serum @ 4.25 h (pe)	
		acetaminophen/diphenhydramine	3	3					acetaminophen (apap) 133.2 mcg/mL In Serum @ 7 h (pe)	
		acetaminophen/diphenhydramine	3	3					acetaminophen (apap) 48 mcg/mL In Serum @ 21.5 h (pe)	
		ethanol (beverage)	4	4					ethanol 266 mg/dL In Serum @ 1.25 h (pe)	
1718	26 y F	bupropion	1	1	A	Ingst	Int-S	1		
1719h	26 y F	citalopram	1	1	A/C	Ingst	Int-S	2		
		quetiapine	2	2						
		benztropine	3	3						
		buspirone	4	4						
		eszopiclone	5	5						
1720ph	26 y M	bupropion	1	1	A	Ingst	Int-S	2		
		duloxetine (ER)	2	2						
		ethanol (beverage)	3	3						
1721ha	27 y F	bupropion	1	1	A/C	Ingst	Int-S	1		
		bupropion	1	1					hydroxybupropion 2800 ng/mL In Blood (unspecified) @ Autopsy	
									bupropion 7200 ng/mL In Blood (unspecified) @ Autopsy	
		sertraline	2	2					sertraline 210 ng/mL In Blood (unspecified) @ Autopsy	
		gabapentin	3	3					gabapentin 2.8 mcg/mL In Blood (unspecified) @ Autopsy	
1722h	27 y F	bupropion (ER)	1	1	U	Ingst	Int-S	2		
		venlafaxine (ER)	2	2						
		naltrexone	3	3						
1723ha	28 y F	venlafaxine	1	1	A/C	Ingst	Int-S	2		
		venlafaxine	1	1					o-desmethylvenlafaxine 0.501 mg/L In Serum @ Unknown	
									venlafaxine 1.44 mg/L In Serum @ Unknown	
		gabapentin	2	2					gabapentin 26.9 mg/L In Serum @ Unknown	
1724h	29 y F	bupropion	1	1	A/C	Ingst	Int-S	2		
		propranolol	2	2						
		fluoxetine	5	3						
		prazosin	3	3						
		topiramate	4	3						
1725h	29 y F	venlafaxine	1	1	A/C	Ingst	Int-S	2		
		acetaminophen	2	2					acetaminophen (apap) 30 mcg/mL In Blood (unspecified) @ Unknown	
[1726ha]	29 y F	bupropion	1	1	A/C	Ingst	Int-S	1		
		bupropion	1	1					hydroxybupropion 1974 ng/mL In Serum @ 6 h (pe)	
									bupropion 665 ng/mL In Serum @ 6 h (pe)	
1727ha	29 y M	bupropion	1	1	A	Ingst	Int-S	1		
		bupropion	1	1					hydroxybupropion 1900 ng/mL In Blood (unspecified) @ 5.5 h (pe)	
		bupropion	1	1					bupropion 2200 ng/mL In Blood (unspecified) @ 10 h (pe)	
		bupropion	1	1					bupropion 2400 ng/mL In Blood (unspecified) @ 5.5 h (pe)	
		bupropion	1	1					hydroxybupropion 3100 ng/mL In Blood (unspecified) @ 10 h (pe)	
		ethanol (beverage)	2	2					ethanol 138 mg/dL In Blood (unspecified) @ 5.5 h (pe)	
		ethanol (beverage)	2	2					ethanol 53 mg/dL In Blood (unspecified) @ 10 h (pe)	
1728	29 y F	amitriptyline	1	1	A	Ingst	Int-S	2		
1729pha	31 y F	bupropion (ER)	1	1	A/C	Ingst	Int-S	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1730ph	31 y M									
[1731ph]	32 y F-Pregnant	amitriptyline	1	1	A	Ingst	Int-S	2		
		bupropion	1	1					hydroxybupropion	1100mcg/L In Serum @ 1.5 h (pe)
		bupropion	1	1					hydroxybupropion	2700mcg/L In Blood (unspecified) @ Autopsy
		bupropion	1	1					bupropion	840mcg/L In Blood (unspecified) @ Autopsy
		gabapentin	2	2					gabapentin	6600mcg/L In Blood (unspecified) @ Unknown
		alprazolam	3	3					alprazolam	15 mcg/L In Blood (unspecified) @ Unknown
		oxycodone	4	4					oxycodone	2.4 mcg/L In Blood (unspecified) @ Unknown
1732ha	32 y F				U	Ingst	Int-S	1		
		bupropion	1	1					bupropion	1000ng/mL In Blood (unspecified) @ Unknown
		bupropion	1	1					hydroxybupropion	1400ng/mL In Blood (unspecified) @ Unknown
		topiramate	2	2					topiramate	3500ng/mL In Blood (unspecified) @ Unknown
		citalopram	3	3					citalopram	150 ng/mL In Blood (unspecified) @ Unknown
		oxycodone	4	4					oxycodone (free)	11 ng/mL In Blood (unspecified) @ Unknown
1733pha	33 y F-Pregnant				U	Ingst	Int-S	1		
		bupropion	1	1					hydroxybupropion	3700ng/mL In Blood (unspecified) @ Unknown
		bupropion	1	1					bupropion	6900ng/mL In Blood (unspecified) @ Unknown
		venlafaxine	2	2					venlafaxine	120 ng/mL In Blood (unspecified) @ Unknown
		venlafaxine	2	2					o-desmethylvenlafaxine	400 ng/mL In Blood (unspecified) @ Unknown
1734ha	33 y M				A/C	Ingst	Int-S	1		
		bupropion	1	1					bupropion	2.2 mg/L In Blood (unspecified) @ Autopsy
		bupropion	1	1					hydroxybupropion	2.4 mg/L In Blood (unspecified) @ Autopsy
		propranolol	3	1						
		venlafaxine	2	1					o-desmethylvenlafaxine	0.62 mg/L In Blood (unspecified) @ Autopsy
		venlafaxine	2	1					venlafaxine	20 mg/L In Blood (unspecified) @ Autopsy
		perphenazine	4	2					perphenazine	0.87 mg/L In Blood (unspecified) @ Autopsy
1735p	33 y F				A	Ingst	Int-S	2		
		citalopram	1	1						
		diphenhydramine	2	2						
1736	34 y F				A	Ingst	Int-S	2		
		venlafaxine (ER)	1	1						
		clonazepam	2	2						
		hypnotic (nonbenzodiazepine), N.O.S.	3	3						
		diphenhydramine/ibuprofen	4	4						
1737pha	34 y M				U	Ingst	Int-S	2		
		doxepin	1	1						
		paroxetine	2	2						
1738ph	35 y F				A/C	Ingst	Int-S	2		
		doxepin	1	1						
		lithium	2	2						
		metformin (ER)	3	3						
		buspirone	4	4						
		hydroxyzine	5	5						
		ethanol (beverage)	6	6					ethanol	241 mg/dL In Blood (unspecified) @ Unknown
1739h	36 y F				A/C	Ingst	Int-S	1		
		amitriptyline	1	1						
		ethanol (beverage)	2	2						
1740h	36 y F				A/C	Ingst	Int-S	1		
		amitriptyline	1	1						
		ethanol (beverage)	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1741ha	37 y F	bupropion	1	1	A	Ingst	Int-S	1	bupropion	686 ng/mL In Blood (unspecified) @ Unknown
		citalopram	2	2					citalopram	3825 ng/mL In Blood (unspecified) @ Unknown
		beta blocker, N.O.S.	3	3					propranolol	2076 mg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	4	4					ethanol	263 mg/dL In Blood (unspecified) @ Unknown
1742p	37 y F	doxepin	1	1	U	Ingst	Int-S	2		
		hydroxyzine	2	2						
		brexpiprazole	3	3						
1743ai	38 y F	bupropion	1	1	U	Unk	Int-S	1		
		aripiprazole	2	2						
		sertraline	3	3						
1744ph	38 y M	bupropion	1	1	U	Ingst	Int-S	3		
		lamotrigine	2	2						
		sertraline	3	3						
		lorazepam	4	4						
		ethanol (beverage)	5	5					ethanol	71 mg/dL In Blood (unspecified) @ Unknown
1745ph	38 y M	trazodone	1	1	A/C	Ingst	Int-S	2		
1746p	39 y M	bupropion	1	1	A	Ingst+Inhal	Int-S	2		
		drug, N.O.S.	2	2						
		cocaine	3	3						
1747	39 y M	lithium	1	1	C	Ingst	AR-D	3		
[1748ha]	40 y F	bupropion (ER)	1	1	A/C	Ingst	Int-S	1	bupropion	1881 ng/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	17.4 mg/dL In Blood (unspecified) @ Unknown
1749ha	41 y M	bupropion	1	1	A	Ingst	Int-S	1	bupropion	1900 ng/mL In Blood (unspecified) @ Autopsy
		bupropion	1	1					hydroxybupropion	1900 ng/mL In Blood (unspecified) @ Autopsy
		tramadol	2	2					o-desmethyiltramadol	180 ng/mL In Blood (unspecified) @ Autopsy
		tramadol	2	2					tramadol	5400 ng/mL In Blood (unspecified) @ Autopsy
		methamphetamine	3	3					amphetamine	100 ng/mL In Blood (unspecified) @ Autopsy
		methamphetamine	3	3					methamphetamine	920 ng/mL In Blood (unspecified) @ Autopsy
1750	41 y F	bupropion	1	1	A/C	Ingst	Int-S	2		
		bupropion (ER)	2	2						
1751ph	41 y M	bupropion	2	1	U	Unk	Unk	2	benzoylcognine	1900 mcg/L In Blood (unspecified) @ Unknown
1752i	42 y M	cocaine	1	1	U	Unk	Int-S	2		
		amitriptyline	1	1						
		cyclobenzaprine	2	2						
		quetiapine	3	3						
1753pha	44 y F	doxepin	1	1	A/C	Ingst	Int-S	2		
1754ha	45 y F	escitalopram	1	1	A/C	Ingst	Int-S	2		
		trazodone	2	2						
		ethanol (beverage)	3	3					ethanol	170 mg/dL In Blood (unspecified) @ Unknown
1755ph	45 y F	eszopiclone	4	4	U	Ingst	Int-U	2		
		fluoxetine	1	1					norfluoxetine	1800 ng/mL In Blood (unspecified) @ Autopsy
		fluoxetine	1	1					fluoxetine	2200 ng/mL In Blood (unspecified) @ Autopsy
		lamotrigine (ER)	2	2					lamotrigine	4.1 mcg/mL In Blood (unspecified) @ Autopsy
		quetiapine	3	3						
		topiramate (ER)	4	4					topiramate	1100 ng/mL In Blood (unspecified) @ Autopsy

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1756pha	46 y F	bupropion	1	1	U	Ingst	Int-S	1	bupropion 20 mg/kg In Liver @ Autopsy	
		bupropion	1	1					bupropion 3.2 mg/L In Blood (unspecified) @ Autopsy	
		bupropion	1	1					hydroxybupropion 30 mg/kg In Liver @ Autopsy	
		bupropion	1	1					hydroxybupropion 6.1 mg/L In Blood (unspecified) @ Autopsy	
		diphenhydramine	2	2					diphenhydramine 0.77 mg/L In Blood (unspecified) @ Autopsy	
		diphenhydramine	2	2					diphenhydramine 12 mg/kg In Liver @ Autopsy	
		tramadol	3	3					o-desmethyltramadol 0.46 mg/L In Blood (unspecified) @ Autopsy	
		tramadol	3	3					o-desmethyltramadol 1.2 mg/kg In Liver @ Autopsy	
		tramadol	3	3					tramadol 3.4 mg/kg In Liver @ Autopsy	
		tramadol	3	3					tramadol 3.4 mg/L In Blood (unspecified) @ Autopsy	
		cyclobenzaprine	4	4					cyclobenzaprine 0.15 mg/L In Blood (unspecified) @ Autopsy	
		cyclobenzaprine	4	4					cyclobenzaprine 4.1 mg/kg In Liver @ Autopsy	
		dextromethorphan	5	5					dextromethorphan 0.78 mg/kg In Liver @ Autopsy	
1757h	46 y F	lithium	1	1	A/C	Ingst	Int-S	2		
1758a	47 y M	bupropion (ER) ethanol (beverage)	1 2	1 2	A/C	Ingst	Int-S	1		
1759h	48 y M	bupropion (ER)	1	1	A/C	Ingst	Int-S	3		
1760h	48 y F	bupropion (ER) ethanol (beverage)	1 2	1 2	A	Ingst	Int-S	2		
1761ph	48 y F	bupropion (ER) baclofen acetaminophen/hydrocodone	1 2 3	1 2 3	C	Ingst	Int-S	2		
1762ha	48 y M	amitriptyline	1	1	A	Ingst	Int-S	1	amitriptyline 5700 ng/mL In Blood (unspecified) @ 5 m (pe)	
		amitriptyline	1	1					nortriptyline 890 ng/mL In Plasma @ 5 m (pe)	
		ethanol (beverage)	2	2					ethanol 64 mg/dL In Serum @ 5 m (pe)	
		bupropion	3	3					bupropion 48 ng/mL In Blood (unspecified) @ 5 m (pe)	
		bupropion	3	3					hydroxybupropion 79 ng/mL In Blood (unspecified) @ 5 m (pe)	
		amphetamine	4	4					amphetamine 79 ng/mL In Plasma @ 5 m (pe)	
1763ph	48 y F	doxepin ethanol (beverage)	1 2	1 2	A	Ingst	Int-S	2		ethanol 142 mg/dL In Serum @ Unknown
1764h	49 y F	trazodone aripiprazole atorvastatin	1 2 3	1 2 3	A/C	Ingst	Int-S	3		
1765p	52 y F	amitriptyline tizanidine diphenhydramine tramadol gabapentin	1 4 3 2 5	1 2 3 4 5	U	Ingst	Int-S	2		
1766h	52 y F	venlafaxine (ER) ethanol (beverage)	1 2	1 2	A/C	Ingst	Int-S	2		ethanol 49 mg/dL In Blood (unspecified) @ Unknown
1767ai	53 y M	amitriptyline	1	1	U	Unk	Int-A	1		
1768ai	54 y M	paroxetine trazodone gabapentin	1 2 3	1 2 3	U	Unk	Unk	3		
1769h	56 y F	bupropion	1	1	A	Ingst	Int-S	2		
1770pha	56 y F	bupropion	1	1	U	Ingst	Int-S	1	hydroxybupropion 11000 ng/mL In Serum @ Unknown	
		bupropion	1	1					bupropion 2200 ng/mL In Serum @ Unknown	

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1771ha	57 y F	mirtazapine	2	2					mirtazapine	320 ng/mL In Serum @ Unknown
		propranolol	3	3					propranolol	20 ng/mL In Serum @ Unknown
		aripiprazole	4	4					aripiprazole	190 ng/mL In Serum @ Unknown
		lithium	1	1	A/C	Ingst + Unk	Int-S	1	lithium	9.7 mEq/L In Blood (unspecified) @ Unknown
		clonidine	2	2					clonidine	10 ng/mL In Blood (unspecified) @ Autopsy
		clonazepam	3	3					clonazepam	12 ng/mL In Serum @ Autopsy
		clonazepam	3	3					7-aminoclonazepam	160 ng/mL In Serum @ Autopsy
		clonazepam	3	3					lorazepam	240 ng/mL In Urine (quantitative only) @ Autopsy
		clonazepam	3	3					7-aminoclonazepam	490 ng/mL In Urine (quantitative only) @ Autopsy
		pregabalin	4	4						
		cetirizine	5	5						
		fluoxetine	6	6					fluoxetine	120 ng/mL In Blood (unspecified) @ Autopsy
		fluoxetine	6	6					norfluoxetine	400 ng/mL In Blood (unspecified) @ Autopsy
1772h	57 y M	amitriptyline	1	1	A/C	Ingst	Int-S	3		
		amlodipine	2	2						
		metoprolol	3	3						
		ethanol (beverage)	4	4					ethanol	65 mg/dL In Blood (unspecified) @ Unknown
		venlafaxine	5	4						
		hydroxyzine	6	5						
		diazepam	7	6						
		acetaminophen/hydrocodone	8	7						
		risperidone	9	8						
		tamsulosin	10	9						
		ondansetron	11	10						
		oxcarbazepine	12	11						
		rosuvastatin	13	12						
		valsartan	14	13						
		omeprazole	15	14						
		ibuprofen	16	15						
1773p	57 y F	trazodone	1	1	A/C	Ingst	Int-S	2		
		ethanol (beverage)	2	2						
1774h	58 y F	trazodone	1	1	U	Ingst + Unk	Unk	3		
		ethanol (beverage)	2	2						
		drug, N.O.S.	3	3						
1775h	58 y F	doxepin	1	1	A/C	Ingst	Int-S	1		
		acetaminophen	2	2					acetaminophen (apap)	600 mcg/mL In Blood (unspecified) @ Unknown
		atenolol	3	3						
		antiplatelet drug, N.O.S.	4	4						
		naproxen	5	5						
		ethanol (beverage)	6	6						
1776p	58 y M	trazodone	1	1	A/C	Ingst	Int-S	2	acetaminophen (apap)	78 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	2	2						
1777pha	60 y F	amitriptyline	1	1	A	Ingst	Int-S	1		
		venlafaxine	2	2						
		ethanol (beverage)	3	3					ethanol	80 mg/dL In Blood (unspecified) @ Unknown
1778h	60 y F	trazodone	1	1	A	Ingst	Int-S	2		
		duloxetine (ER)	2	2						
		acetaminophen	3	3					acetaminophen (apap)	31 mcg/mL In Serum @ Unknown
1779p	60 y F	amitriptyline	1	1	A	Ingst	Int-S	2		
1780h	60 y F	nortriptyline	1	1	A/C	Ingst	Int-S	2		
1781h	60 y F	trazodone	1	1	A/C	Ingst	Int-S	2		
		clonazepam	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1782	61 y F	bupropion (ER)	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	31 mcg/mL In Blood (unspecified) @ Unknown
1783p	62 y F	acetaminophen	2	2	U	Ingst	Int-S	1		
		trazodone	1	1						
		carbamazepine	2	2						
		acetaminophen/oxycodone	3	3					acetaminophen (apap)	65 mcg/mL In Blood (unspecified) @ Unknown
		duloxetine (ER)	4	4						
		escitalopram	5	5						
		doxycycline	6	6						
		sulfamethoxazole/trimethoprim	7	7						
		amoxicillin/clavulanic acid	8	8						
		chlorthalidone	9	9						
		prednisone	10	10						
		pantoprazole	11	11						
1784h	62 y F	trazodone	1	1	U	Ingst	Int-S	2		
		alprazolam	2	2						
		escitalopram	3	3						
		citalopram	4	4						
		ibuprofen	5	5						
		diclofenac	6	6						
		acetaminophen/oxycodone	7	7						
		tizanidine	8	8						
1785	62 y F	amitriptyline	1	1	A	Ingst	Int-S	2		
		warfarin	2	2						
		benazepril	3	3						
1786h	64 y M	escitalopram	1	1	C	Ingst	AR-D	3		
		cough and cold preparation, N.O.S.	2	2						
1787	66 y M	bupropion	1	1	A/C	Ingst + Aspir	Int-S	2		
1788ha	67 y F	bupropion (ER)	1	1	A/C	Ingst	Int-S	1		
		bupropion (ER)	1	1					bupropion	1200 ng/mL In Blood (unspecified) @ Autopsy
		venlafaxine	2	2					hydroxybupropion	2800 ng/mL In Blood (unspecified) @ Autopsy
		venlafaxine	2	2					venlafaxine	520 ng/mL In Blood (unspecified) @ Autopsy
		venlafaxine	2	2					o-desmethylvenlafaxine	91 ng/mL In Blood (unspecified) @ Autopsy
1789	68 y M	fluoxetine	1	1	A/C	Ingst + Unk	Int-S	2		
		hydroxyzine	2	2						
		drug, N.O.S.	3	3						
1790pha	70 y M	amitriptyline	1	1	U	Ingst	Int-S	1		
		amitriptyline	1	1					nortriptyline	0.065 mg/L In Blood (unspecified) @ Unknown
		gabapentin	2	2					amitriptyline	0.454 mg/L In Blood (unspecified) @ Unknown
		clonazepam	3	3						
1791ha	71 y F	bupropion	1	1	A/C	Ingst	Int-S	1		
		bupropion	1	1					hydroxybupropion	1500 ng/mL In Blood (unspecified) @ Unknown
		acetaminophen/codeine	2	2					bupropion	1800 ng/mL In Blood (unspecified) @ Unknown
		acetaminophen/codeine	2	2					acetaminophen (apap)	20.6 mcg/mL In Blood (unspecified) @ Unknown
		buspirone	3	3					codeine (free)	900 ng/mL In Blood (unspecified) @ Unknown
		ibuprofen	4	4						
1792	72 y F	fluoxetine	1	1	A	Ingst	Int-S	3		
		quetiapine	2	2						
		lamotrigine	3	3						
		trazodone	4	4						
1793	72 y M	escitalopram	1	1	A	Ingst	Unt-T	3		
		gabapentin	2	2						
1794	72 y F	doxepine	1	1	A/C	Ingst	Int-S	1		
		mirtazapine	2	2						
		hydroxyzine	3	3						
1795h	72 y F	fluoxetine	1	1	A	Ingst	Int-S	3		
		clonazepam	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1796h	73 y F	bupropion	1	1	A/C	Ingst	Int-S	1	bupropion	100 mcg/mL In Blood (unspecified) @ 5 m (pe)
		bupropion	1	1					hydroxybupropion	1000 mcg/L In Blood (unspecified) @ 5 m (pe)
		duloxetine (ER)	2	2					duloxetine	72 mcg/L In Blood (unspecified) @ Unknown
		lurasidone	3	3						
		ethanol (beverage)	4	4					ethanol	0.023 g/dL In Blood (unspecified) @ Unknown
1797h	73 y F	lithium	1	1	C	Ingst	AR-D	3	lithium	1.9 mmol/L In Serum @ 1 d (pe)
		lithium	1	1					lithium	2.2 mmol/L In Serum @ Unknown
1798h	73 y M	sertraline	1	1	A/C	Ingst	Int-S	2		
1799h	73 y F	amitriptyline	1	1	A/C	Ingst	Int-S	2		
1800ha	74 y F	trazodone	1	1	U	Ingst	Int-S	1	trazodone	0.24 ng/mL In Serum @ Autopsy
		fentanyl (prescription)	2	2					norfentanyl	1.2 ng/mL In Serum @ Autopsy
		fentanyl (prescription)	2	2					fentanyl	3.3 ng/mL In Serum @ Autopsy
		ketamine	3	3					ketamine	2000 ng/mL In Serum @ Autopsy
		ketamine	3	3					norketamine	450 ng/mL In Serum @ Autopsy
1801ha	76 y F	bupropion	2	1	U	Ingst	Int-S	1	bupropion	923 ng/mL In Serum @ Unknown
		diltiazem	1	2						
		losartan	3	3						
		hydrochlorothiazide	4	4						
		hydroxyzine	5	5						
1802ph	76 y F	trazodone	1	1	A/C	Ingst	Int-S	2		
		lorazepam	2	2						
		fluoxetine	3	3						
		melatonin	4	4						
1803	78 y F	sertraline	1	1	A/C	Ingst	Int-S	2		
1804h	82 y F	lithium (ER)	1	1	A/C	Ingst	Unt-G	2	lithium	3.2 mEq/L In Serum @ Unknown
		salicylate (EC)	2	2						
		levothyroxine	3	3						
		carbidopa/levodopa	4	4						
1805ha	83 y F	doxepin	1	1	A/C	Ingst	Int-S	3		
		trazodone	2	2						
		prazosin	3	3						
		ethanol (beverage)	4	4					ethanol	50 mg/dL In Serum @ Unknown
1806h	87 y M	bupropion (ER)	1	1	A	Ingst	Int-S	2		
		mirtazapine	2	2						
		amiodarone	3	3						
		apixaban	4	4						
		levothyroxine	5	5						
1807	90 y F	sertraline	1	1	A	Ingst	Int-S	3		
1808h	92 y F	trazodone	1	1	A	Ingst	Unt-G	3		
		diphenhydramine	2	2						
1809h	94 y F	bupropion	1	1	A	Ingst	Unt-T	2		
		duloxetine (ER)	2	2						
		naltrexone	3	3						
1810pa	30+ y M	bupropion	1	1	U	Ingst	Int-S	3		
See Also case 33, 54, 68, 100, 115, 125, 156, 176, 276, 284, 336, 344, 350, 418, 523, 555, 560, 567, 602, 606, 628, 632, 664, 675, 677, 700, 839, 873, 895, 968, 1017, 1050, 1064, 1073, 1079, 1083, 1100, 1103, 1120, 1136, 1171, 1208, 1209, 1211, 1222, 1229, 1233, 1235, 1291, 1368, 1374, 1399, 1431, 1527, 1544, 1551, 1579, 1588, 1595, 1813, 1818, 1821, 1839, 1841, 1851, 1852, 1866, 1869, 1875, 1884, 1886, 1891, 1892, 1895, 1896, 1897, 1900, 1901, 1907, 1910, 1913, 1915, 1924, 1926, 1928, 1929, 1934, 1948, 1949, 1953, 1954, 1956, 1957, 1958, 1961, 1962, 1963, 1967, 1970, 1975, 1976, 1978, 1988, 1990, 1998, 2006, 2008, 2011, 2016, 2028, 2041, 2049, 2053, 2058, 2059, 2081, 2102, 2114, 2132, 2137, 2138, 2142, 2154, 2168, 2183, 2188, 2189, 2191, 2203, 2223, 2227, 2230, 2231, 2242, 2247, 2249, 2254, 2257, 2264, 2277, 2282, 2296, 2301, 2312, 2326, 2347, 2390, 2402, 2412, 2464, 2477, 2501, 2521, 2551, 2613										
Antihistamines										
[1811pha]	13 y M	diphenhydramine	1	1	A	Ingst	Int-A	1	diphenhydramine	9951 ng/mL In Blood (unspecified) @ Unknown
1812h	17 y M	diphenhydramine	1	1	A	Ingst	Unk	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1813ph	20 y F	diphenhydramine	2	1	A	Ingst + Aspir	Int-S	2		
		sertraline	1	2						
1814h	22 y F	diphenhydramine	1	1	A	Ingst	Int-S	1		
1815h	24 y M	diphenhydramine	1	1	A	Ingst	Int-S	2		
1816pha	27 y F	diphenhydramine	1	1	A	Ingst	Int-S	3		
1817pha	29 y M	diphenhydramine	1	1	A	Ingst	Unk	1	diphenhydramine	9567 ng/mL In Blood (unspecified) @ Unknown
1818pha	29 y F	diphenhydramine	1	1	U	Ingst	Int-S	1		
		topiramate	2	2						
		clonazepam	3	3						
		fluoxetine	4	4						
		gabapentin	5	5						
		ethanol (beverage)	6	6						
		drug, N.O.S.	7	7						
1819ph	30 y M	diphenhydramine	1	1	A	Ingst	Int-S	1	diphenhydramine	10000 ng/mL In Blood (unspecified) @ Autopsy
1820p	31 y F	diphenhydramine	1	1	A	Ingst	Int-S	2		
1821h	37 y F	diphenhydramine	1	1	A	Ingst	Int-S	3		
		fluoxetine	2	2						
		aripiprazole	3	3						
1822ph	37 y M	diphenhydramine	1	1	A	Ingst	Int-S	1		
		ethanol (beverage)	2	2					ethanol	312 mg/dL In Blood (unspecified) @ Unknown
1823h	37 y M	diphenhydramine	1	1	A	Ingst	Int-S	1	diphenhydramine	9300 ng/mL In Blood (unspecified) @ 5 m (pe)
		dextromethorphan	2	2						
		ibuprofen	3	3						
1824ph	38 y M	diphenhydramine	1	1	A	Ingst	Int-S	2		
1825h	42 y M	diphenhydramine	1	1	A	Ingst	Int-S	2		
		gabapentin	2	2						
		ethanol (beverage)	3	3					ethanol	172 mg/dL In Serum @ Unknown
1826pha	44 y M	diphenhydramine	1	1	U	Unk	Unk	2	diphenhydramine	1.388 mg/L In Blood (unspecified) @ Unknown
		marijuana, N.O.S.	2	2						
		drug, N.O.S.	3	3						
1827ph	45 y M	hydroxyzine	1	1	A	Ingst	Int-S	2		
		scopolamine	2	2						
1828	45 y M	diphenhydramine	1	1	A	Ingst	Int-A	3		
		ethanol (beverage)	2	2						
1829ph	49 y M	diphenhydramine	1	1	C	Ingst	Int-M	2		
1830h	50 y F	diphenhydramine	1	1	A	Ingst	Int-S	1	ethylene glycol	35 mg/dL In Blood (unspecified) @ Unknown
		ethylene glycol	2	2						
1831h	50 y M	dimenhydrinate	1	1	A	Ingst	Int-S	2		
		naproxen	2	2						
		ethanol (beverage)	3	3						
1832ai	51 y M	diphenhydramine	1	1	U	Unk	Int-S	1		
1833h	52 y F	diphenhydramine	1	1	A	Ingst	Int-S	2		
1834h	54 y M	hydroxyzine	1	1	A/C	Ingst	Int-S	3		
		cyclobenzaprine	2	2						
		oxycodone	3	3						
1835h	59 y M	diphenhydramine	1	1	A/C	Ingst	Int-S	2		
1836p	59 y F	diphenhydramine	1	1	U	Ingst	Int-S	2		
		linacotide	2	2						
1837	59 y F	diphenhydramine	1	1	A	Ingst	Int-S	2		
1838ai	65 y F	diphenhydramine	1	1	U	Unk	Int-S	1		
		diazepam	2	2						
		ethanol (beverage)	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1839	70 y F	diphenhydramine	1	1	U	Ingst	Int-S	1		
		bupropion	2	2						
		metoprolol	3	3						
		trazodone	4	4						
		duloxetine (ER)	5	5						
		mirtazapine	6	6						
		doxepin	7	7						
		levothyroxine	8	8						
		furosemide	9	9						
		potassium salts, N.O.S.	10	10						
1840h	70 y M				A	Ingst	Int-S	2		
1841ha	76 y F	diphenhydramine	1	1	A/C	Ingst	Int-S	1		
		diphenhydramine	1	1					diphenhydramine	5500ng/mL In Blood (unspecified) @ Unknown
		carbidopa/levodopa	2	2						
		hydrochlorothiazide	3	3						
		sertraline	4	4						
		rasagiline	5	5						
		simvastatin	6	6						
		vitamin D	7	7						
		amantadine	8	8						
1842ha	78 y F				A	Ingst	Int-S	2		
1843	86 y F	diphenhydramine	1	1	A/C	Ingst	Unk	2		
		diphenhydramine	1	1						
		cyclobenzaprine	2	2						
		hydroxyzine	4	4						
		medizine	3	4						
1844	Unknown age F				A	Ingst	Int-S	2		
		diphenhydramine	1	1						
		hydroxyzine	2	2						
See Also case 88, 91, 114, 125, 284, 295, 341, 364, 402, 455, 563, 585, 602, 616, 623, 628, 664, 707, 716, 734, 757, 835, 840, 931, 987, 997, 1011, 1021, 1050, 1079, 1131, 1200, 1209, 1251, 1298, 1370, 1388, 1426, 1430, 1458, 1488, 1510, 1523, 1526, 1540, 1572, 1621, 1692, 1714, 1735, 1738, 1742, 1756, 1765, 1771, 1772, 1789, 1794, 1801, 1808, 1848, 1866, 1879, 1892, 1893, 1896, 1899, 1907, 1908, 1910, 1934, 1953, 1965, 1966, 1975, 1988, 2006, 2031, 2062, 2097, 2102, 2137, 2152, 2161, 2162, 2183, 2200, 2213, 2238, 2254, 2270, 2286, 2301, 2307, 2390, 2461, 2532, 2544, 2549, 2551, 2622, 2625										
Antimicrobials										
1845ha	3 y M				C	Par	Unt-T	1		
		doxycycline	1	1						
		lidocaine	2	2						
		iopamidol	3	3						
1846h	15 y M				A	Ingst	Int-S	2		
		antimalarial, N.O.S.	1	1						
		ibuprofen	2	2						
		ethanol (beverage)	3	3					ethanol	38mg/dL In Blood (unspecified) @ Unknown
[1847h]	16 y F				A/C	Ingst	Int-S	1		
1848ph	38 y F	hydroxychloroquine	1	1	A	Ingst	Int-S	2		
		hydroxychloroquine	1	1						
		metronidazole	2	2						
		hydroxyzine	3	3						
		hydrochlorothiazide/losartan	4	4						
		vitamin D	5	5						
1849	53 y M				A/C	Unk	Unt-U	3		
1850	55 y M	isavuconazonium	1	1	A	Ingst	Int-S	1		
		dapsone	1	1					methemoglobin	24.8 % In Blood (unspecified) @ Unknown
		amlodipine	2	2						
		carvedilol	3	3						
		abacavir/dolutegravir/lamivudine	4	4						
		zolpidem	5	5						
		methocarbamol	6	6						
		ezetimibe	7	7						
		diazepam	8	8						
1851h	59 y F				A/C	Ingst	Int-S	1		
		hydroxychloroquine	1	1						
		amlodipine	2	2						
		vasodilator, N.O.S.	3	3						
		trazodone	4	4						
1852	60 y F				A	Ingst	Int-S	2		
		hydroxychloroquine	1	1						
		metoclopramide	2	2						
		sertraline	3	3						
		cleaner (hypochlorite)	4	4						
[1853pha]	64 y M				A	Ingst	Unt-M	2		
		levamisole	1	1						
1854h	77 y M				A/C	Par + Unk	Unt-T	3		
		vancomycin	1	1						
		warfarin	2	2						
See Also case 180, 1660, 1783, 1841, 2071, 2120, 2135, 2138, 2145, 2155, 2159, 2245, 2277, 2361										

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
Antineoplastic										
[1855h]	49 y F				C	Ingst	Unt-T	1		
		methotrexate	1	1					methotrexate	0.05 mmol/L In Serum @ Unknown
1856h	64 y M				C	Ingst	Unt-T	3		
		methotrexate	1	1						
1857h	76 y F				U	Ingst	AR-D	2		
		methotrexate	1	1						
1858h	78 y M				C	Ingst	Unt-T	1		
		methotrexate	1	1						
1859h	78 y F				A/C	Ingst	Unt-T	3		
		methotrexate	1	1						
1860h	85 y M				C	Ingst	Unt-T	1		
		methotrexate	1	1					methotrexate	0.04 µmol/L In Blood (unspecified) @ Unknown
1861h	88 y M				C	Ingst	Unt-T	1		
		methotrexate	1	1					methotrexate	0.11 µmol/L In Blood (unspecified) @ Unknown
See Also case 1555										
Asthma Therapies										
1862h	66 y F				C	Ingst	AR-D	3		
		theophylline	1	1					theophylline	31.4 mcg/mL In Blood (unspecified) @ 11 h (pe)
See Also case 1953, 2312										
Cardiovascular Drugs										
1863ha	12 y F				A	Ingst	Int-S	2		
		metoprolol	1	1						
1864h	14 y F				A	Ingst	Int-S	2		
		verapamil	1	1						
1865ha	15 y F				A	Ingst	Int-S	1		
		amlodipine	1	1						
		metoprolol	2	2						
		atorvastatin	3	3						
1866h	16 y F				A	Ingst	Int-S	2		
		amlodipine	1	1						
		bupropion	2	2						
		diphenhydramine	3	3						
1867h	16 y M				A	Ingst + Unk	Int-S	3		
		amlodipine	1	1						
		salicylate	2	2					salicylate	7.9 mg/dL In Blood (unspecified) @ Unknown
1868h	17 y F				A	Ingst	Int-S	2		
		amlodipine	1	1						
1869ha	18 y M				A	Ingst	Int-S	2		
		amlodipine	1	1						
		prazosin	2	2						
		vortioxetine	3	3						
		risperidone	4	4						
1870ph	18 y F				A/C	Ingst	Int-S	2		
		flecainide	1	1						
1871i	23 y M				U	Unk	Int-S	1		
		propranolol	1	1						
		nitrates (sodium)	2	2						
1872	23 y F				A	Ingst	Int-S	2		
		amlodipine	1	1						
1873pha	23 y F				A	Ingst	Int-S	1		
		carvedilol	2	1						
		diltiazem	1	2					diltiazem	610 ng/mL In Serum @ Autopsy
1874h	24 y F				A/C	Ingst	Int-S	1		
		amlodipine	1	1						
		oxycodone	2	2						
1875ph	25 y M				A	Ingst	Int-S	2		
		propranolol	1	1						
		clomipramine	2	2						
		quetiapine	3	3						
		olanzapine	4	4						
		alprazolam	5	5						
		amphetamine/dextroamphetamine	6	6						
		naproxen	7	7						
		diclofenac	8	8						
1876gai	26 y F				U	Unk	Int-S	1		
		propranolol	1	1						
		marijuana, N.O.S.	2	2						
1877ha	26 y M				A	Ingst	Int-M	1		
		amlodipine	1	1						
1878h	27 y M				A/C	Ingst	Int-S	2		
		amlodipine	1	1						
1879h	27 y F				A	Ingst	Int-S	2		
		amlodipine	1	1						
		carvedilol	2	2						
		diphenhydramine	3	3						
1880	27 y F				A	Ingst	Int-S	2		
		amlodipine	1	1						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1881	27 y F	diltiazem (ER)	1	1	A	Ingst	Int-S	2		
		lisinopril	2	2						
		oxycodone	3	3						
		amphetamine	4	4						
1882h	28 y M	amlodipine	1	1	A	Ingst	Int-S	2		
		salicylate	2	2						
1883pa	28 y F	clonidine	1	1	U	Ingst	Int-S	1		
									clonidine 46 mcg/L In Blood (unspecified) @ Unknown	
1884h	30 y M	propranolol	1	1	A/C	Ingst	Int-S	2		
		trazodone	2	2						
1885ha	31 y M	amlodipine	1	1	A	Ingst	Int-S	1		
									amlodipine 1100 ng/mL In Serum @ Unknown	
1886h	31 y F	verapamil	1	1	A/C	Ingst	Int-S	2		
		trazodone	2	2						
		baclofen	3	3						
		ethanol (beverage)	4	4						
1887p	32 y F	propranolol	1	1	A	Ingst	Int-S	2		
		atenolol	2	2						
1888pa	32 y F	metoprolol	1	1	A	Ingst	Int-S	1		
		flecainide	2	2					metoprolol 59000 ng/mL In Whole Blood @ Autopsy	
		ethanol (beverage)	3	3					flecainide 0.48 mcg/mL In Whole Blood @ Autopsy	
									ethanol 390 mg/dL In Blood (unspecified) @ Unknown	
1889h	32 y F	propranolol	1	1	A/C	Ingst	Int-S	2		
									propranolol 5800 ng/mL In Blood (unspecified) @ Unknown	
1890a	33 y F	propranolol (ER)	1	1	U	Ingst	Int-S	1		
									propranolol 5100 ng/mL In Blood (unspecified) @ Unknown	
1891ha	33 y M	metoprolol	1	1	A/C	Ingst	Int-S	1		
		zolidem	2	2					metoprolol 6.1 mcg/mL In Blood (unspecified) @ Autopsy	
		sertraline	3	3					zolidem 1.5 mcg/mL In Blood (unspecified) @ Autopsy	
		ethanol (beverage)	4	4					sertraline 0.85 mcg/mL In Blood (unspecified) @ Autopsy	
		ethanol (beverage)	4	4					ethanol 0.11 g/dL In Blood (unspecified) @ Autopsy	
		ethanol (beverage)	4	4					ethanol 0.14 g/dL In Vitreous @ Autopsy	
		ethanol (beverage)	4	4					ethanol 157 mg/dL In Blood (unspecified) @ Unknown	
		amlodipine	5	5						
		potassium	6	6						
		furosemide	7	7						
1892h	33 y F	propranolol	1	1	A/C	Ingst	Int-S	3		
		fluoxetine	2	2						
		hydroxyzine	3	3						
		alprazolam	4	4						
		ethanol (beverage)	5	5						
1893	33 y F	clonidine	1	1	A/C	Ingst	Int-S	2		
		atogepant	2	2						
		ondansetron	3	3						
		acetaminophen	4	4					acetaminophen (apap) 60.6 mcg/mL In Blood (unspecified) @ Unknown	
1894h	33 y F	diphenhydramine	5	5	A/C	Ingst	Int-S	2		
		nifedipine (ER)	1	1						
		amlodipine	2	2						
		apixaban	3	2						
1895h	34 y F	propranolol	1	1	A/C	Ingst	Int-S	2		
		acetaminophen/caffeine/salicylate	2	2					salicylate 19.1 mg/dL In Serum @ 4h (pe)	
		acetaminophen/caffeine/salicylate	2	2					acetaminophen (apap) 207 mcg/mL In Serum @ 4h (pe)	
		duloxetine (ER)	3	3						
		ibuprofen	4	4						
1896h	34 y F	metoprolol	1	1	A	Ingst	Int-S	2		
		bupropion	2	2						
		hydroxyzine	3	3						
		bupirone	4	4						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1897ha	35 y M				A/C	Ingst	Int-S	1		
		amlodipine	1	1						
		bupropion	2	2					bupropion	16 mg/L In Blood (unspecified) @ Autopsy
		hydralazine	3	3						
		valproic acid (ER)	4	4						
		quetiapine	5	5					quetiapine	2.6 mg/L In Blood (unspecified) @ Autopsy
		fluoxetine	6	6					fluoxetine	0.7 mg/L In Blood (unspecified) @ Autopsy
		gabapentin	7	7						
		naltrexone	8	8						
1898h	35 y M				A	Ingst	Int-S	2		
		beta blocker, N.O.S.	1	1						
		angiotensin converting enzyme inhibitor, N.O.S.	2	2						
		atypical antipsychotic, N.O.S.	3	3						
		gabapentin	4	4						
		clonazepam	5	5						
		temazepam	6	6						
		drug, N.O.S.	7	7						
		ethanol (beverage)	8	8					ethanol	116 mg/dL In Blood (unspecified) @ Unknown
1899ha	35 y F				A/C	Ingst	Int-S	1		
		metoprolol	3	1					metoprolol	19159 ng/mL In Blood (unspecified) @ Autopsy
		glyburide	2	2						
		amlodipine	1	3						
		metformin	4	4						
		labetalol	5	5						
		nifedipine	6	6						
		topiramate	7	7					topiramate	15.6 mcg/mL In Blood (unspecified) @ Autopsy
		losartan	8	8						
		hydroxyzine	9	9					hydroxyzine	101 ng/mL In Blood (unspecified) @ Autopsy
		buspirone	10	10					buspirone	78 ng/mL In Blood (unspecified) @ Autopsy
1900ha	37 y M				U	Ingst	Int-S	1		
		amlodipine	1	1					amlodipine	850 ng/mL In Blood (unspecified) @ Unknown
		escitalopram	2	2					citalopram	130 ng/mL In Blood (unspecified) @ Unknown
		losartan	3	3						
		metoprolol (ER)	1	1						
		bupropion (ER)	2	2					bupropion	410 ng/mL In Blood (unspecified) @ Unknown
		gabapentin	3	3					gabapentin	40 mcg/mL In Blood (unspecified) @ Unknown
		amlodipine	4	4						
		ethanol (beverage)	5	5					ethanol	12 mg/dL In Blood (unspecified) @ Unknown
		amphetamine	6	6					amphetamine	42 ng/mL In Blood (unspecified) @ Unknown
1902ha	37 y F				U	Unk	Int-S	2		
		clonidine	4	1						
		morphine	1	1					morphine (free)	95 ng/mL In Blood (unspecified) @ Unknown
		phenobarbital	2	2					phenobarbital	3.6 mcg/mL In Blood (unspecified) @ Unknown
		cocaine	3	3					benzoylecognine	1000 ng/mL In Blood (unspecified) @ Unknown
		methylphenidate	5	5					methylphenidate	29 ng/mL In Blood (unspecified) @ Unknown
		levetiracetam	6	6					levetiracetam	20 mcg/mL In Blood (unspecified) @ Unknown
1903ph	38 y F				A	Ingst	Int-U	2		
		propranolol	1	1						
1904h	38 y F				A/C	Ingst	Int-S	2		
		propranolol	1	1						
1905ai	38 y F				U	Unk	Int-A	1		
		propranolol	1	1						
		ethanol (beverage)	2	2						
1906ha	38 y F				A/C	Ingst	Int-S	1		
		amlodipine	1	1					amlodipine	21 ng/mL In Blood (unspecified) @ Unknown
		carvedilol	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		clonidine	3	3					clonidine	16 ng/mL In Blood (unspecified) @ Unknown
		lisinopril	4	4						
		marijuana, N.O.S.	5	5					delta-9-thc	28 ng/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	6	6					ethanol	44 mg/dL In Serum @ Unknown
1907	39 y M	amlodipine	1	1	A/C	Ingst	Int-S	2		
		losartan	2	2						
		bupropion	3	3						
		venlafaxine	4	4						
		antihistamine, N.O.S.	5	5						
1908ha	40 y F	amlodipine	1	1	A	Ingst	Int-S	1		
		diphenhydramine	2	2						
1909h	40 y M	lisinopril	1	1	U	Ingst	Int-M	1		
1910ha	40 y M	metoprolol	1	1	A/C	Ingst	Int-S	1		
									metoprolol	1000 ng/mL In Blood (unspecified) @ Unknown
		calcium antagonist, N.O.S.	2	2						
		bupropion	3	3					bupropion	200 ng/mL In Blood (unspecified) @ Unknown
									hydroxybupropion	450 ng/mL In Blood (unspecified) @ Unknown
		bupropion	3	3						
		fluoxetine	4	4					norfluoxetine	100 ng/mL In Blood (unspecified) @ Unknown
		fluoxetine	4	4					fluoxetine	470 ng/mL In Blood (unspecified) @ Unknown
		hydroxyzine	5	5					hydroxyzine	180 ng/mL In Blood (unspecified) @ Unknown
		anticoagulant, N.O.S.	6	6						
		anticoagulant, N.O.S.	7	7						
		lamotrigine	8	8					lamotrigine	3.8 mcg/mL In Blood (unspecified) @ Unknown
		benzodiazepine, N.O.S.	9	9						
		cannabidiol	10	10						
1911h	41 y F	calcium antagonist, N.O.S.	1	1	U	Ingst	Int-S	1		
1912	41 y F	amlodipine	1	1	U	Ingst	Int-S	2		
		lisinopril	2	2						
		naproxen	3	3						
		metformin	4	4						
1913ph	41 y F	propranolol	1	1	A/C	Ingst	Int-S	2		
		ethylene glycol	2	2						
		amphetamine/dextroamphetamine (ER)	4	3						
		fluoxetine	5	3						
		gabapentin	6	3						
		trazodone	3	3						
1914ph	42 y M	amlodipine	1	1	A/C	Ingst	Int-S	2		
		carvedilol	2	2						
		losartan	3	3						
		ethanol (beverage)	4	4					ethanol	439 mg/dL In Serum @ Unknown
1915ph	42 y M	metoprolol	1	1	A/C	Ingst + Unk	Int-S	2		
		alprazolam	2	2						
		trazodone	3	3						
		cocaine	4	4						
1916h	42 y F	amlodipine/benazepril	1	1	A/C	Ingst	Unt-G	2		
		propranolol	2	2						
1917h	43 y M	amlodipine	1	1	A	Ingst	Int-S	2		
1918h	43 y F	metoprolol	1	1	A/C	Ingst	Int-S	1		
		amlodipine	2	2						
1919	43 y M	amlodipine	1	1	A/C	Ingst	Int-S	2		
									ethanol	100 mg/dL In Blood (unspecified) @ Unknown
		metoprolol (ER)	2	2						
		metformin	3	3						
		quetiapine	4	4						
		rosuvastatin	5	5						
		ethanol (beverage)	6	6						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1920h	43 y F	metoprolol	1	1	A/C	Ingst	Int-U	2		
		diclofenac	2	2						
1921h	44 y M	amlodipine	1	1	A	Ingst	Int-S	2	amlodipine	90 ng/mL In Blood (unspecified) @ Unknown
		quetiapine	2	2						
		prazosin	3	3						
		lithium	4	4					lithium	0.77 mEq/L In Blood (unspecified) @ Unknown
1922h	44 y M	propranolol	1	1	A/C	Ingst	Int-U	2		
1923	45 y F	amlodipine	1	1	A/C	Ingst + Unk	Int-U	2		
		clonazepam	2	2						
		cocaine	3	3						
		fentanyl (prescription)	4	4						
1924ha	45 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
		olanzapine	2	2					olanzapine	54 ng/mL In Serum @ Unknown
		benztropine	3	3						
		trazodone	4	4					trazodone	2.2 mcg/mL In Serum @ Unknown
		fluoxetine	5	5					fluoxetine	250 ng/mL In Serum @ Unknown
		fluoxetine	5	5					norfluoxetine	62 ng/mL In Serum @ Unknown
		vitamin D	6	6						
1925ha	45 y F	atenolol	3	1	U	Ingst	Int-S	1	atenolol	11000 ng/mL In Plasma @ Autopsy
		amlodipine	1	2						
		lisinopril	2	3						
1926h	46 y F	amlodipine	1	1	A/C	Ingst	Int-S	1		
		lisinopril	2	2						
		venlafaxine (ER)	3	3						
1927ph	47 y F	amlodipine	1	1	A	Ingst	Int-S	2		
		quetiapine	2	2						
		gabapentin	3	3						
1928	47 y F	calcium antagonist, N.O.S.	1	1	A	Ingst	Int-S	1	ethanol	80 mg/dL In Blood (unspecified) @ Unknown
		trazodone	2	2						
		thiazide	3	3						
		ethanol (beverage)	4	4						
1929	47 y M	amlodipine	1	1	A	Ingst	Int-S	1		
		amitriptyline	2	2						
		hydrochlorothiazide	3	3						
1930a	48 y F	diltiazem	1	1	A/C	Ingst	Int-S	1	diltiazem	15 mg/L In Blood (unspecified) @ Autopsy
		hydrochlorothiazide/olmesartan	2	2						
		cyclobenzaprine	3	3					cyclobenzaprine	0.28 mg/L In Blood (unspecified) @ Autopsy
1931h	48 y M	metoprolol (ER)	1	1	A	Ingst	Int-S	2		
		amlodipine	2	2						
		salicylate	3	3						
		folic acid	4	4						
1932h	48 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
		gabapentin	2	2						
		diphenhydramine/ibuprofen	3	3						
		ethanol (beverage)	4	4					ethanol	204 mg/dL In Blood (unspecified) @ Unknown
1933h	48 y M	amlodipine	1	1	A	Ingst	Int-S	2		
		guanfacine	2	2						
		ezetimibe	3	3						
		acetaminophen	4	4						
1934pha	48 y M	metoprolol	1	1	U	Ingst	Int-S	1		
		bupropion	2	2					bupropion	430 ng/mL In Serum @ Unknown
		bupropion	2	2					hydroxybupropion	670 ng/mL In Serum @ Unknown
		diphenhydramine	3	3					diphenhydramine	1800 ng/mL In Serum @ Unknown
		lorazepam	4	4					lorazepam	35 ng/mL In Serum @ Unknown
		venlafaxine	5	5					o-desmethylvenlafaxine	570 ng/mL In Serum @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		alprazolam	6	6					alprazolam	8.5 ng/mL In Serum @ Unknown
		ethanol (beverage)	7	7					ethanol	39 mg/dL In Serum @ Unknown
1935h	48 y F				A/C	Ingst	Int-S	2		
		amlodipine	1	1						
		lisinopril	2	2						
1936	48 y M				A/C	Ingst	Unt-T	3		
		metoprolol	1	1						
1937h	48 y F				A	Ingst	Int-S	2		
		diltiazem	1	1						
		quinidine	2	2						
		carvedilol	3	3						
		levothyroxine	7	3						
		insulin, N.O.S.	4	4						
		sodium bicarbonate	5	5						
		ethanol (beverage)	6	6						
1938h	49 y F				A/C	Ingst	Int-S	2		
		amlodipine	1	1						
		atenolol	2	2						
		zolpidem	3	3						
1939ha	50 y M				A/C	Ingst	Int-S	1		
		amlodipine	1	1					amlodipine	750 ng/mL In Serum @ Unknown
		metoprolol	2	2					metoprolol	1100 ng/mL In Serum @ Unknown
		acetaminophen/diphenhydramine	3	3					acetaminophen (apap)	55 mcg/mL In Serum @ Unknown
		acetaminophen/diphenhydramine	3	3					diphenhydramine	730 ng/mL In Serum @ Unknown
		ethanol (beverage)	4	4					ethanol	163 mg/dL In Serum @ Unknown
1940	50 y F				A/C	Ingst+Inhal	Int-S	2		
		amlodipine	1	1						
		propranolol	2	2						
		lisinopril	3	3						
		cocaine	4	4						
		melatonin	5	5						
1941h	50 y F				U	Ingst	Int-S	1		
		amlodipine	1	1						
1942h	50 y F				A	Ingst	Int-S	1		
		amlodipine	1	1						
		metoprolol	2	2						
		candesartan	3	3						
		isosorbide (ER)	4	4						
1943ha	51 y M				A/C	Ingst	Int-M	1		
		amlodipine	1	1						
		ethanol (beverage)	2	2					ethanol	127 mg/dL In Blood (unspecified) @ Unknown
1944ai	51 y M				U	Unk	Int-S	1		
		propranolol	1	1						
		diltiazem	2	2						
		ethanol (beverage)	3	3						
1945	51 y M				A	Ingst	Int-S	2		
		nifedipine (ER)	1	1						
		lisinopril	2	2						
		ethanol (beverage)	3	3						
1946h	52 y M				A	Ingst	Int-S	2		
		amlodipine	1	1						
		lisinopril	2	2						
1947h	52 y M				A/C	Ingst+Par	Int-S	1		
		amlodipine	1	1						
		insulin, N.O.S.	2	2						
		metformin	3	3						
1948pha	52 y F				A/C	Ingst	Int-S	1		
		propranolol	1	1					propranolol	3.7 mg/L In Blood (unspecified) @ 5 m (pe)
		sertraline	2	2					sertraline	1.1 mg/L In Blood (unspecified) @ 5 m (pe)
		amiodarone	3	3						
		indomethacin	4	4						
1949	52 y F				A/C	Ingst	Int-S	2		
		amlodipine	1	1						
		metformin	2	2						
		trazodone	3	3						
		escitalopram	4	4						
		bupirone	5	5						
1950ai	53 y M				U	Unk	AR-D	1		
		tadalafil	1	1						
1951h	53 y M				A	Ingst	Int-S	2		
		amlodipine	1	1						
		losartan	2	3						
		acetaminophen	3	4					acetaminophen (apap)	6 mcg/mL In Serum @ Unknown
		atorvastatin	4	5						
		ethanol (beverage)	6	6						
		hydrochlorothiazide	5	6						
1952	53 y M				A/C	Ingst	Int-S	2		
		amlodipine	1	1						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1953ha	53 y F	carvedilol	2	2	A/C	Ingst	Int-S	1		
		metoprolol	1	1					metoprolol	10000 ng/mL In Blood (unspecified) @ Unknown
		nortriptyline	2	2					nortriptyline	670 ng/mL In Blood (unspecified) @ Unknown
		desvenlafaxine	3	3					o-desmethylvenlafaxine	790 ng/mL In Blood (unspecified) @ Unknown
		montelukast	4	4						
		famotidine	5	5						
		ethanol (beverage)	6	6						
1954ha	54 y M	amlodipine	1	1	A/C	Ingst	Int-S	1	metformin	110 mcg/mL In Whole Blood @ Autopsy
		metformin	2	2						
		sertraline	3	3						
1955h	54 y F	lisinopril	1	1	U	Ingst	AR-D	2		
1956ha	54 y F	amlodipine	1	1	A/C	Ingst	Int-S	1	amlodipine	900 ng/mL In Blood (unspecified) @ Autopsy
		diazepam	2	2					diazepam	60 ng/mL In Blood (unspecified) @ Autopsy
		diazepam	2	2					nordiazepam	83 ng/mL In Blood (unspecified) @ Autopsy
		alprazolam	3	3					alprazolam	18 ng/mL In Blood (unspecified) @ Autopsy
		oxycodone	4	4					oxycodone (free)	13 ng/mL In Blood (unspecified) @ Autopsy
		duloxetine (ER)	5	5					duloxetine	31 ng/mL In Blood (unspecified) @ Autopsy
		gabapentin	6	6					gabapentin	11 mcg/mL In Blood (unspecified) @ Autopsy
1957ha	54 y M	amlodipine	1	1	A	Ingst	Int-S	1	amlodipine	260 ng/mL In Serum @ Unknown
		bupropion	2	2					bupropion	440 ng/mL In Serum @ Unknown
		bupropion	2	2					hydroxybupropion	610 ng/mL In Serum @ Unknown
		lisinopril	3	3						
		hydrochlorothiazide	4	4						
		atorvastatin	5	5						
		ethanol (beverage)	6	6						
1958ha	54 y M	amlodipine	1	1	A	Ingst	Int-S	3		
		citalopram	2	2						
		hydrochlorothiazide	3	3						
		hydrochlorothiazide/losartan	4	4						
1959ha	54 y F	amlodipine	1	1	A/C	Ingst	Int-S	1	amlodipine	360 ng/mL In Serum @ Unknown
		lisinopril	2	2						
		ethanol (beverage)	3	3					ethanol	138 mg/dL In Serum @ Unknown
1960p	54 y M	amlodipine	1	1	U	Ingst	Int-S	2		
		atenolol	2	2						
		lisinopril	3	3						
1961ph	54 y F	amlodipine	1	1	A/C	Ingst	Int-S	1		
		metoprolol (ER)	2	2						
		amitriptyline	3	3						
1962h	54 y F	diltiazem (ER)	1	1	A	Ingst	Int-S	1		
		clorazepate	2	2						
		angiotensin receptor blocker, N.O.S.	3	3						
		bupropion	4	4						
		calcium antagonist, N.O.S.	5	5						
1963ha	54 y M	amlodipine	1	1	A/C	Ingst	Int-S	2		
		escitalopram	2	2						
		ethanol (beverage)	3	3						
1964ha	55 y M	verapamil	1	1	A	Ingst	Int-S	1	verapamil	1200 ng/mL In Blood (unspecified) @ Unknown
		bisoprodol	2	2						
		metformin	3	3					metformin	41 mcg/mL In Whole Blood @ Unknown
		lisinopril	4	4						
		ethanol (beverage)	5	5						
1965ha	55 y F	amlodipine	1	1	A/C	Ingst	Int-S	1		
		quetiapine	2	2						
		hydroxyzine	3	3						
		loratadine	4	4						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1966ha	56 y F	amlodipine	1	1	A/C	Ingst	Int-S	1		
		diphenhydramine	2	2						
		atorvastatin	3	3						
		ethanol (beverage)	4	4					ethanol	71 mg/dL In Blood (unspecified) @ Unknown
1967h	56 y M	carvedilol	1	1	A/C	Ingst	Int-S	1		
		escitalopram	2	2						
		drug, N.O.S.	3	3						
1968h	56 y F	amlodipine	1	1	A	Ingst	Int-S	2		
1969h	56 y M	amlodipine	1	1	A/C	Ingst	Int-S	2		
		gabapentin	2	2						
1970h	56 y M	diltiazem	1	1	U	Ingst	Int-S	3		
		trazodone	2	2						
		escitalopram	3	3						
1971a	57 y F	amlodipine	1	1	A/C	Ingst	Unk	1		
1972h	57 y M	amlodipine	1	1	A/C	Ingst	Int-S	2		
1973ha	57 y M	amlodipine	1	1	A	Ingst	Int-S	1		
		metoprolol	2	2					metoprolol	0.718 mg/L In Serum @ Unknown
		quetiapine	3	3					quetiapine	2.36 mg/L In Serum @ Unknown
		gabapentin	4	4					gabapentin	11.5 mg/L In Serum @ Unknown
		lisinopril	5	5						
		apixiban	6	6						
		simvastatin	7	7						
1974h	57 y M	amlodipine	1	1	A/C	Ingst	Unk	2		
1975ha	57 y M	amlodipine	1	1	A/C	Ingst + Par	Int-S	2		
		escitalopram	2	2					citalopram	290 ng/mL In Blood (unspecified) @ Unknown
		methylene blue	3	3						
		lisinopril	4	4						
		hydroxyzine	5	5					hydroxyzine	130 ng/mL In Blood (unspecified) @ Unknown
		semaglutide	6	6						
		chlorthalidone	7	7						
		spironolactone	8	8						
		atorvastatin	9	9						
1976h	58 y F	propranolol	1	1	A/C	Ingst	Int-S	1		
		venlafaxine	2	2						
		acetaminophen	3	3					acetaminophen (apap)	59 mcg/mL In Serum @ Unknown
1977h	58 y M	isosorbide (ER)	1	1	A	Ingst	Int-S	3		
		ranolazine (ER)	2	2						
		acetaminophen	3	3					acetaminophen (apap)	65 mcg/mL In Blood (unspecified) @ Unknown
1978	58 y F	apixaban	4	4	A	Ingst	Int-S	2		
		amlodipine	1	1						
		acetaminophen	2	2						
		duloxetine (ER)	3	3						
		losartan	4	4						
1979h	58 y M	amlodipine	1	1	A/C	Ingst + Unk	Int-M	3		
		ethanol (beverage)	2	2					ethanol	130 mg/dL In Serum @ Unknown
1980h	58 y M	amlodipine	1	1	A/C	Ingst	Int-S	2		
1981h	58 y M	diltiazem	1	1	A/C	Ingst	Int-S	1		
		metoprolol	2	2						
		hydralazine	3	3						
		metformin/sitagliptin	4	4						
		hydrochlorothiazide	5	5						
		prednisone	6	6						
		atorvastatin	7	7						
		nitroglycerin	8	8						
1982h	58 y M	amlodipine	1	1	A	Ingst	Int-S	2		
		lisinopril	2	2						
1983ph	58 y F	amlodipine	1	1	A	Ingst	Int-S	2		
		carvedilol	2	2						
		drug, N.O.S.	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
1984h	58 y M	amlodipine	1	1	A	Ingst	Int-S	2		
1985h	58 y F	diltiazem	1	1	U	Ingst	Unk	2		
		metoprolol	2	2						
		drug, N.O.S.	3	3						
1986ha	59 y M	amlodipine	1	1	U	Ingst	Int-S	1	amlodipine	980 ng/mL In Serum @ Unknown
1987ha	60 y M	melatonin	2	2	A/C	Ingst	Int-S	1		
		amlodipine	2	1					amlodipine	220 ng/mL In Serum @ 40 m (pe)
		carvedilol	3	2						
		clonazepam	7	3					aminoclonazepam	199 ng/mL In Serum @ 40 m (pe)
		clonazepam	7	3					clonazepam	641 ng/mL In Serum @ 40 m (pe)
		lisinopril	6	4						
		furosemide	5	5						
		glimepiride	1	6						
		meloxicam	8	7						
		apixaban	4	8						
		atorvastatin	9	9						
1988pha	60 y F	amlodipine	1	1	A/C	Ingst	Int-S	1		
		escitalopram	3	2					citalopram	3.7 mg/L In Blood (unspecified) @ 3 h (pe)
		quetiapine	2	2						
		atorvastatin	8	3						
		famotidine	9	3						
		gabapentin	6	3					gabapentin	1.4 mg/L In Blood (unspecified) @ 3 h (pe)
		linagliptin	7	3						
		solifenacin	4	3						
		pregabalin	5	5						
1989pha	60 y F	metoprolol	1	1	U	Ingst	Int-S	2	metoprolol	3316 ng/mL In Serum @ Unknown
		diltiazem	2	2					diltiazem	300 ng/mL In Serum @ Unknown
		aripiprazole	3	3					aripiprazole	37.3 ng/mL In Serum @ Unknown
		marijuana, N.O.S.	4	4					delta-9-thc	5.7 ng/mL In Serum @ Unknown
		lorazepam	5	5					lorazepam	71.9 ng/mL In Serum @ Unknown
1990h	60 y F	carvedilol	1	1	U	Unk	Int-S	3		
		doxepin	2	2						
		alprazolam	3	3						
		buspirone	4	4						
		levothyroxine	5	5						
		aripiprazole	6	6						
1991p	60 y F	calcium antagonist, N.O.S.	1	1	A	Ingst	Unk	2		
		analgesic, N.O.S.	2	2						
		ethanol (beverage)	3	3						
1992h	60 y F	verapamil (ER)	1	1	A/C	Ingst	Int-S	2		
1993h	60 y F	diltiazem (ER)	1	1	A	Ingst	Int-S	1		
1994p	61 y F	amlodipine	1	1	A	Ingst	Unk	2	ethanol	23 mg/dL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2						
1995h	61 y F	digoxin	1	1	C	Ingst	AR-D	3	digoxin	2.3 ng/mL In Blood (unspecified) @ Unknown
1996h	61 y M	amlodipine	1	1	A/C	Ingst	Unk	1		
		levetiracetam	2	2					levetiracetam	5 mcg/mL In Blood (unspecified) @ Unknown
		losartan	3	3						
1997h	61 y M	metoprolol	1	1	A/C	Ingst	Int-S	2		
1998	61 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
		atenolol	2	2						
		escitalopram	3	3						
		omeprazole	4	4						
1999h	61 y F	amlodipine	1	1	A	Ingst	Int-S	2		
		losartan	2	2						
		ethanol (beverage)	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2000pa	62 y M	calcium antagonist, N.O.S.	1	1	A	Ingst	Int-S	1		
		cyclobenzaprine	2	2						
		ethanol (beverage)	3	3						
2001	62 y M	metoprolol (ER)	1	1	A/C	Ingst	Int-S	2		
		baclofen	2	2						
		diazepam	3	3						
		lisinopril	4	4						
2002h	62 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
		ropinirole	2	2						
2003h	62 y F	atenolol	1	1	A/C	Ingst	Int-S	1		
		amlodipine	2	2						
2004ph	62 y F	propranolol	1	1	U	Ingst	Int-S	2		
		clonazepam	3	2						
		eszopiclone	2	2						
2005hi	62 y M	amlodipine	1	1	A	Ingst	Int-S	2		
2006ha	63 y F	amlodipine	1	1	U	Ingst + Unk	Int-S	1	diphenhydramine	0.12 mg/L In Serum @ Unknown
		alprazolam	2	2					alprazolam	0.05 mg/L In Blood (unspecified) @ Unknown
		lisinopril	3	3						
		fluoxetine	4	4					fluoxetine	0.22 mg/L In Blood (unspecified) @ Unknown
		risperidone	5	5						
		diphenhydramine	6	6						
2007h	63 y M	diltiazem	1	1	A/C	Ingst	Int-S	2		
		sotalol	2	2						
		ethanol (beverage)	3	3					ethanol	0.125 g/dL In Blood (unspecified) @ Unknown
		apixiban	4	4						
		atorvastatin	5	5						
2008ha	63 y F	metoprolol	1	1	A/C	Ingst	Int-S	1		
		venlafaxine	2	2						
		duloxetine (ER)	3	3						
		methocarbamol	4	4						
		clonazepam	5	5						
2009h	63 y F	metoprolol (ER)	1	1	A/C	Ingst	Int-S	2		
		lisinopril	2	2						
		acetaminophen/oxycodone	3	3					acetaminophen (apap)	154 mg/L In Serum @ 6.5 h (pe)
		acetaminophen/oxycodone	3	3					acetaminophen (apap)	39 mg/L In Serum @ 3.25 h (pe)
		cyclobenzaprine	4	4						
		gabapentin	5	5						
2010h	63 y F	verapamil	1	1	A/C	Ingst	Int-S	3		
		diazepam	2	2						
		lisinopril	3	3						
		buprenorphine/naloxone (sublingual film)	4	4						
2011h	63 y M	propranolol	1	1	A/C	Ingst	Int-S	2		
		trazodone	2	2						
2012h	63 y F	carvedilol	1	1	A	Ingst	Int-U	2		
		amlodipine	2	2						
2013ph	64 y F	digoxin	1	1	U	Ingst	AR-D	2	digoxin	4.4 ng/mL In Serum @ Unknown
		digoxin	1	1					digoxin	6.2 ng/mL In Serum @ Unknown
2014h	64 y M	amlodipine	1	1	A/C	Ingst	Int-U	2		
2015h	64 y F	amlodipine	1	1	A	Ingst	Int-S	3		
		lisinopril	2	2						
		chlorthalidone	3	3						
		empagliflozin	4	4						
2016h	64 y F	amlodipine	3	1	U	Unk	Int-S	2		
		bupropion	2	1						
		drug, N.O.S.	1	1						
		clonidine	4	2						
2017h	64 y F	amlodipine	1	1	A/C	Ingst	Int-S	1		
		ethanol (beverage)	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2018h	65 y M	calcium antagonist, N.O.S.	1	1	A	Par	Unt-T	2		
2019h	65 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
		clonidine	2	2						
		clonazepam	3	3						
		gabapentin	4	4						
		ethanol (beverage)	5	5						
2020h	65 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
		ethanol (beverage)	2	2						
2021ha	66 y F	verapamil	1	1	A	Ingst	Unt-T	1	verapamil	250 ng/mL In Blood (unspecified) @ 10 h (pe)
		metoprolol	2	2					metoprolol	660 ng/mL In Blood (unspecified) @ 5 m (pe)
		amiodarone	3	3					amiodarone	0.56 mcg/mL In Blood (unspecified) @ 5 m (pe)
		amiodarone	3	3					desethylamiodarone	0.88 ng/mL In Blood (unspecified) @ 5 m (pe)
[2022ha]	66 y M	metoprolol	1	1	A/C	Ingst	Int-S	1	metoprolol	7500 ng/mL In Blood (unspecified) @ 2 h (pe)
2023h	66 y M	verapamil	1	1	U	Ingst	Unk	3		
2024p	66 y M	calcium antagonist, N.O.S.	1	1	A/C	Ingst	Int-S	2		
2025h	66 y M	amlodipine	1	1	A	Ingst	Int-S	2		
2026ha	66 y F	amlodipine	2	1	A/C	Ingst	AR-D	1	amlodipine	490 ng/mL In Blood (unspecified) @ Unknown
		metoprolol (ER)	1	2					metoprolol	360 ng/mL In Blood (unspecified) @ Unknown
		latanoprost/timolol	3	3						
2027	66 y M	verapamil	1	1	A/C	Ingst	Int-S	2		
		lisinopril	2	2						
2028ha	66 y M	metoprolol	1	1	A/C	Ingst	Int-S	1	desmethyloperamide	10 ng/mL In Blood (unspecified) @ 7 h (pe)
		metoprolol	1	1					citalopram	270 ng/mL In Blood (unspecified) @ 7 h (pe)
		metoprolol	1	1					metoprolol	40000 ng/mL In Blood (unspecified) @ 7 h (pe)
		metoprolol	1	1					alprazolam	960 ng/mL In Blood (unspecified) @ 7 h (pe)
		alprazolam	2	2						
		citalopram	3	3						
		loperamide	4	4						
2029h	66 y M	verapamil	1	1	A	Ingst	Int-S	2		
		acetaminophen/oxycodone	2	2						
		clonazepam	3	3						
		diazepam	4	4						
2030h	66 y M	digoxin	1	1	C	Ingst	AR-D	2	digoxin	7.2 ng/mL In Blood (unspecified) @ 0 d (pe)
		digoxin	1	1					digoxin	7.4 ng/mL In Blood (unspecified) @ 0 d (pe)
		digoxin	1	1					digoxin	8 ng/mL In Blood (unspecified) @ 2 d (pe)
2031ha	66 y F	amlodipine	1	1	A/C	Ingst	Int-S	1	amlodipine	590 ng/mL In Serum @ Autopsy
		diphenhydramine	2	2					diphenhydramine	570 ng/mL In Serum @ Autopsy
2032h	66 y F	amlodipine	1	1	A	Ingst	Int-S	2		
		metformin	2	2						
2033	67 y F	carvedilol	1	1	A/C	Ingst	Int-S	2		
		hydralazine	2	2						
2034p	67 y F	propranolol	1	1	A/C	Ingst	Int-S	2		
2035h	67 y M	amlodipine	1	1	U	Ingst	Int-S	2		
		alprazolam	2	2						
		melatonin	3	3						
2036a	67 y F	metoprolol	1	1	A/C	Ingst	Int-S	2		
		amlodipine	2	2						
		levothyroxine	3	3						
		gabapentin	4	4						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2037a	68 y M	nifedipine	1	1	A	Ingst	Int-S	1	nifedipine	460 ng/mL In Blood (unspecified) @ Unknown
2038h	68 y F	digoxin	1	1	A	Par	Unt-T	3	digoxin	4.2 ng/mL In Blood (unspecified) @ Unknown
2039ha	68 y F	amlodipine	1	1	A/C	Ingst	Int-S	1	amlodipine	630 ng/mL In Blood (unspecified) @ 2 h (pe)
2040ha	68 y F	amlodipine/benazepril	1	1	A	Ingst	Int-S	1	amlodipine	650 ng/mL In Blood (unspecified) @ Unknown
2041h	68 y F	verapamil	1	1	A	Unk	Int-S	2		
		bupropion	2	2						
		clonazepam	3	3						
		alprazolam	4	4						
		zolpidem	5	5						
		zopiclone	6	6						
2042	68 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
		prednisone	2	2						
2043h	69 y F	nifedipine	1	1	A	Ingst	Int-S	2		
		metoprolol	2	2						
		clonidine	3	3						
		losartan	4	4						
2044h	69 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
		lisinopril	2	2						
2045	69 y F	diltiazem	1	1	A/C	Ingst	Int-S	2		
		phenytoin (ER)	2	2					phenytoin	27.8 mcg/mL In Serum @ Unknown
		levothyroxine	3	3						
		apixiban	4	4						
2046ha	70 y F	sotalol	1	1	A/C	Ingst	Int-S	2		
2047ph	70 y F	flecainide	2	1	C	Ingst	AR-D	2		
		metformin	1	2						
2048ai	70 y M	amlodipine	1	1	U	Unk	Int-S	1		
		tramadol	2	2						
		clonazepam	3	3						
2049h	70 y F	amlodipine	1	1	A/C	Ingst	Int-S	1		
		nortriptyline	2	2						
		acetaminophen	3	3					acetaminophen (apap)	18.8 mcg/mL In Serum @ Unknown
		morphine	4	4						
		gabapentin	5	5						
		pregabalin	6	6						
		oxycodone	7	7						
		vortioxetine	8	8						
		angiotensin converting enzyme inhibitor, N.O.S.	9	9						
2050h	71 y M	carvedilol	1	1	A	Ingst	Int-S	2		
2051h	71 y M	flecainide	1	1	C	Ingst	AR-D	2		
2052p	71 y F	clonidine	1	1	U	Ingst	Int-S	2		
		quetiapine	2	2						
		zolpidem	3	3						
		cardiovascular drug, N.O.S.	4	4						
		acetaminophen	5	5					acetaminophen (apap)	20.4 mcg/mL In Plasma @ Unknown
2053h	71 y M	carvedilol	1	1	A/C	Ingst	Int-S	2		
		venlafaxine	2	2						
		ethanol (beverage)	3	3						
2054h	71 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
2055h	71 y F	antiarrhythmic, N.O.S.	1	1	A/C	Ingst	AR-D	2		
		acetaminophen	2	2						
2056ha	71 y M	diltiazem (ER)	1	1	A/C	Ingst	Int-S	1		
		benazepril	2	2						
		acetaminophen/hydrocodone	3	3					acetaminophen (apap)	11 mcg/mL In Serum @ Unknown
2057h	72 y F	digoxin	1	1	C	Ingst	AR-D	2		
2058h	72 y F	amlodipine	1	1	A	Ingst	Int-S	2		
		trazodone	2	2						

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Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2059ha	72 y M	venlafaxine (ER)	3	3	A	Ingst	Int-S	1		
		losartan	4	4						
		calcium antagonist, N.O.S.	1	1						
		carvedilol	2	2						
		losartan	3	3						
2060ph	72 y M	benzodiazepine, N.O.S.	4	4	A/C	Ingst	Int-M	2		
		benzodiazepine, N.O.S.	4	4						
		escitalopram	5	5						
		antihyperlipidemic, N.O.S.	6	6						
		nadolol	1	1						
2061ph	72 y F	ethanol (beverage)	2	2	C	Ingst	AR-D	2		
		digoxin	1	1						
		spironolactone	2	2						
2062	73 y M	potassium chloride (ER)	3	3	A/C	Ingst	Int-S	1		
		amlodipine	1	1						
		promethazine	2	2						
2063h	73 y F	amlodipine	1	1	A	Ingst	Int-S	2		
		pregabalin	2	2						
2064	73 y F	verapamil	1	1	A	Ingst	Int-S	2		
		lisinopril	2	2						
		olanzapine	3	3						
2065	73 y F	amlodipine/hydrochlorothiazide/olmesartan	1	1	A/C	Ingst	Int-S	2		
		atenolol	1	1						
2066h	73 y F	amlodipine	1	1	A/C	Ingst	Int-S	2		
		hydrochlorothiazide/lisinopril	2	2						
2068ha	74 y F	metoprolol	1	1	A/C	Ingst	Int-S	1		
		drug, N.O.S.	2	2						
2069h	74 y M	amlodipine	1	1	A/C	Ingst + Aspir	Int-S	2		
		ethanol (beverage)	2	2						
		amlodipine	1	1						
2070	74 y F	metoprolol	2	2	A/C	Ingst	Int-S	2		
		gabapentin	3	3						
		amlodipine	1	1						
2071h	74 y F	atenolol	2	2	A/C	Ingst	Int-S	1		
		levofloxacin	3	3						
		amlodipine	1	1						
2072h	74 y F	metoprolol (ER)	1	1	A/C	Ingst	Int-S	2		
		baclofen	2	2						
		ibuprofen	3	3						
2073	74 y F	amlodipine	1	1	A/C	Ingst	Int-S	1		
		diltiazem (ER)	1	1						
2074	75 y M	insulin, N.O.S.	2	2	A	Ingst	Int-S	1		
		verapamil	1	1						
2075h	75 y M	metoprolol	2	2	C	Ingst	AR-D	3		
		digoxin	1	1						
2076h	75 y F	digoxin	1	1	C	Ingst	AR-D	3		
		digoxin	1	1						
2077h	75 y M	dofetilide	1	1	A	Ingst + Unk	Int-S	1		
		acetaminophen/oxycodone	2	2						
		ethanol (beverage)	3	3						
2078h	75 y F	digoxin	1	1	C	Par	AR-D	3		
		digoxin	1	1						
2079h	75 y M	amlodipine	1	1	A/C	Ingst + Derm	Int-S	2		
		metformin	2	2						
		glipizide	3	3						
		lisinopril	4	4						
		pioglitazone	5	5						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2080ha	75 y M	salicylate gabapentin atorvastatin	6 7 8	6 7 8	A/C	Ingst	Int-S	1		
2081p	75 y F	carvedilol amlodipine hydralazine	1 2 3	1 2 3	A/C	Ingst	Int-S	2		
2082h	75 y F	amlodipine acetaminophen/hydrocodone morphine olanzapine mirtazapine duloxetine (ER) atorvastatin donepezil vortioxetine	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	A	Ingst	Int-S	2		
2083h	75 y F	nifedipine (ER) doxazosin losartan carbon monoxide	1 2 3 4	1 2 3 4	C	Ingst	Unk	3		carboxyhemoglobin 5.1 % In Blood (unspecified) @ Unknown
2084h	76 y M	digoxin	1	1						digoxin 4.4 ng/mL In Blood (unspecified) @ Unknown
2085h	76 y M	metoprolol (ER) glyphosate apixaban	1 2 3	1 2 3	A	Ingst	Int-S	2		
2086h	76 y M	sotalol	1	1	A/C	Ingst	Int-S	2		
2087h	76 y F	digoxin	1	1	A	Ingst	AR-D	3		digoxin 2.6 ng/mL In Blood (unspecified) @ Unknown
2088h	76 y F	metoprolol acetaminophen/hydrocodone	1 2	1 2	A/C	Ingst	Int-S	2		
2089h	76 y F	clonidine ethanol (beverage)	3 4	3 4						acetaminophen (apap) 47 mcg/mL In Serum @ Unknown
2090h	77 y F	calcium antagonist, N.O.S.	1	1	A	Ingst	Int-S	2		
2091	77 y F	diltiazem metoprolol	1 2	1 2	A/C	Ingst	Int-S	2		
2092	77 y F	digoxin	1	1	C	Ingst	AR-D	3		digoxin 3.3 ng/mL In Blood (unspecified) @ Unknown
2093h	77 y F	flecainide	1	1						
2094h	77 y M	amlodipine tizanidine drug, N.O.S.	1 2 3	1 2 3	A	Ingst	Int-S	2		
2095h	78 y F	digoxin	1	1	C	Ingst	AR-D	2		digoxin 2.8 ng/mL In Blood (unspecified) @ 1 h (pe)
2096h	78 y M	carvedilol	1	1	A	Ingst	Int-S	1		
2097p	78 y F	amlodipine ethanol (beverage)	1 2	1 2	A	Ingst	Int-S	1		
2098h	78 y M	ethanol (beverage)	2	2						ethanol 160 mg/dL In Serum @ Unknown
2099h	79 y F	digoxin	1	1	A/C	Ingst	Unk	2		digoxin 0.33 ng/mL In Blood (unspecified) @ Unknown
2100h	79 y F	metoprolol digoxin	2 1	2 1	A/C	Ingst	Int-S	1		digoxin 10.5 mcg/L In Blood (unspecified) @ Unknown
		meclizine	2	2						
		diltiazem (ER)	1	1	A/C	Ingst	Unt-T	3		
		digoxin	1	1	A/C	Ingst	Int-S	1		digoxin 10 ng/mL In Blood (unspecified) @ 30 m (pe)
		diltiazem zolpidem sitagliptin	1 2 3	1 2 3	A	Ingst	Int-S	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2101h	79 y M				A	Ingst	Int-S	2		
		amlodipine	1	1						
		atorvastatin	2	2						
		metformin	3	3						
		tamsulosin	4	4						
2102	79 y F				A	Ingst	Int-S	2		
		amlodipine	1	1						
		mirtazapine	2	2						
		ferrous sulfate	3	3						
		quetiapine	4	4						
		clopidogrel	5	5						
		furosemide	6	6						
		cetirizine	7	7						
		simvastatin	8	8						
		omeprazole (ER)	9	9						
2103h	79 y F				C	Ingst	Unt-G	1		
		digoxin	1	1					digoxin 6.1 ng/mL In Blood (unspecified) @ Unknown	
2104h	81 y M				C	Ingst	AR-D	2		
		digoxin	1	1					digoxin 5.2 ng/mL In Blood (unspecified) @ Unknown	
2105h	81 y M				C	Ingst	AR-D	2		
		digoxin	1	1						
2106h	81 y F				A/C	Ingst	Int-S	1		
		diltiazem	1	1						
		metformin	2	2						
		digoxin	3	3					digoxin 0.6 mcg/L In Serum @ Unknown	
		acetaminophen/codeine	4	4						
		pregabalin	5	5						
		alprazolam	6	6						
		metoprolol	7	7						
		hydrochlorothiazide	8	8						
		warfarin	9	9						
		glipizide	10	10						
		thyroid preparation, N.O.S.	11	11						
[2107h]	82 y M				A/C	Ingst	Unt-T	3		
		flecainide	1	1						
2108h	82 y F				C	Ingst	AR-D	2		
		digoxin	1	1					digoxin 4.2 ng/mL In Blood (unspecified) @ Unknown	
2109h	82 y F				C	Ingst	AR-D	3		
		digoxin	1	1					digoxin 2.69 ng/mL In Blood (unspecified) @ Unknown	
2110	82 y F				A	Ingst	Int-S	2		
		amlodipine	1	1						
2111h	82 y F				C	Ingst	AR-D	3		
		digoxin	1	1						
2112h	83 y F				A/C	Ingst	Int-S	2		
		diltiazem	1	1						
		amiodarone	2	2						
		metoprolol	3	3						
		apixiban	5	4						
		lisinopril	4	4						
2113h	83 y F				A	Ingst	Int-S	2		
		diltiazem	1	1						
		apixiban	2	2						
2114	83 y M				A/C	Ingst	Int-S	2		
		amlodipine	1	1						
		labetalol	2	2						
		gabapentin	3	3						
		trazodone	4	4						
2115h	83 y F				A	Ingst	Int-S	2		
		diltiazem (ER)	1	1						
2116h	84 y M				A	Ingst	Int-S	2		
		atenolol	1	1						
		amlodipine	2	2						
2117h	85 y F				A	Ingst	AR-D	3		
		digoxin	1	1						
2118h	85 y F				A	Ingst	Int-S	2		
		diltiazem	1	1						
2119ai	85 y F				U	Unk	Int-S	1		
		diltiazem	1	1						
2120h	85 y F				C	Ingst	AR-D	3		
		digoxin	1	1					digoxin 3.3 ng/mL In Blood (unspecified) @ Unknown	
2121h	87 y M				A	Ingst	Unt-T	1		
		sulfamethoxazole/trimethoprim	2	2						
		diltiazem	1	1						
		amiodarone	2	2						
		furosemide	3	3						
		beta blocker, N.O.S.	4	4						
		irbesartan	5	5						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2122ai	87 y F	atenolol	1	1	U	Unk	Int-S	1		
		tramadol	2	2						
2123h	87 y F	flecainide	1	1	C	Ingst	AR-D	2		
2124ha	88 y F	metoprolol	1	1	A/C	Ingst	Int-S	1	metoprolol 2600 ng/mL In Serum @ Unknown	
		amlodipine	2	2					amlodipine 130 ng/mL In Serum @ Unknown	
		flecainide	3	3					flecainide 3.1 mcg/mL In Serum @ Unknown	
2125h	89 y F	digoxin	1	1	C	Ingst	Unk	3	digoxin 3.2 ng/mL In Serum @ 15 h (pe)	
2126	89 y F	digoxin	1	1	C	Ingst	AR-D	2	digoxin 3 ng/mL In Blood (unspecified) @ Unknown	
2127h	91 y M	amlodipine	1	1	A	Ingst	Int-S	1		
2128a	91 y F	calcium antagonist, N.O.S.	1	1	A/C	Ingst	Unt-G	1		
		beta blocker, N.O.S.	2	2						
		anticoagulant, N.O.S.	3	3						
		salicylate	4	4						
		thyroid preparation, N.O.S.	5	5						
2129ha	91 y M	amlodipine	1	1	A	Ingst	Int-S	1		
		salicylate	2	2					salicylate 44.4 mg/dL In Blood (unspecified) @ Unknown	
2130	92 y F	digoxin	1	1	C	Ingst	AR-D	2	digoxin 1.7 ng/mL In Plasma @ 35 h (pe)	
		digoxin	1	1					digoxin 2.4 ng/mL In Plasma @ 22.5 h (pe)	
		digoxin	1	1					digoxin 2.7 ng/mL In Plasma @ 12 h (pe)	
2131h	93 y F	metoprolol	1	1	A	Ingst	Int-S	2		
		metformin	2	2						
		donepezil	3	3						
2132h	93 y M	digoxin	1	1	A	Ingst + Par	Int-S	1	digoxin 10 ng/mL In Blood (unspecified) @ Unknown	
		potassium	3	2						
		carvedilol	2	3						
		atorvastatin	7	4						
		citalopram	4	5						
		tamsulosin	5	6						
		sacubitril/valsartan	8	7						
		insulin, N.O.S.	6	8						
2133	94 y F	digoxin	1	1	A	Ingst	AR-D	2	digoxin 3.3 ng/mL In Blood (unspecified) @ Unknown	
2134h	94 y F	digoxin	1	1	A/C	Ingst	Unt-T	2	digoxin 4.9 ng/mL In Blood (unspecified) @ 8 h (pe)	
		digoxin	1	1					digoxin 5 ng/mL In Blood (unspecified) @ 14 h (pe)	
2135	95 y F	amlodipine	1	1	A	Ingst	Int-S	2		
		benazepril	2	2						
		glimepiride	3	3						
		atorvastatin	4	4						
		metformin	5	5						
		bisoprolol/hydrochlorothiazide	6	6						
		levofloxacin	7	7						
		prednisone	8	8						
2136h	98 y M	diltiazem (ER)	1	1	A	Ingst	AR-D	3		
2137pha	Unknown adult (≥ 20 yrs) M				A/C	Ingst	Int-S	1		
		calcium antagonist, N.O.S.	1	1					amlodipine 430 ng/mL In Serum @ Unknown	
		lisinopril	2	2						
		duloxetine (ER)	3	3						
		hydroxyzine	4	4						
		midazolam	5	5						

See Also case 301, 308, 510, 579, 725, 987, 1115, 1209, 1388, 1414, 1420, 1470, 1534, 1574, 1575, 1580, 1627, 1708, 1724, 1734, 1741, 1764, 1770, 1771, 1772, 1775, 1785, 1801, 1805, 1806, 1839, 1841, 1848, 1850, 1851, 2143, 2154, 2161, 2183, 2187, 2188, 2194, 2203, 2209, 2213, 2214, 2218, 2231, 2238, 2242, 2249, 2264, 2300, 2301, 2305, 2307, 2412, 2477, 2501, 2548, 2568, 2583, 2612, 2665, 2690

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
Cold and Cough Preparations										
2138pa	14 y F				C	Ingst	Int-S	2		
		benzonatate	1	1						
		paroxetine	2	2						
		salicylate	3	3					salicylate	5.7 mg/dL In Blood (unspecified) @ Unknown
		salicylate	3	3					salicylate	8.1 mg/dL In Blood (unspecified) @ Unknown
		amoxicillin	4	4						
2139pa	14 y F	benzonatate	1	1	A	Ingst	Int-S	2		
2140	15 y F	benzonatate	1	1	A	Ingst	Int-S	2		
2141p	16 y F	Benzonatate	1	1	A	Ingst	Int-S	2		
2142ph	18 y F	benzonatate	2	1	A	Ingst	Int-S	1		
		iron, N.O.S.	1	2					iron	2100 mcg/dL In Blood (unspecified) @ Unknown
		fluoxetine	3	3						
		methocarbamol	4	4						
2143ph	18 y F	benzonatate	1	1	A	Ingst	Int-S	2		
		acetaminophen	4	2					acetaminophen (apap)	7.3 mcg/mL In Serum @ 5 m (pe)
		diclofenac	3	2						
		lisinopril	2	2						
2144h	23 y M	dextromethorphan	1	1	A	Ingst	Unk	1	dextro / levo methorphan	3400 ng/mL In Blood (unspecified) @ 5 m (pe)
		dextromethorphan	1	1					dextrorphan / levorphanol	690 ng/mL In Blood (unspecified) @ 5 m (pe)
2145pa	29 y M				U	Unk	Int-A	3		
		benzonatate	1	1						
		cyclobenzaprine	2	2						
		valacyclovir	3	3						
		cephalexin	4	4						
2146h	32 y M	dextromethorphan	1	1	A	Ingst	Int-A	2		
2147ph	38 y F	dextromethorphan	1	1	U	Ingst + Unk	Int-S	2		
		marijuana	2	2						
2148ai	44 y F	pseudoephedrine	1	1	U	Unk	Unk	1		
2149a	50 y M	acetaminophen/chlorpheniramine/dextromethorphan	1	1	A	Ingst	Unk	3	diphenhydramine	210 ng/mL In Blood (unspecified) @ Unknown
		acetaminophen/chlorpheniramine/dextromethorphan	1	1					ethanol	52 mg/dL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2						
2150p	50 y M	benzonatate	1	1	A	Ingst	Int-S	2		
		ethanol (beverage)	2	2						
2151ph	51 y M	acetaminophen/antihistamine/dextromethorphan	1	1	C	Ingst	Int-A	2		
		ethanol (non-beverage)	2	2						
2152pha	55 y F	doxylamine	1	1	A	Inhal	Int-S	1		
		diphenhydramine	2	2						
		carbon monoxide	3	3					carboxyhemoglobin	2.4 % In Blood (unspecified) @ 2.5 h (pe)
2153h	74 y F	acetaminophen/chlorpheniramine/dextromethorphan	1	1	A	Ingst	Int-S	2	acetaminophen (apap)	97 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	2	2						
2154ha	87 y F	acetaminophen/chlorpheniramine/dextromethorphan	1	1	A	Ingst	Int-S	1	dextromethorphan	2900 ng/mL In Blood (unspecified) @ Autopsy
		acetaminophen/chlorpheniramine/dextromethorphan	1	1					acetaminophen (apap)	75 mcg/mL In Blood (unspecified) @ Autopsy
		losartan	2	2						
		baclofen	3	3						
		duloxetine (ER)	4	4					duloxetine	710 ng/mL In Blood (unspecified) @ Autopsy
		alprazolam	5	5						
		amitriptyline	6	6					nortriptyline	120 ng/mL In Blood (unspecified) @ Autopsy
		amitriptyline	6	6					amitriptyline	560 ng/mL In Blood (unspecified) @ Autopsy

See Also case 31, 352, 873, 897, 1100, 1580, 1756, 1786, 1823, 2155, 2175, 2349, 2479, 2501, 2535, 2627

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
Dietary Supplements/Herbals/Homeopathic										
2155ph	13 y F				A	Ingst	Unk	2		
		dietary supplement/homeopathic agent, N.O.S.	1	1						
		acetaminophen	2	2					acetaminophen (apap)	14 mcg/mL In Blood (unspecified) @ Unknown
		benzonatate	3	3						
		nirmatrelvir/ritonavir	4	4						
		ethanol (beverage)	5	5					ethanol	12 mg/dL In Blood (unspecified) @ Unknown
2156	30 y F				A	Ingst	Int-S	2		
		ephedra	1	1						
		ondansetron	2	2						
		clonazepam	3	3						
		phenazopyridine	4	4						
2157h	32 y M				U	Unk	AR-O	3		
		dietary supplement/homeopathic agent, N.O.S.	1	1						
2158h	33 y F				C	Ingst	Int-M	2		
		botanical, N.O.S	1	1						
		phenol	2	2						
		botanical (oregano)	3	3						
2159	52 y M				U	Ingst	Int-S	2		
		Candida albicans/kreosotum/Natrum muriaticum	3	1					methemoglobin	26.9 % In Serum @ Unknown
		lysergic acid diethylamide (LSD)	1	2						
		amoxicillin	2	3						
See Also case 289, 325, 1380, 1565, 1802, 1940, 1986, 2035, 2213, 2424										
Electrolytes and Minerals										
2160ai	19 y F				U	Unk	Unk	1		
		iron, N.O.S.	1	1						
2161pha	45 y F				A/C	Ingst	Int-S	1		
		iron, N.O.S.	1	1					iron	1101 mcg/dL In Blood (unspecified) @ 3 h (pe)
		iron, N.O.S.	1	1					iron	177 mcg/dL In Blood (unspecified) @ 2 d (pe)
		iron, N.O.S.	1	1					iron	350 mcg/dL In Blood (unspecified) @ 2 d (pe)
		iron, N.O.S.	1	1					iron	530 mcg/dL In Blood (unspecified) @ 2 d (pe)
		iron, N.O.S.	1	1					iron	712 mcg/dL In Blood (unspecified) @ 2 d (pe)
		iron, N.O.S.	1	1					iron	929 mcg/dL In Blood (unspecified) @ Unknown
		methamphetamine	2	2						
		diphenhydramine	3	3						
		risperidone	4	4						
		acetaminophen/caffeine/salicylate	5	5						
		ibuprofen	6	6						
		hydroxyzine	7	7						
		gabapentin	8	8						
		atorvastatin	9	9						
		haloperidol	10	10						
		salicylate	11	11						
[2162h]	51 y F				A	Ingst+Par	Int-S	1		
		diphenhydramine	1	1						
		sodium bicarbonate	2	1						
2163ha	52 y F				A/C	Ingst	Int-S	1		
		potassium salts, N.O.S.	1	1					amphetamine	0.01 mg/L In Serum @ 1.3 h (pe)
		potassium salts, N.O.S.	1	1					methamphetamine	0.35 mg/L In Serum @ 1.3 h (pe)
		potassium salts, N.O.S.	1	1					potassium	6.5 mmol/L In Serum @ 1.3 h (pe)
		methamphetamine	2	2						
2164h	52 y F				A	Ingst	Int-S	1		
		iron, N.O.S.	1	1					iron	2000 mcg/dL In Serum @ Unknown
		acetaminophen	2	2					acetaminophen (apap)	81.2 mcg/mL In Serum @ Unknown
2165ph	56 y M				U	Ingst	Unk	3		
		magnesium	1	1					magnesium	15 mg/dL In Blood (unspecified) @ Unknown
[2166ha]	57 y F				A	Ingst	Int-S	1		
		potassium	1	1					potassium	2.4 mmol/L In Serum @ 6 h (pe)
		potassium	1	1					potassium	8.6 mmol/L In Serum @ 1 h (pe)
		potassium	1	1					potassium	9 mmol/L In Vitreous @ Autopsy
2167h	59 y M				A	Par	Unt-T	3		
		magnesium	1	1					magnesium	5.7 mEq/L In Serum @ 5 m (pe)
		magnesium	1	1					magnesium	7.3 mEq/L In Serum @ 4 h (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2168h	61 y F	potassium	1	1	A/C	Ingst	Int-S	1	potassium	8.7 mmol/L In Serum @ Unknown
		potassium	1	1					potassium	9.5 mmol/L In Serum @ Unknown
		trazodone	2	1						
		gabapentin	3	2						
2169h	78 y F	potassium	1	1	U	Ingst	Unk	1		
2170	89 y F	magnesium	1	1	A	Par	Unt-T	1		
See Also case 205, 308, 1537, 1579, 1839, 1891, 1937, 2061, 2102, 2132, 2142, 2213, 2399										
Gastrointestinal Preparations										
2171ph	16 y M	loperamide	1	1	U	Ingst	Int-S	2		
2172p	24 y M	loperamide	1	1	A	Ingst	Int-A	2		
2173ph	39 y F	loperamide	1	1	A	Ingst	Unk	2		
2174ph	46 y F	loperamide	1	1	A	Ingst	Int-A	2		
See Also case 336, 558, 1150, 1388, 1525, 1544, 1772, 1783, 1836, 1852, 1893, 1988, 1998, 2028, 2102, 2156, 2203										
Hormones and Hormone Antagonists										
2175ha	21 y F	metformin	1	1	A	Ingst	Int-S	1		
		ethanol (beverage)	2	2					ethanol	111 mg/dL In Blood (unspecified) @ Unknown
		acetaminophen/antihistamine/dextromethorphan	3	3					acetaminophen (apap)	29 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen/antihistamine/dextromethorphan	3	3					diphenhydramine	400 ng/mL In Blood (unspecified) @ Unknown
		acetaminophen/salicylate	4	4						
2176ha	38 y M	metformin	1	1	A	Ingst+Par	Int-S	1	metformin	180 mcg/mL In Whole Blood @ Autopsy
		insulin (aspart)	2	2					insulin	32 microU/mL In Whole Blood @ Autopsy
		ethanol (beverage)	3	3					ethanol	155 mg/dL In Serum @ Unknown
2177ha	41 y M	metformin	1	1	U	Unk	Unk	2		
2178h	41 y F	metformin	1	1	A/C	Ingst	Int-S	1		
		ethanol (beverage)	2	2						
		marijuana, N.O.S.	3	3						
2179ph	42 y F	insulin, N.O.S.	1	1	A	Par	Int-S	1		
2180	42 y F	metformin	2	1	A/C	Ingst	Int-S	2		
		indomethacin	1	2						
[2181ph]	46 y M	insulin, N.O.S.	1	1	A	Par	Int-S	1	insulin	63 microU/mL In Blood (unspecified) @ Unknown
		drug, N.O.S.	2	2						
2182h	47 y M	metformin	1	1	C	Ingst	AR-D	2		
2183ph	48 y F	empagliflozin	1	1	A/C	Ingst	Int-S	2		
		insulin (degludec) (ER)	2	2						
		olanzapine	3	3						
		venlafaxine	4	4						
		propranolol	5	5						
		gabapentin	6	6						
		hydroxyzine	7	7						
		buspirone	8	8						
2184p	50 y M	insulin, N.O.S.	1	1	A/C	Unk	Int-S	2		
		methamphetamine	2	2						
2185h	52 y F	insulin, N.O.S.	1	1	A/C	Par	Int-S	1		
2186	54 y M	insulin, N.O.S.	1	1	A	Ingst+Par	Int-S	2		
		ethanol (beverage)	2	2					ethanol	82 mg/dL In Blood (unspecified) @ Unknown
2187	55 y M	oral hypoglycemic (sulfonylurea), N.O.S.	1	1	A	Ingst	Int-S	1		
		metformin	2	2						
		sodium glucose co-transporter 2 inhibitor, N.O.S.	3	3						
		antihyperlipidemic, N.O.S.	4	4						
2188h	55 y F	metformin	1	1	A/C	Ingst	Int-S	2		
		amlodipine	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		acetaminophen/hydrocodone	5	3						
		angiotensin receptor blocker/ diuretic N.O.S.	4	4						
		eluxadolone	3	5						
		escitalopram	6	6						
		sumatriptan	7	7						
2189h	57 y F	insulin, N.O.S.	1	1	A/C	Ingst+Par	Int-S	2		
		amitriptyline	2	2						
		aripiprazole	3	3						
		anticholinergic, N.O.S.	4	4						
		gabapentin	5	5						
		quetiapine	6	6						
		ropinirole	7	7						
		sumatriptan	8	8						
		venlafaxine	9	9						
		cyclobenzaprine	10	10						
2190p	57 y M	insulin, N.O.S.	1	1	U	Par	Int-S	1		
2191h	59 y F	metformin	1	1	A/C	Ingst	Int-S	2		
		opioid, N.O.S.	2	2						
		fluoxetine	4	3						
		ethanol (beverage)	3	4						
2192ha	60 y F	insulin (glargine) (ER) drug, N.O.S.	1	1	A/C	Par	Unk	2		
			2	2						
2193h	60 y F	metformin	1	1	C	Ingst	Unt-T	2		
		acetaminophen	2	2					acetaminophen (apap)	22mcg/mL In Blood (unspecified) @ Unknown
2194	62 y M	insulin (lispro)	1	1	A/C	Ingst+Par	Int-S	1		
		atenolol	2	2						
		enalapril	3	3						
[2195ha]	63 y M	metformin	1	1	A	Ingst	Int-S	1		metformin 85mg/L In Blood (unspecified) @ 22 h (pe)
2196h	63 y F	metformin	1	1	C	Ingst	Int-U	2		
		acetaminophen	2	2					acetaminophen (apap)	53mcg/mL In Serum @ 5 m (pe)
		ethanol (beverage)	3	3					ethanol	287 mg/dL In Serum @ 5 m (pe)
2197h	66 y F	metformin	1	1	C	Ingst	AR-D	3		
2198h	68 y M	metformin	1	1	A	Ingst	AR-D	3		metformin 16 mcg/mL In Blood (unspecified) @ Unknown
2199h	68 y F	metformin	1	1	C	Ingst	AR-D	2		
2200h	70 y F	metformin	1	1	U	Ingst	Int-M	3		
		ibuprofen	2	2						
		diphenhydramine	3	3						
2201h	70 y F	insulin (glargine) (ER)	1	1	A/C	Ingst+Par	Int-S	1		
		acetaminophen/hydrocodone	2	2						
		dulaglutide	3	3						
		empagliflozin	4	4						
2202h	73 y M	metformin	1	1	A/C	Ingst	AR-D	3		
2203h	73 y F	glipizide	1	1	A/C	Ingst	AR-D	3		
		metformin	2	2						
		amlodipine	3	3						
		lithium	4	4					lithium	1.4 mEq/L In Blood (unspecified) @ Unknown
		losartan	5	5						
		celecoxib	6	6						
		pregabalin	7	7						
		sitagliptin	8	8						
		rosuvastatin	9	9						
		pantoprazole (ER)	10	10						
		salicylate	11	11						
2204h	74 y F	metformin	1	1	C	Ingst	Unt-T	2		
2205	74 y M	metformin	1	1	U	Ingst	AR-D	3		
2206h	75 y F	metformin/sitagliptin	1	1	C	Ingst	AR-D	2		
2207h	75 y F	metformin	1	1	C	Ingst	AR-D	2		
		tirzepatide	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2208h	77 y M	metformin	1	1	A	Ingst	Int-S	2		
2209h	83 y F	glimepiride	1	1	A/C	Ingst	Unt-T	3		
		metformin	2	2						
		angiotensin converting enzyme inhibitor, N.O.S.	3	3						
2210h	83 y F	metformin	1	1	U	Ingst	Unk	3	metformin	12mcg/mL In Blood (unspecified) @ Unknown
2211h	84 y F	metformin	1	1	C	Ingst	AR-D	1		
2212h	86 y F	metformin	1	1	A/C	Ingst	Oth-M	2		
		acetaminophen	2	2						
		salicylate	3	3						
2213h	87 y M	glimepiride	1	1	A/C	Ingst	Unt-T	1		
		diltiazem	2	2						
		carvedilol	3	3						
		potassium	4	4						
		lisinopril	5	5						
		furosemide	6	6						
		tamsulosin	7	7						
		acetazolamide	8	8						
		apixaban	9	9						
		salicylate	10	10						
		cinnamon	11	11						
		famotidine	12	12						
		ferrous sulfate	13	13						
		loratadine	14	14						
		metformin	15	15						
		vitamins (multiple)	16	16						
		fish oil	17	17						
		rosuvastatin	18	18						
		tramadol	19	19						
2214h	87 y F	metformin	1	1	C	Ingst	AR-D	2		
		metoprolol	2	2						
		diltiazem	3	3						
See Also case 152, 734, 754, 958, 1035, 1096, 1127, 1259, 1324, 1479, 1555, 1568, 1574, 1579, 1613, 1615, 1696, 1738, 1783, 1804, 1806, 1839, 1899, 1912, 1919, 1937, 1947, 1949, 1954, 1964, 1975, 1981, 1987, 1988, 1990, 2015, 2032, 2036, 2042, 2045, 2047, 2074, 2079, 2100, 2101, 2106, 2128, 2131, 2132, 2135, 2231, 2245, 2301, 2304, 2501, 2673										
Miscellaneous Drugs										
2215h	9 y F	deferoxamine	1	1	C	Par	AR-D	3		
2216p	13 y F	atomoxetine	1	1	A/C	Ingst	Int-S	2		
2217h	75 y F	tacrolimus	1	1	C	Ingst	Unt-T	3	tacrolimus	30.1 mcg/mL In Blood (unspecified) @ Unknown
2218	75 y M	viral disease (COVID-19-Confirmed)	2	2	A	Ingst	Int-S	2		
		donepezil	1	1						
		memantine	2	2						
		clopidogrel	3	3						
		verapamil (ER)	4	4						
		acetaminophen	5	5					acetaminophen (apap)	56mcg/mL In Serum @ Unknown
See Also case 336, 1096, 1575, 1701, 1804, 1841, 1893, 1975, 2002, 2081, 2131, 2189, 2247, 2307, 2315										
Muscle Relaxants										
2219h	31 y M	baclofen	1	1	A/C	Ingst	Unk	3		
2220ph	40 y F	cyclobenzaprine	1	1	A	Ingst	Int-S	2		
		ethanol (beverage)	2	2					ethanol	39mg/dL In Blood (unspecified) @ Unknown
2221h	46 y F	tizanidine	1	1	U	Ingst	Int-S	2		
		zolpidem	2	2						
2222	48 y M	cyclobenzaprine	1	1	A	Ingst	Int-S	3		
		ethanol (beverage)	2	2						
2223h	53 y M	tizanidine	1	1	A/C	Ingst	Int-S	2		
		trazodone	2	2						
		baclofen	3	3						
2224h	53 y F	tizanidine	1	1	A	Ingst + Unk	Int-S	3		
		opioid, N.O.S.	2	2						
		marijuana, N.O.S.	3	3						
2225h	63 y M	baclofen	1	1	A/C	Ingst + Inhal	Int-S	2		
		oxycodone	2	2						
		cocaine	3	3						
2226ai	64 y M	cyclobenzaprine	1	1	U	Unk	Int-A	1		
		cocaine	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2227hi	67 y F	cyclobenzaprine	1	1	U	Ingst	Int-S	2		
		tizanidine	2	2						
		trazodone	3	3						
2228ai	68 y F	cyclobenzaprine	1	1	U	Unk	Int-A	1		
		diazepam	2	2						
		ethanol (beverage)	3	3						
2229	68 y M	baclofen	1	1	A	Ingst	Int-S	2		
		gabapentin	2	2						
		cyclobenzaprine	3	3						
2230ha	69 y F	baclofen	1	1	A	Ingst	Unk	3		
		gabapentin	4	2					gabapentin 7.5 mcg/mL In Blood (unspecified) @ Unknown	
		venlafaxine	2	2					venlafaxine 1300 ng/mL In Blood (unspecified) @ Unknown	
		venlafaxine	2	2					o-desmethylvenlafaxine 510 ng/mL In Blood (unspecified) @ Unknown	
		acetaminophen/hydrocodone	3	3					hydrocodone 23 ng/mL In Blood (unspecified) @ Unknown	
		acetaminophen/hydrocodone	3	3					acetaminophen (apap) 6.2 mcg/mL In Blood (unspecified) @ Unknown	
2231h	69 y F	baclofen	1	1	A/C	Ingst	Int-S	2		
		bupropion	2	2						
		glipizide	3	3						
		losartan	4	4						
		levothyroxine	5	5						
2232ph	70 y F	tizanidine	2	1	A	Ingst	Int-S	1		
		ibuprofen	4	2						
		tramadol	1	2						
		acetaminophen	3	3					acetaminophen (apap) 154.1 mcg/mL In Blood (unspecified) @ 16 h (pe)	
2233p	70 y F	tizanidine	1	1	A	Ingst	Int-S	2		
		tramadol	2	2						
2234h	71 y F	cyclobenzaprine	1	1	A	Ingst	Int-A	3		
2235	78 y F	carisoprodol	1	1	A	Ingst	Int-S	2		
See Also case 336, 807, 821, 873, 959, 975, 1017, 1036, 1050, 1167, 1200, 1204, 1211, 1243, 1291, 1298, 1320, 1350, 1367, 1399, 1400, 1455, 1544, 1567, 1569, 1752, 1756, 1761, 1765, 1784, 1834, 1843, 1850, 1886, 1930, 2000, 2001, 2008, 2009, 2072, 2092, 2142, 2145, 2154, 2189, 2289, 2501, 2504, 2638, 2650										
Opioid Antagonists										
2236ai	61 y M	narcotic antagonist (long acting), N.O.S.	1	1	U	Unk	Int-A	1		
See Also case 1077, 1522, 1722, 1809, 1897										
Sedative/Hypnotics/Antipsychotics										
2237ph	14 y F	phenobarbital	1	1	A	Ingst	Int-S	2	phenobarbital 111 mg/L In Blood (unspecified) @ Unknown	
2238ha	15 y F	drug, N.O.S.	2	2	A	Ingst + Unk	Int-S	1	quetiapine 1500 ng/mL In Blood (unspecified) @ Autopsy	
		quetiapine (ER)	1	1					hydroxyzine 300 ng/mL In Blood (unspecified) @ Autopsy	
		hydroxyzine	2	2						
		atenolol	3	3						
2239ai	17 y F	alprazolam	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2240h	23 y M	quetiapine (ER)	1	1	A	Ingst	Int-S	3		
2241ai	23 y M	alprazolam	1	1	U	Unk	Int-S	1		
		ethanol (beverage)	2	2						
2242h	24 y M	atypical antipsychotic, N.O.S.	1	1	A/C	Ingst	Int-S	2		
		trazodone	3	2						
		metoprolol	2	3						
		venlafaxine	4	4						
		drug, N.O.S.	5	5						
		ethanol (beverage)	6	6					ethanol 175 mg/dL In Blood (unspecified) @ Unknown	
2243	26 y F	quetiapine	1	1	A	Ingst	Int-S	2		
		lamotrigine	2	2						
		gabapentin	3	3						
2244ph	27 y M	bromazolam	1	1	U	Unk	Unk	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2245ph	29 y F	zolpidem	1	1	A/C	Ingst + Aspir	Int-S	2		
		alprazolam	2	2						
		valacyclovir	3	3						
		metformin	4	4						
		buspirone	5	5						
		amphetamine/dextroamphetamine	6	6						
2246ai	32 y M	flualprazolam	1	1	U	Unk	Int-A	1		
		methadone	2	2						
2247h	32 y F	quetiapine	1	1	A/C	Ingst	Int-S	3		
		atomoxetine	2	2						
		buspirone	3	3						
		fluoxetine	4	4						
2248ha	33 y F	quetiapine	1	1	A/C	Ingst	Int-S	3		
		levetiracetam	2	2						
2249pha	33 y M	benztropine	4	1	U	Unk	Int-U	1	benztropine mesylate	72 ng/mL In Blood (unspecified) @ Unknown
		cocaine	6	1					benzoyllecognine	780 ng/mL In Blood (unspecified) @ Unknown
		haloperidol	1	1					haloperidol	140 ng/mL In Blood (unspecified) @ Unknown
		olanzapine	3	1					olanzapine	130 ng/mL In Blood (unspecified) @ Unknown
		prazosin	2	1						
		sertraline	5	1					sertraline	1400 ng/mL In Blood (unspecified) @ Unknown
		sertraline	5	1					desmethylsertraline	440 ng/mL In Blood (unspecified) @ Unknown
2250pha	35 y M	quetiapine	1	1	A/C	Ingst	Int-S	2	quetiapine	11241 ng/mL In Blood (unspecified) @ Unknown
		lamotrigine	2	2						
		lorazepam	3	3						
		oxcarbazepine	4	4						
		gabapentin	5	5					gabapentin	7.8 mcg/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	6	6					ethanol	281 mg/dL In Blood (unspecified) @ Unknown
2251ha	36 y M	benzodiazepine, N.O.S.	1	1	A	Ingst	Int-S	2		
		ethanol (beverage)	2	2						
		drug, N.O.S.	3	3						
2252h	37 y F	haloperidol	1	1	A	Ingst	Int-S	2		
2253	37 y M	clozapine	1	1	A/C	Ingst	Int-S	2		
2254h	38 y F	clozapine	1	1	A/C	Ingst + Unk	Int-A	1		
		alprazolam	1	1						
		drug, N.O.S.	3	2						
		fantanyl (non-prescription)	2	2						
		methamphetamine	4	4						
		cetirizine	5	5						
		chlorpheniramine	6	6						
		trazodone	7	7						
		hydroxyzine	8	8						
		gabapentin	9	9						
2255h	38 y F	olanzapine	1	1	A/C	Ingst	Int-S	2		
2256pha	38 y F	clozapine	1	1	A/C	Ingst	Int-S	1	clozapine	3600 ng/mL In Blood (unspecified) @ Unknown
		clozapine	1	1					norclozapine	560 ng/mL In Blood (unspecified) @ Unknown
		valproic acid (ER)	2	2					valproic acid	110 mcg/mL In Blood (unspecified) @ Unknown
2257ai	38 y M	clozapine	1	1	U	Unk	Unk	1		
		fluoxetine	2	2						
		perphenazine	3	3						
2258ph	38 y M	bromazolam	1	1	U	Ingst	Unk	1	bromazolam	12.7 ng/mL In Blood (unspecified) @ Unknown

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		fentanyl (non-prescription)	2	2					fentanyl	1.6 ng/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	3	3					ethanol	128 mg/dL In Blood (unspecified) @ Unknown
2259i	43 y F	alprazolam	1	1	U	Ingst	Int-S	2		
		quetiapine	2	2						
2260ph	43 y M	doxylamine	1	1	A	Ingst	Int-S	2		
2261ph	43 y F	alprazolam	1	1	A/C	Ingst	Int-S	3		
		activated charcoal	2	2						
2262ai	46 y F	quetiapine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		lamotrigine	3	3						
2263	46 y F	quetiapine	1	1	A	Ingst	Int-S	2		
		oxcarbazepine	2	2						
2264h	47 y M	quetiapine	1	1	A	Ingst	Int-S	3		
		trazodone	2	2						
		lisinopril	3	3						
2265h	47 y F	haloperidol (ER)	1	1	A	Par	AR-D	2		
2266	48 y M	quetiapine	2	1	U	Ingst + Unk	Int-S	2		
		methadone	1	2						
		benzodiazepine, N.O.S.	3	3						
2267ha	49 y F	quetiapine	1	1	A/C	Ingst	Int-S	1	quetiapine	11 mg/L In Blood (unspecified) @ Autopsy
		naproxen	2	2						
2268h	50 y M	buspirone	1	1	A/C	Ingst	Int-S	2		
		warfarin	2	2						
		ethanol (beverage)	3	3					ethanol	23 mg/dL In Serum @ Unknown
2269h	50 y F	lorazepam	2	1	U	Ingst	Int-S	2		
		acetaminophen	1	2					acetaminophen (apap)	184 mcg/mL In Blood (unspecified) @ Unknown
		acetaminophen	1	2					acetaminophen (apap)	323 mcg/mL In Blood (unspecified) @ Unknown
2270ai	51 y F	alprazolam	1	1	U	Unk	Unk	1		
		diphenhydramine	2	2						
		gabapentin	3	3						
2271pha	52 y F	quetiapine	1	1	A/C	Ingst	Int-S	1		
		fentanyl (non-prescription)	2	2					fentanyl	5.2 ng/mL In Blood (unspecified) @ Autopsy
		fentanyl (non-prescription)	2	2					fentanyl	7 ng/mL In Blood (unspecified) @ 45 m (pe)
2272pha	54 y M	quetiapine	1	1	A/C	Ingst	Int-S	3		
		gabapentin	2	2						
		cocaine	3	3						
2273h	56 y M	diazepam	1	1	A	Ingst	Int-U	2		
		acetaminophen	2	2						
2274ph	56 y F	benzodiazepine, N.O.S.	1	1	A	Ingst	Int-U	3		
		cocaine	2	2						
		fentanyl (non-prescription)	3	3						
2275ai	58 y F	alprazolam	1	1	U	Unk	Int-S	1		
		valproic acid	2	2						
		ethanol (beverage)	3	3						
2276h	58 y F	quetiapine	1	1	A/C	Ingst	Int-S	2		
2277h	58 y M	clonazepam	1	1	U	Ingst	Int-S	2		
		gabapentin	2	2						
		duloxetine (ER)	3	3						
		acyclovir	4	4						
2278h	59 y F	quetiapine	1	1	U	Ingst	Int-S	3		
		acetaminophen	2	2						
2279h	59 y F	quetiapine	1	1	U	Ingst	Int-S	2		
		marijuana, N.O.S.	2	2						
		ethanol (beverage)	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2280ph	59 y M	alprazolam	1	1	A/C	Ingst + Aspir	Int-S	2		
2281pha	60 y F	benzodiazepine, N.O.S.	1	1	U	Ingst	Unk	1		
2282h	61 y F	olanzapine	1	1	A/C	Ingst	Int-S	1		
		oxcarbazepine	3	1					olanzapine 200 ng/mL In Blood (unspecified) @ Autopsy	
		fluoxetine	2	2					10-hydroxycarbazepine 8.7 mcg/mL In Blood (unspecified) @ Autopsy	
		fluoxetine	2	2					fluoxetine 390 ng/mL In Blood (unspecified) @ Autopsy	
		valproic acid (ER)	4	2					norfluoxetine 630 ng/mL In Blood (unspecified) @ Autopsy	
		valproic acid (ER)	4	2					valproic acid 139 mcg/mL In Plasma @ 36 h (pe)	
2283ph	63 y M	pentobarbital	1	1	A	Unk	Int-S	2		valproic acid 84 mcg/mL In Blood (unspecified) @ 5 m (pe)
2284	63 y F	quetiapine	1	1	A	Ingst	Int-S	2		
2285	64 y M	alprazolam	1	1	A/C	Ingst + Inhal	Int-A	3		
2286h	65 y F	alprazolam	1	1	A	Ingst	Int-S	3		
		gabapentin	2	2						
		histamine-2 blocker, N.O.S.	3	3						
		drug, N.O.S.	4	4						
		acetaminophen	5	5					acetaminophen (apap) 52 mcg/mL In Serum @ 4 h (pe)	
2287	65 y F	quetiapine	1	1	A/C	Ingst	Int-S	3		
2288h	68 y M	diazepam	1	1	A/C	Ingst	Int-S	3		
2289ai	69 y F	phenobarbital	1	1	U	Unk	Unk	1		
		cyclobenzaprine	2	2						
		methadone	3	3						
2290ph	69 y F	clonazepam	1	1	A	Ingst	Int-S	2		
		methadone	2	2					clonazepam 393 ng/mL In Blood (unspecified) @ Unknown	
		methadone	2	2					methadone metabolite 158 ng/mL In Blood (unspecified) @ Unknown	
		methadone	2	2					methadone 770 ng/mL In Blood (unspecified) @ Unknown	
2291h	70 y M	alprazolam	1	1	A/C	Ingst	Int-S	1		
		alprazolam	1	1					alprazolam 310 ng/mL In Blood (unspecified) @ Unknown	
		alprazolam	1	1					alprazolam 9.8 ng/mL In Blood (unspecified) @ Autopsy	
2292i	71 y F	clonazepam	1	1	A/C	Ingst	Unk	3		
2293ha	71 y M	quetiapine	1	1	A/C	Ingst	Int-S	3		
2294ph	72 y M	quetiapine	1	1	A	Ingst	Int-S	2		
		lorazepam	2	2						
		clonazepam	3	3						
2295h	72 y M	lorazepam	1	1	A	Par	AR-D	3		
		diazepam	2	2						
2296ph	75 y F	clozapine	1	1	A	Ingst	Unt-T	3		
		haloperidol	2	2						
		sertraline	3	3						
		vitamins (multiple)/iron, N.O.S.	4	4						
2297h	78 y M	eszopiclone	1	1	A	Ingst	Int-S	3		
		alprazolam	2	2						
2298h	79 y M	propofol	1	1	A	Par	Unt-T	3		
2299h	80 y M	alprazolam	1	1	U	Ingst	Int-S	2		
		oxycodone	2	2						
2300h	83 y M	olanzapine	1	1	A/C	Ingst	Unk	1		
		amlodipine	2	2						
		valproic acid (ER)	3	3						
		lamotrigine	4	4						
2301h	83 y F	quetiapine	1	1	A/C	Ingst	Int-S	2		
		acetaminophen	2	2					acetaminophen (apap) 120 mcg/mL In Blood (unspecified) @ Unknown	
		hydroxyzine	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		sertraline	4	4						
		valsartan	5	5						
		gabapentin	6	6						
		levothyroxine	7	7						
2302h	86 y F	temazepam	1	1	A/C	Ingst	Int-S	2		
2303h	86 y M	alprazolam	1	1	A/C	Ingst	Int-S	2		
2304h	87 y F	clozapine	1	1	A	Ingst	Unt-T	3		
		metformin	2	2						
		atypical antipsychotic, N.O.S.	3	3						
2305	89 y F	atypical antipsychotic, N.O.S.	1	1	A/C	Ingst	Unt-G	3		
		calcium antagonist, N.O.S.	2	2						
		angiotensin receptor blocker, N.O.S.	3	3						
		acetaminophen	4	4						
2306h	91 y F	clozapine	1	1	A	Ingst	Unt-G	3		
		benztropine	2	2						
2307ph	50+ y F	clonazepam	1	1	U	Unk	Int-S	3		
		alprazolam	2	2						
		eszopiclone	3	3						
		diphenhydramine	4	4						
		clonidine	5	5						
		quetiapine	6	6						
		mannose	7	7						
		ferulic acid	8	8						
See Also case 29, 63, 65, 68, 84, 116, 125, 156, 176, 222, 226, 263, 327, 329, 333, 336, 338, 342, 347, 381, 382, 390, 412, 413, 422, 431, 434, 461, 467, 481, 514, 526, 533, 535, 541, 542, 546, 564, 572, 591, 608, 619, 630, 637, 647, 665, 694, 704, 712, 723, 734, 746, 755, 767, 784, 848, 849, 854, 855, 911, 931, 939, 942, 943, 960, 987, 991, 997, 1005, 1008, 1024, 1035, 1050, 1073, 1081, 1083, 1084, 1096, 1098, 1106, 1109, 1136, 1157, 1166, 1170, 1171, 1173, 1192, 1203, 1209, 1211, 1222, 1263, 1276, 1287, 1291, 1305, 1314, 1333, 1338, 1354, 1370, 1387, 1399, 1407, 1408, 1419, 1450, 1455, 1476, 1479, 1483, 1532, 1533, 1544, 1546, 1556, 1567, 1569, 1576, 1583, 1592, 1599, 1602, 1606, 1609, 1627, 1678, 1686, 1687, 1691, 1693, 1697, 1710, 1714, 1719, 1731, 1734, 1736, 1738, 1742, 1743, 1744, 1752, 1754, 1755, 1764, 1770, 1771, 1772, 1781, 1783, 1784, 1790, 1791, 1792, 1795, 1796, 1802, 1818, 1821, 1838, 1850, 1869, 1875, 1891, 1892, 1896, 1897, 1898, 1899, 1902, 1910, 1915, 1919, 1921, 1923, 1924, 1927, 1934, 1938, 1949, 1956, 1962, 1965, 1973, 1987, 1988, 1989, 1990, 2001, 2004, 2006, 2008, 2010, 2019, 2028, 2029, 2035, 2041, 2048, 2052, 2059, 2064, 2081, 2100, 2102, 2106, 2137, 2154, 2156, 2161, 2183, 2189, 2221, 2228, 2324, 2326, 2346, 2351, 2357, 2369, 2380, 2402, 2412, 2425, 2501, 2544, 2573, 2613, 2633, 2643										
Stimulants and Street Drugs										
[2308pha]	9 y F	cocaine	1	1	A	Unk	Unk	1	benzoyllecognine	0.035 mg/L In Blood (unspecified) @ Autopsy
		cocaine	1	1					benzoyllecognine	0.055 mg/L In Urine (quantitative only) @ Autopsy
		cocaine	1	1					benzoyllecognine	27 ng/mL In Urine (quantitative only) @ 12 h (pe)
2309ph	16 y M	cocaine	1	1	A	Ingst	Int-A	1		
		fentanyl (prescription)	2	2						
2310ai	17 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2311pha	18 y F	methamphetamine	1	1	A	Ingst	Int-S	1	methamphetamine	22810 ng/mL In Blood (unspecified) @ Unknown
		methamphetamine	1	1					amphetamine	301 ng/mL In Blood (unspecified) @ Unknown
[2312ha]	18 y M	caffeine	1	1	A	Ingst	Int-S	1	caffeine	100 mcg/mL In Blood (unspecified) @ Unknown
		citalopram	2	2					citalopram	143 ng/mL In Blood (unspecified) @ Unknown
2313pa	18 y M	clenbuterol	3	3	A	Ingst	Int-M	1		
		cocaine	1	1					benzoyllecognine	2000 ng/mL In Blood (unspecified) @ Unknown
		cocaine	1	1					cocaine	2200 ng/mL In Blood (unspecified) @ Unknown
		cocaine	1	1					cocaethylene	80 ng/mL In Blood (unspecified) @ Unknown
		ethanol (beverage)	2	2					ethanol	170 mg/dL In Blood (unspecified) @ Unknown
2314pha	20 y F	cocaine	1	1	U	Unk	Int-S	1	cocaine	160 ng/mL In Blood (unspecified) @ Unknown
		cocaine	1	1					benzoyllecognine	3000 ng/mL In Blood (unspecified) @ Unknown
2315h	21 y M	methamphetamine drug, N.O.S.	1	1	A	Ingst + Unk	Int-S	2		
			2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2316ha	21 y M	methamphetamine	1	1	A	Unk	Int-A	1	amphetamine	110 ng/mL In Blood (unspecified) @ Unknown
		methamphetamine	1	1					methamphetamine	3700 ng/mL In Blood (unspecified) @ Unknown
2317ph	22 y M	cocaine	1	1	U	Unk	Int-A	2		
		fentanyl (non-prescription)	2	2						
2318h	22 y M	methamphetamine	1	1	U	Unk	Int-A	2		
2319pha	22 y F	amphetamine (hallucinogenic), 3,4-methylenedioxy-methamphetamine (MDMA)	1	1	A	Ingst	Int-A	1		
		marijuana, N.O.S.	2	2						
2320ha	22 y M	methamphetamine	1	1	A	Ingst	Int-A	2		
2321ha	23 y M	methamphetamine	1	1	A/C	Ingst	Int-M	1	amphetamine	0.254 mg/L In Serum @ Unknown
		methamphetamine	1	1					methamphetamine	16.2 mg/L In Serum @ Unknown
2322pa	23 y M	cocaine	1	1	U	Ingst	Int-U	1	cocaine	280 ng/mL In Whole Blood @ Unknown
		marijuana, N.O.S.	2	2					thc (tetrahydrocannabinol)	3.8 ng/mL In Whole Blood @ Unknown
		mushroom (psilocybin-psilocin)	3	3						
2323ai	24 y F	cocaine	1	1	U	Unk	Int-A	1		
2324h	24 y M	amphetamine	1	1	A	Ingst	Int-A	2		
		aripiprazole	2	2						
2325ha	24 y M	methamphetamine	1	1	A	Unk + Rec	Unk	1	methamphetamine	1300 ng/mL In Blood (unspecified) @ Unknown
		methamphetamine	1	1					amphetamine	32 ng/mL In Blood (unspecified) @ Unknown
2326ph	25 y F	dexamethylphenidate	1	1	A	Ingst	Int-S	2		
		trazodone	2	2						
		clonazepam	3	3						
		fluoxetine	4	4						
2327h	26 y M	stimulant/street drug, N.O.S.	1	1	A	Unk	Int-A	3		
2328ai	27 y M	cocaine	1	1	U	Unk	Int-A	3		
2329i	27 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2330h	27 y M	methamphetamine	1	1	A	Unk	Int-A	2		
		fentanyl (non-prescription)	2	2						
2331p	27 y M	methamphetamine	1	1	A	Inhal	Int-A	2		
2332ai	28 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2333ai	28 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2334ha	28 y F	methamphetamine	1	1	U	Unk	Unk	1	methamphetamine	1140 ng/mL In Blood (unspecified) @ Unknown
		amphetamine, N.O.S.	2	2					amphetamine	97 ng/mL In Blood (unspecified) @ Unknown
		ketamine	3	3						
		gabapentin	4	4					gabapentin	2 mcg/mL In Blood (unspecified) @ Unknown
2335h	28 y M	methamphetamine	1	1	A	Ingst + Unk	Int-A	1		
		buprenorphine/naloxone (sublingual film)	2	2						
2336ai	28 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2337ai	28 y M	cocaine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2338ai	28 y M	amphetamine (hallucinogenic), 3,4-methylenedioxy-methamphetamine (MDMA)	1	1	U	Unk	Int-A	1		
2339pai	29 y M	amphetamine	1	1	U	Unk	Int-A	2		
		marijuana, N.O.S.	2	2						
		fentanyl (non-prescription)	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2340ai	29 y M	methamphetamine	4	4	U	Unk	Int-A	1		
2341h	29 y M	methamphetamine	1	1	C	Ingst + Unk	Int-A	3		
		cocaine	1	1						
		amphetamine (hallucinogenic), 3,4-methylenedioxy-methamphetamine (MDMA)	2	2						
		ethanol (beverage)	3	3					ethanol	40 mg/dL In Blood (unspecified) @ Unknown
2342p	29 y M				A	Ingst	Int-M	2		
2343h	29 y M	cocaine	1	1	A	Ingst + Par	Int-A	2		
		methamphetamine	1	1						
		buprenorphine/naloxone (sublingual film)	2	2						
2344ph	30 y F				U	Ingst + Unk	Int-U	2		
		cocaine	1	1						
		acetaminophen/oxycodone	2	2						
2345ai	30 y M				U	Unk	Int-A	1		
		cocaine	1	1						
		marijuana, N.O.S.	2	2						
2346ph	30 y F				A	Ingst	Unt-M	2		
		cocaine	1	1						
		cocaine	2	2						
		fentanyl (prescription)	3	3						
		amphetamine, N.O.S.	4	4						
		benzodiazepine, N.O.S.	5	5						
		marijuana	6	6						
2347ai	30 y F				U	Unk	Int-S	1		
		cocaine	1	1						
		doxepin	2	2						
		ethanol (beverage)	3	3						
2348ai	30 y M				U	Unk	Int-A	1		
		cocaine	1	1						
		oxycodone	2	2						
		ethanol (beverage)	3	3						
2349ai	30 y M				U	Unk	Int-A	1		
		methamphetamine	1	1						
		dextromethorphan	2	2						
2350p	30 y M				A	Unk	Unk	3		
		phencyclidine	1	1						
		marijuana, N.O.S.	2	2						
2351pha	30 y F				A	Unk	Int-A	1		
		cocaine	1	1						
		benzodiazepine, N.O.S.	2	2						
2352pha	30 y F				U	Unk	Unk	2		
		cocaine	1	1					benzoyllecognine	130 ng/mL In Blood (unspecified) @ Unknown
2353ph	30 y M				A	Ingst	Int-A	2		
		nitrites (amyl-butyl)	1	1						
2354pa	31 y M				A	Ingst	Unk	2		
		cocaine	1	1						
2355ai	31 y F				U	Unk	Int-A	1		
		methamphetamine	1	1						
2356a	31 y M				U	Ingst	Int-A	1		
		methamphetamine	1	1						
		amphetamine	2	2						
2357pha	32 y F				A	Ingst + Unk	Int-S	2		
		methamphetamine	1	1					methamphetamine	280 ng/mL In Blood (unspecified) @ Autopsy
		methamphetamine	1	1					amphetamine	68 ng/mL In Blood (unspecified) @ Autopsy
		fentanyl (prescription)	2	2					norfentanyl	1.7 ng/mL In Blood (unspecified) @ Autopsy
		fentanyl (prescription)	2	2					fentanyl	15 ng/mL In Blood (unspecified) @ Autopsy
		fentanyl (prescription)	2	2					4-anpp (despropionyl fentanyl)	2.7 ng/mL In Blood (unspecified) @ Autopsy
2358ai	32 y M				U	Unk	Int-A	1		
		aripiprazole	3	3						
		methamphetamine	1	1						
		ethanol (beverage)	2	2						
		marijuana, N.O.S.	3	3						
2359ph	32 y F				A	Unk	Unk	2		
		methamphetamine	1	1						
		drug, N.O.S.	2	2						
2360ai	32 y M				U	Unk	Int-A	1		
		methamphetamine	1	1						
		ethanol (beverage)	2	2						
2361pha	32 y M				A	Inhal	Int-A	2		
		cocaine	1	1						
		levamisole	2	2						
2362ai	32 y F				U	Unk	Int-A	1		
		methamphetamine	1	1						
2363i	32 y F				U	Unk	Int-A	1		
		methamphetamine	1	1						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2364ha	33 y M	cocaine	1	1	U	Ingst	Int-A	1		
		amphetamine	2	2						
2365ai	33 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2366ai	33 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2367h	33 y F	cocaine	1	1	A	Unk	Unk	3		
2368pai	34 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2369i	34 y M	amphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		alprazolam	3	3						
2370ai	35 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
		ethanol (beverage)	3	3						
2371i	35 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		methadone	2	2						
2372ai	35 y M	cocaine	1	1	U	Unk	Int-A	1		
2373ai	35 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2374ai	35 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2375h	35 y M	methamphetamine	1	1	A	Unk	Unk	3		
		marijuana	2	2						
2376ph	35 y F	amphetamine/dextroamphetamine (ER)	1	1	U	Ingst	Int-S	2		
		ethanol (beverage)	2	2					ethanol 27mg/dL In Serum @ Unknown	
2377h	36 y M	methamphetamine	1	1	C	Ingst + Inhal + Par	Int-A	3		
		buprenorphine/naloxone (sublingual film)	2	2						
2378ai	37 y M	cocaine	1	1	U	Unk	Int-A	2		
		ethanol (beverage)	2	2						
2379i	37 y F	amphetamine (hallucinogenic), 3,4-methylenedioxy-methamphetamine (MDMA)	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		ketamine	3	3						
2380ai	37 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		quetiapine	2	2						
2381ai	37 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2382ai	37 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2383ph	37 y F	methamphetamine	1	1	U	Unk	Int-S	2		
2384ai	38 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2385ai	38 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2386pai	38 y M	methamphetamine	3	1	A	Ingst	Int-A	1		
		methamphetamine							methamphetamine 187ng/mL In Serum @ Autopsy	
		fentanyl (prescription)	1	2					norfentanyl 1.5ng/mL In Serum @ Autopsy	
		fentanyl (prescription)	1	2					fentanyl 2.4ng/mL In Serum @ Autopsy	
		fentanyl analogs (despropionyl) cleaner (alkali/anionic/nonionic)	2	2						
			4	3						
2387ai	38 y M	cocaine	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
2388ai	39 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2389ai	39 y M	cocaine	1	1	U	Unk	Int-A	1		
2390ai	39 y F	cocaine	1	1	U	Unk	Int-A	1		
		diphenhydramine	2	2						
		mirtazapine	3	3						
2391h	39 y M	methamphetamine	1	1	A	Ingst	Unk	2		
		veterinary drug, unknown	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2392ai	39 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2393ai	39 y F	methamphetamine ethanol (beverage)	1 2	1 2	U	Unk	Int-A	1		
2394ai	39 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2395ai	39 y M	cocaine ethanol (beverage)	1 2	1 2	U	Unk	Int-A	1		
2396ai	39 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2397ai	39 y M	methamphetamine	1	1	U	Unk	Int-A	1		
[2398ph]	39 y M	amphetamine (hallucinogenic), 3,4-methylenedioxyamphetamine (MDA)	1	1	U	Ingst	Int-A	1	mda (3,4-methylenedioxyam- phetamine)	2100 ng/mL In Blood (unspecified) @ Autopsy
2399ph	39 y M	amphetamine (hallucinogenic), 3,4-methylenedioxyamphetamine (MDA)	1	1	C	Ingst	Int-A	3	mdma (3,4-methylenedioxy- methamphetamine)	2100 ng/mL In Blood (unspecified) @ Autopsy
		methamphetamine	1	1						
		iron, N.O.S.	2	2					iron	298 mcg/dL In Blood (unspecified) @ Unknown
		salicylate	3	3					salicylate	17 mg/dL In Blood (unspecified) @ Unknown
2400ai	40 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2401ai	40 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2402pai	40 y M	cocaine topiramate fentanyl (non-prescription) xylazine citalopram olanzapine	1 2 3 4 5 6	1 2 3 4 5 6	A	Unk	Int-A	3		
2403	40 y M	cocaine	1	1	U	Unk	Int-A	1		
2404ai	40 y M	cocaine	1	1	U	Unk	Int-A	1		
2405pha	41 y M	methamphetamine	1	1	U	Ingst + Inhal	Unk	1	methamphetamine	240 ng/mL In Blood (unspecified) @ Autopsy
2406ai	41 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2407ai	41 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2408ai	41 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2409ai	41 y M	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2410pha	41 y M	methamphetamine	1	1	A/C	Ingst + Unk	Int-A	3	methamphetamine	140 ng/mL In Blood (unspecified) @ Unknown
		methamphetamine	1	1					amphetamine	8.9 ng/mL In Blood (unspecified) @ Unknown
2411ha	41 y M	methamphetamine	1	1	U	Ingst + Par	Unk	2		
2412ha	41 y M	amphetamine (hallucinogenic), 3,4-methylenedioxy- methamphetamine (MDMA)	1	1	A/C	Ingst	Int-S	2		
		venlafaxine alprazolam tadalafil	2 3 4	2 3 4						
2413p	41 y M	stimulant/street drug, N.O.S. ethanol (beverage)	1 2	1 2	A	Ingst + Inhal	Int-A	2		
									ethanol	38 mg/dL In Blood (unspecified) @ Unknown
2414ai	42 y M	cocaine ethanol (beverage)	1 2	1 2	U	Unk	Int-A	1		
2415ai	42 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2416ai	42 y M	methamphetamine marijuana, N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2417ai	42 y F	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2418ai	42 y F	cocaine	1	1	U	Unk	Int-A	1		
2419i	42 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2420ai	42 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2421ph	42 y M	cocaine	1	1	U	Unk	Unk	2		
2422ai	42 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2423ai	42 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		methamphetamine	1	1						
		substance (non-drug), N.O.S.	2	2						
2424ph	42 y F	methamphetamine	1	1	A	Ingst	Int-A	2		
		Mitragyna speciosa korthals	2	2						
		Hypericum perforatum	3	3						
2425pha	42 y M	cocaine	1	1	U	Unk	Int-S	1		
		opioid, N.O.S.	2	2						
		olanzapine	3	3						
2426ph	42 y M	amphetamine (hallucinogenic), tryptamine	1	1	A	Ingst	Int-A	2		
		fentanyl (non-prescription)	2	2						
		methamphetamine	3	3						
2427h	42 y F	methamphetamine	1	1	A	Ingst + Inhal	Int-S	1		
		acetaminophen/caffeine/salicylate	2	2						
		ibuprofen	3	3						
		drug, N.O.S.	4	4						
2428ai	43 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2429pa	43 y M	methamphetamine	1	1	A	Ingst	Int-M	1		
									methamphetamine 48000 ng/mL In Blood (unspecified) @ Autopsy	
2430ai	43 y M	cocaine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2431ai	43 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2432ai	43 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2433ai	43 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2434ha	44 y F	methamphetamine	1	1	A	Unk	Unk	1		
		methamphetamine	1	1					amphetamine 350 ng/mL In Blood (unspecified) @ Autopsy	
		methamphetamine	1	1					methamphetamine 6200 ng/mL In Blood (unspecified) @ Autopsy	
2435ai	44 y M	cocaine	1	1	U	Unk	Int-A	1		
2436ai	44 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2437ai	44 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2438h	44 y F	methamphetamine	1	1	A	Ingst	Int-A	2		
2439ai	44 y M	cocaine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2440ai	44 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		substance (non-drug), N.O.S.	3	3						
2441ph	44 y M	THC homolog	1	1	A/C	Ingst	Int-A	2		
		ethanol (beverage)	2	2					ethanol 347 mg/dL In Blood (unspecified) @ Unknown	
2442ai	45 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2443ph	45 y M	methamphetamine	1	1	A	Ingst	Int-A	1		
		oxycodone	2	2						
2444ai	45 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2445ai	46 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2446ai	46 y M	cocaine	1	1	U	Unk	Int-A	1		
		methamphetamine	2	2						
		marijuana, N.O.S.	3	3						
2447ai	46 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2448ai	46 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		methadone	2	2						
		substance (non-drug), N.O.S.	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
[2449ha]	46 y M	methamphetamine	1	1	A	Ingst	Unk	1	amphetamine	171 ng/mL In Blood (unspecified) @ Unknown
		methamphetamine	1	1					methamphetamine	7660 ng/mL In Blood (unspecified) @ Unknown
2450h	46 y M	cocaine	1	1	A	Unk	Int-A	2		
		methamphetamine	2	2						
2451ai	47 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2452ai	47 y F	cocaine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2453ai	47 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2454h	47 y M	methamphetamine	1	1	A	Ingst	Int-U	2		
		substance (non-drug), N.O.S.	2	2						
2455ai	47 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2456ai	47 y M	cocaine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2457ai	47 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2458i	47 y M	Mitragyna speciosa korthals	1	1	U	Ingst	Int-U	1		
2459ai	47 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2460i	47 y M	cocaine	1	1	A/C	Unk	Int-S	2		
		opioid/salicylate	2	2						
2461ai	48 y M	cocaine	1	1	U	Unk	Int-A	1		
		amphetamine	2	2						
		hydroxyzine	3	3						
2462ai	48 y M	methamphetamine	1	1	U	Unk	Int-A	2		
2463ai	48 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2464ai	48 y F	methamphetamine	1	1	U	Unk	Int-S	1		
		bupropion	2	2						
		ethanol (beverage)	3	3						
2465ai	48 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2466ai	48 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2467i	48 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2468h	48 y M	methamphetamine	1	1	A	Ingst + Inhal	Int-A	2		
2469	48 y M	THC homolog	1	1	A/C	Unk	Int-A	2		
2470ai	49 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2471ai	49 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2472ai	49 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2473i	49 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2474ai	49 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2475ai	49 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
2476	49 y M	methamphetamine	1	1	A	Ingst	Int-U	1		
2477pha	49 y F	amphetamine, N.O.S.	1	1	U	Ingst	Int-S	1	amphetamine	2 mg/L In Blood (unspecified) @ Autopsy
		bupropion	2	2					bupropion	4.5 mg/L In Blood (unspecified) @ Autopsy
		citalopram	3	3					citalopram	0.32 mg/L In Blood (unspecified) @ Autopsy
		metoprolol	4	4					metoprolol	28 mg/L In Blood (unspecified) @ Autopsy
2478ph	49 y M	stimulant/street drug, N.O.S.	1	1	A	Inhal	Int-A	2		
		cocaine	2	2						
		marijuana, N.O.S.	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2479pai	50 y M	benzoyllecgonine	1	1	U	Unk	Oth-M	3		
		dextromethorphan	2	2						
		fentanyl (non-prescription)	3	3						
		acetaminophen	4	4						
2480ai	50 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2481ai	50 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2482h	50 y M	methamphetamine	1	1	A	Ingst	Int-A	1		
2483ai	50 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2484ai	50 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2485ai	50 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		cocaine	1	1						
		ethanol (beverage)	2	2						
2486p	50 y F	cocaine	1	1	U	Unk	Unk	2		
2487ai	50 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2488ai	50 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2489i	50 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		cocaine	1	1						
		amphetamine	2	2						
2490ai	50 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
2491ai	51 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2492ai	51 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2493ai	51 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2494ai	51 y M	cocaine	1	1	U	Unk	Int-A	1		
2495i	51 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2496ai	51 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		cocaine	1	1						
		alcohol, N.O.S.	2	2						
2497pha	52 y M	cocaine	1	1	U	Unk	Int-A	1		
2498ai	52 y F	methamphetamine	1	1	A/C	Unk	Int-A	1		
2499ai	52 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
2500ai	52 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2501h	52 y M	methamphetamine	1	1	A/C	Ingst	Int-S	2		
		methylphenidate	1	1						
		amlodipine	2	2						
		oxycodone	3	3						
		escitalopram	4	4						
		aripiprazole	5	5						
		methocarbamol	6	6						
		metformin	7	7						
		bupirone	8	8						
		dextromethorphan	9	9						
		hydrochlorothiazide	10	10						
		levothyroxine	11	11						
		atorvastatin	12	12						
2502	52 y M	cocaine	1	1	U	Unk	Unk	2		
2503ai	53 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2504ai	53 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		cocaine	1	1						
		ethanol (beverage)	2	2						
		cyclobenzaprine	3	3						
2505ai	53 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
2506ai	53 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
2507ai	53 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2508i	54 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2509i	54 y M	methamphetamine	1	1	U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2510ai	54 y M	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2511i	54 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2512ai	54 y M	methamphetamine marijuana, N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2513ai	54 y M	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2514i	55 y M	cocaine	1	1	U	Unk	Int-A	1		
2515ai	55 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2516ai	55 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2517i	55 y M	methamphetamine marijuana, N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2518ai	55 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2519ai	55 y M	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2520ai	55 y F	methamphetamine cocaine ethanol (beverage)	1 2 3	1 2 3	U	Unk	Int-A	1		
2521pai	56 y M	benzoyllecgonine marijuana, N.O.S. fentanyl (non-prescription) methamphetamine nortriptyline	1 2 3 4 5	1 2 3 4 5	A	Unk	Int-A	3		
2522ha	56 y M	methamphetamine	1	1	U	Ingst + Unk	Int-A	1	amphetamine 33 ng/mL In Blood (unspecified) @ Autopsy	
		methamphetamine	1	1					methamphetamine 440 ng/mL In Blood (unspecified) @ Autopsy	
		fentanyl (non-prescription)	2	2					fentanyl 0.63 ng/mL In Blood (unspecified) @ Autopsy	
		fentanyl (non-prescription)	2	2					norfentanyl 0.74 ng/mL In Blood (unspecified) @ Autopsy	
2523ai	56 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2524ai	56 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2525ai	56 y M	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2526ai	57 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2527ai	57 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2528ai	57 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2529ai	57 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2530i	57 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2531ai	57 y M	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2532ai	57 y F	methamphetamine methadone hydroxyzine	1 2 3	1 2 3	U	Unk	Int-A	1		
2533ai	57 y F	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2534ha	58 y M	methamphetamine	1	1	A	Ingst	Int-S	1	amphetamine 310 ng/mL In Blood (unspecified) @ Unknown	
		methamphetamine	1	1					methamphetamine 3600 ng/mL In Blood (unspecified) @ Unknown	
		salicylate	2	2					salicylate 77.4 mg/dL In Blood (unspecified) @ Unknown	
		acetaminophen	3	3					acetaminophen (apap) 66.9 mcg/mL In Blood (unspecified) @ Unknown	
2535ai	58 y M	methamphetamine ethanol (beverage) dextromethorphan	1 2 3	1 2 3	U	Unk	Int-A	1		
2536i	58 y F	methamphetamine	1	1	U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2537ai	59 y M	cocaine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2538ai	59 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2539ai	59 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2540ai	59 y M	cocaine	1	1	U	Unk	Int-A	1		
2541ai	59 y F	methamphetamine	1	1	U	Unk	Int-A	2		
2542ai	59 y M	methamphetamine	1	1	U	Unk	Int-A	3		
2543ai	59 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2544ai	59 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		diphenhydramine	2	2						
		aripiprazole	3	3						
2545ai	59 y M	methamphetamine	1	1	U	Unk	Int-A	2		
2546ha	59 y F	methamphetamine	1	1	A	Unk	Unk	3		
		methamphetamine	1	1					methamphetamine 370 ng/mL In Blood (unspecified) @ Unknown	
		methamphetamine	1	1					amphetamine 61 ng/mL In Blood (unspecified) @ Unknown	
2547ai	60 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2548ai	60 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		metoprolol	2	2						
2549ai	60 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		diphenhydramine	2	2						
2550ai	60 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2551ai	60 y F	methamphetamine	1	1	U	Unk	Int-S	1		
		cocaine	1	1						
		sertraline	2	2						
		diphenhydramine	3	3						
2552ai	60 y M	methamphetamine	1	1	U	Unk	Int-A	2		
2553ai	61 y F	cocaine	1	1	U	Unk	Int-A	1		
2554h	61 y M	methamphetamine	1	1	U	Unk	Int-A	3		
2555i	61 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2556ai	61 y M	cocaine	1	1	U	Unk	Int-A	1		
2557ai	61 y M	cocaine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2558ai	61 y M	nitrites (amyl-butyl)	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2559ai	61 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2560ai	62 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2561ai	62 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2562ai	62 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2563ai	62 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2564ai	62 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2565ai	62 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2566i	63 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2567ai	63 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2568ai	63 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		metoprolol	2	2						
2569ai	64 y F	Mitragyna speciosa korthals	1	1	U	Unk	Int-A	1		
		oxycodone	2	2						
		gabapentin	3	3						
2570ai	64 y F	methamphetamine	1	1	U	Unk	Int-A	2		
		ethanol (beverage)	2	2						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2571ai	64 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2572ai	64 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		marijuana, N.O.S.	3	3						
2573ai	64 y F	methamphetamine	1	1	U	Unk	Int-A	3		
		alprazolam	2	2						
		marijuana, N.O.S.	3	3						
2574ai	64 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2575ai	64 y M	cocaine	1	1	U	Unk	Int-A	1		
2576ai	64 y M	Mitragyna speciosa korthals	1	1	U	Unk	Int-A	1		
2577ai	64 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2578ai	64 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
2579ai	64 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		cocaine	2	2						
2580ai	65 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2581ai	65 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2582ai	65 y F	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2583ai	65 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		metoprolol	2	2						
2584ai	65 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2585ai	65 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2586ai	65 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
2587ai	66 y M	cocaine	1	1	U	Unk	Int-A	1		
2588ai	66 y F	cocaine	1	1	U	Unk	Int-A	1		
		hydrocodone	2	2						
		ethanol (beverage)	3	3						
2589ai	66 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2590ai	66 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		marijuana, N.O.S.	2	2						
2591ai	66 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		gabapentin	2	2						
2592ai	66 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2593ai	67 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
2594ai	68 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		fentanyl (non-prescription)	2	2						
2595ai	68 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2596ai	68 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2597ai	68 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2598ai	68 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2599ai	68 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		substance (non-drug), N.O.S.	2	2						
		marijuana, N.O.S.	3	3						
2600ai	68 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2601ai	69 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2602i	69 y M	methamphetamine	1	1	U	Unk	Int-A	1		
		ethanol (beverage)	2	2						
		substance (non-drug), N.O.S.	3	3						
2603ai	70 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2604ai	70 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2605ai	70 y M	methamphetamine	1	1	U	Unk	Int-A	1		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2606ai	70 y F	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2607ai	70 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2608ai	71 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2609ai	71 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2610ai	71 y F	methamphetamine substance (non-drug), N.O.S.	1 2	1 2	U	Unk	Int-A	1		
2611ai	72 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2612i	72 y M	methamphetamine metoprolol	1 2	1 2	U	Unk	Int-A	1		
2613pha	72 y F	amphetamine, N.O.S. bupropion	1 2	1 2	A/C	Ingst	Int-S	1		
		gabapentin	3	3					bupropion 1676ng/mL In Serum @ Unknown	
		duloxetine (ER)	4	4					gabapentin 6.5mcg/mL In Serum @ Unknown	
		diazepam	5	5					duloxetine 3895ng/mL In Serum @ Unknown	
		diazepam	5	5					diazepam 193ng/mL In Serum @ Unknown	
									nordiazepam 250ng/mL In Serum @ Unknown	
2614ai	73 y M	methamphetamine	1	1	U	Unk	Int-A	1		
2615ai	79 y F	methamphetamine	1	1	U	Unk	Int-A	1		
2616pha	8 m M	cocaine	1	1	U	Unk	Unk	1		
		cocaine	1	1					benzoyllecognine 2800ng/mL In Blood (unspecified) @ Autopsy	
2617ph	Unknown adult (≥20 yrs) M	stimulant/street drug, N.O.S cocaine	1 2	1 2	A	Inhal	Int-A	2		cocaine 900ng/mL In Blood (unspecified) @ Autopsy
2618ph	Unknown adult (≥20 yrs) M	stimulant/street drug, N.O.S cocaine	1 2	1 2	A	Inhal	Int-A	2		
2619ai	Unknown age F	methamphetamine	1	1	U	Unk	Int-A	1		
2620ai	Unknown age F	methamphetamine	1	1	U	Unk	Int-A	1		
See Also case 1, 9, 25, 34, 35, 47, 68, 95, 113, 132, 153, 199, 205, 207, 209, 225, 263, 264, 276, 311, 318, 319, 320, 322, 323, 330, 332, 336, 338, 345, 347, 348, 353, 354, 356, 358, 359, 360, 362, 363, 367, 369, 370, 371, 372, 379, 380, 382, 383, 384, 385, 386, 388, 390, 391, 396, 398, 403, 404, 405, 406, 407, 410, 413, 415, 416, 418, 419, 420, 421, 422, 424, 425, 428, 430, 432, 434, 436, 438, 440, 443, 445, 448, 451, 452, 453, 455, 457, 458, 459, 461, 462, 464, 465, 466, 467, 469, 472, 474, 475, 476, 480, 481, 486, 487, 488, 489, 492, 493, 494, 496, 498, 499, 501, 504, 505, 506, 507, 508, 509, 510, 512, 515, 518, 519, 520, 521, 522, 525, 530, 532, 533, 534, 537, 543, 544, 545, 548, 549, 551, 554, 556, 557, 559, 560, 562, 564, 566, 567, 568, 571, 581, 582, 586, 587, 588, 590, 595, 596, 598, 604, 605, 606, 607, 609, 610, 614, 615, 617, 618, 620, 621, 629, 630, 631, 633, 635, 638, 641, 642, 644, 646, 649, 650, 657, 660, 661, 662, 663, 666, 667, 670, 674, 676, 677, 678, 679, 682, 683, 685, 686, 689, 695, 698, 699, 702, 709, 710, 711, 712, 713, 714, 715, 717, 719, 720, 725, 726, 727, 728, 730, 731, 737, 739, 742, 745, 746, 747, 750, 751, 753, 756, 758, 759, 762, 763, 766, 767, 768, 769, 770, 772, 776, 778, 780, 781, 782, 783, 786, 787, 788, 789, 792, 793, 794, 795, 797, 801, 805, 806, 807, 808, 811, 815, 816, 818, 819, 823, 824, 827, 831, 833, 835, 836, 837, 839, 840, 848, 854, 855, 860, 861, 863, 865, 868, 874, 875, 876, 877, 883, 884, 885, 887, 889, 890, 894, 898, 902, 903, 905, 906, 909, 911, 914, 918, 919, 927, 928, 929, 934, 935, 936, 940, 941, 942, 943, 944, 945, 946, 947, 951, 952, 960, 961, 962, 964, 965, 966, 967, 968, 971, 972, 973, 974, 976, 977, 978, 979, 982, 983, 984, 990, 992, 993, 994, 995, 999, 1001, 1002, 1003, 1004, 1006, 1008, 1016, 1018, 1019, 1023, 1027, 1031, 1033, 1037, 1042, 1043, 1044, 1046, 1049, 1052, 1053, 1054, 1058, 1060, 1061, 1065, 1069, 1073, 1077, 1082, 1085, 1087, 1095, 1096, 1098, 1103, 1104, 1105, 1107, 1115, 1117, 1118, 1119, 1121, 1126, 1130, 1132, 1135, 1138, 1140, 1141, 1143, 1144, 1146, 1148, 1149, 1153, 1156, 1161, 1166, 1168, 1169, 1172, 1176, 1177, 1178, 1179, 1183, 1185, 1186, 1187, 1188, 1190, 1191, 1192, 1193, 1194, 1195, 1198, 1199, 1205, 1208, 1213, 1216, 1218, 1219, 1220, 1225, 1226, 1228, 1230, 1232, 1236, 1238, 1239, 1240, 1242, 1243, 1244, 1246, 1248, 1249, 1250, 1251, 1253, 1254, 1255, 1256, 1260, 1261, 1262, 1267, 1268, 1269, 1270, 1271, 1272, 1276, 1282, 1284, 1287, 1296, 1299, 1302, 1305, 1306, 1312, 1316, 1321, 1323, 1325, 1327, 1336, 1337, 1339, 1341, 1342, 1345, 1348, 1349, 1350, 1356, 1362, 1364, 1365, 1366, 1372, 1373, 1374, 1376, 1385, 1386, 1389, 1390, 1393, 1394, 1395, 1396, 1397, 1400, 1402, 1404, 1405, 1410, 1412, 1413, 1428, 1437, 1440, 1441, 1442, 1443, 1449, 1451, 1456, 1459, 1460, 1462, 1463, 1465, 1468, 1469, 1471, 1473, 1478, 1479, 1483, 1485, 1487, 1488, 1496, 1503, 1504, 1508, 1510, 1518, 1519, 1522, 1536, 1543, 1547, 1550, 1551, 1579, 1580, 1584, 1628, 1649, 1650, 1654, 1655, 1656, 1660, 1661, 1666, 1672, 1673, 1674, 1675, 1681, 1708, 1746, 1749, 1751, 1762, 1816, 1826, 1875, 1876, 1881, 1901, 1902, 1906, 1910, 1913, 1915, 1923, 1940, 1989, 2147, 2159, 2161, 2163, 2178, 2184, 2224, 2225, 2226, 2239, 2245, 2249, 2254, 2272, 2274, 2279, 2627, 2633, 2643, 2647, 2649, 2651, 2653, 2662, 2689										
Unknown Drug										
2621pha	14 y M	drug, N.O.S.	1	1	U	Unk	Int-U	1		
2622ph	15 y F	drug, N.O.S. diphenhydramine acetaminophen	1 2 3	1 2 3	A	Ingst	Int-S	2		
2623ph	15 y F	drug, N.O.S.	1	1	U	Ingst	Unk	2		
2624h	16 y F	drug, N.O.S.	1	1	U	Ingst + Unk	Int-S	2		
2625pa	17 y M	drug, N.O.S.	1	1	A	Ingst	Int-S	1		
		diphenhydramine	2	2					diphenhydramine 36mg/L In Plasma @ Autopsy	
2626i	18 y F	drug, N.O.S.	1	1	A	Unk	Int-A	2		

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2627p	20 y F	drug, N.O.S.	1	1	U	Oth + Unk	Unk	2		
		acetaminophen/dextromethorphan	2	2						
		marijuana	3	3						
		fentanyl (prescription)	4	4						
2628phi	20 y F	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2629ph	21 y M	drug, N.O.S.	1	1	U	Unk	Unk	2		
2630i	22 y M	drug, N.O.S.	1	1	A/C	Inhal	Int-A	2		
2631ph	23 y M	drug, N.O.S.	1	1	C	Unk	Unk	1		
		drug, N.O.S.	1	1					norfentanyl	0.1 ng/mL In Blood (unspecified) @ Autopsy
		ethanol (beverage)	2	2					fentanyl	2.7 mcg/mL In Blood (unspecified) @ Autopsy
									ethanol	101 mg/dL In Blood (unspecified) @ Unknown
2632pha	23 y M	drug, N.O.S.	1	1	A	Ingst	Int-U	2		
2633ph	24 y F	drug, N.O.S.	1	1	A	Ingst	Int-S	2		
		benzodiazepine, N.O.S.	2	2						
		cocaine	3	3						
2634pha	25 y F	drug, N.O.S.	1	1	A	Unk	Int-A	1		
2635h	26 y M	drug, N.O.S.	1	1	U	Ingst + Unk	Unk	2		
		acetaminophen	2	2					acetaminophen (apap)	47 mcg/mL In Serum @ Unknown
2636i	26 y M	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2637ph	27 y F	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2638ph	27 y M	drug, N.O.S.	1	1	U	Unk	Int-S	2		
		baclofen	2	2						
2639i	27 y F	drug, N.O.S.	1	1	A	Unk	Unk	2		
2640p	29 y F	drug, N.O.S.	1	1	A/C	Ingst	Int-S	2		
		ethanol (beverage)	2	2						
2641i	31 y M	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2642i	32 y F	drug, N.O.S.	1	1	U	Unk	Unk	2		
2643ph	33 y M	drug, N.O.S.	1	1	A/C	Ingst	Int-A	2		
		cocaine	2	2						
		methamphetamine	3	3						
		benzodiazepine, N.O.S.	4	4						
		marijuana	5	5						
2644h	35 y M	drug, N.O.S.	1	1	A	Ingst	Int-U	2		
2645i	35 y F	drug, N.O.S.	1	1	U	Par	Int-A	2		
2646i	38 y M	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2647ph	38 y M	drug, N.O.S.	1	1	A	Unk	Int-A	2		
		methamphetamine	2	1						
2648ph	38 y F	drug, N.O.S.	1	1	U	Unk	Int-S	2		
2649ha	38 y F	drug, N.O.S.	1	1	A	Unk	Int-A	1		
		drug, N.O.S.	1	1					trazodone	0.69 mg/mL In Blood (unspecified) @ 5 m (pe)
		drug, N.O.S.	1	1					norfentanyl	1.5 ng/mL In Blood (unspecified) @ 5 m (pe)
		drug, N.O.S.	1	1					benzoyllecognine	1200 ng/mL In Blood (unspecified) @ 5 m (pe)
		drug, N.O.S.	1	1					4-anpp (despropionyl fentanyl)	2.5 ng/mL In Blood (unspecified) @ 5 m (pe)
		drug, N.O.S.	1	1					norketamine	380 ng/mL In Blood (unspecified) @ 5 m (pe)
		drug, N.O.S.	1	1					fentanyl	4.6 ng/mL In Blood (unspecified) @ 5 m (pe)
		drug, N.O.S.	1	1					gabapentin	5.7 mcg/mL In Blood (unspecified) @ 5 m (pe)
		drug, N.O.S.	1	1					norfluoxetine	610 ng/mL In Blood (unspecified) @ 5 m (pe)

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
		drug, N.O.S.	1	1					ketamine	740 ng/mL In Blood (unspecified) @ 5 m (pe)
		drug, N.O.S.	1	1					fluoxetine	740 ng/mL In Blood (unspecified) @ 5 m (pe)
		fentanyl (prescription)	2	2						
		ketamine	3	3						
		cocaine	4	4						
		xylazine	5	5						
2650ph	39 y M	drug, N.O.S.	1	1	A	Ingst	Int-U	1		
		carisoprodol	3	2					carisoprodol	11.1 mcg/mL In Whole Blood @ Unknown
		carisoprodol	3	2					meprobamate	8.6 mcg/mL In Whole Blood @ Unknown
		fentanyl (non-prescription)	2	2					fentanyl	6.6 ng/mL In Whole Blood @ Unknown
2651ha	40 y M	drug, N.O.S.	1	1	A	Unk	Unt-U	2		
		methamphetamine	2	2						
		fentanyl (non-prescription)	3	3						
2652ph	41 y F	drug, N.O.S.	1	1	A	Ingst	Int-S	2		
2653h	41 y F	drug, N.O.S.	1	1	U	Ingst + Unk	Int-S	2		
		drug, N.O.S.	1	1						
		morphine	2	2						
		cocaine	3	3						
		oxycodone (ER)	4	4						
		amphetamine/dextroamphetamine	5	5						
2654h	42 y M	drug, N.O.S.	1	1	A/C	Ingst + Aspir	Int-S	2		
		ethanol (beverage)	2	2						
2655	42 y F	drug, N.O.S.	1	1	A	Ingst	Int-S	2		
		acetaminophen	2	2					acetaminophen (apap)	22 mg/mL In Serum @ Unknown
2656i	43 y M	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2657i	44 y M	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2658i	45 y M	drug, N.O.S.	1	1	U	Inhal	Int-A	2		
2659i	45 y M	drug, N.O.S.	1	1	A	Unk	Unk	2		
2660pha	46 y M	drug, N.O.S.	1	1	U	Ingst + Unk	Unk	2		
		ethanol (beverage)	2	2						
2661ph	47 y M	drug, N.O.S.	1	1	A	Unk	Int-U	2		
2662ph	47 y M	drug, N.O.S.	1	1	U	Unk	Int-U	2		
		fentanyl (non-prescription)	2	2						
		methamphetamine	3	3						
2663h	48 y M	drug, N.O.S.	1	1	A/C	Ingst	Int-A	2		
		ethanol (beverage)	2	2					ethanol	383 mg/dL In Serum @ Unknown
2664h	49 y F	drug, N.O.S.	1	1	A	Ingst	Int-S	2		
2665h	50 y M	drug, N.O.S.	1	1	U	Ingst	Int-S	2		
		valproic acid	2	2					valproic acid	141 mcg/mL In Blood (unspecified) @ Unknown
2666i	52 y M	tamsulosin	3	3	A	Unk	Int-A	2		
2667i	54 y M	drug, N.O.S.	1	1	A	Par	Int-U	2		
2668pha	55 y F	drug, N.O.S.	1	1	A	Ingst	Int-U	2		
		fentanyl (non-prescription)	2	2						
2669ph	56 y M	drug, N.O.S.	2	1	A	Unk	Unt-U	2		
		ethanol (beverage)	3	2					ethanol	400 mg/dL In Blood (unspecified) @ Unknown
		fentanyl (non-prescription)	1	3						
		opioid, N.O.S.	4	4						
2670ai	57 y M	drug, N.O.S.	1	1	U	Unk	Int-A	1		
2671p	58 y M	drug, N.O.S.	1	1	A	Ingst	Int-S	3		
2672i	58 y F	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2673h	58 y M	drug, N.O.S.	1	1	A	Ingst	Int-S	3		
		metformin	2	2						
		ethanol (beverage)	3	3						

(continued)

Table 21. Listing of Fatal Nonpharmaceutical and Pharmaceutical Exposures – Continued.

Annual Report ID	Age	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	RCF	Analyte	Blood Concentration @ Time
2674	58 y F	drug, N.O.S.	1	1	U	Ingst	Unk	2	acetaminophen (apap)	15 mcg/mL In Blood (unspecified) @ Unknown
		drug, N.O.S.	1	1					salicylate	6.4 mg/dL In Blood (unspecified) @ Unknown
2675i	58 y F	drug, N.O.S.	1	1	A	Unk	Int-U	2		
2676i	60 y M	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2677i	62 y M	drug, N.O.S.	1	1	U	Par	Int-A	2		
2678i	63 y M	drug, N.O.S.	1	1	A	Unk	Int-A	2		
2679h	64 y F	drug, N.O.S.	1	1	A	Ingst	Int-S	2		
2680pi	65 y F	drug, N.O.S.	1	1	U	Ingst	Unk	3		
2681	65 y F	drug, N.O.S.	1	1	U	Ingst	Unk	2		
2682i	67 y M	drug, N.O.S.	1	1	A	Unk	Unk	2		
2683i	67 y M	drug, N.O.S.	1	1	U	Unk	Int-U	2		
2684i	68 y F	drug, N.O.S.	1	1	A	Unk	Int-A	2		
		heroin	2	2						
2685h	68 y M	drug, N.O.S.	1	1	A/C	Ingst	Int-S	2		
2686	70 y F	drug, N.O.S.	1	1	A	Ingst	Int-U	2		
2687h	72 y M	drug, N.O.S.	1	1	U	Oth	Unk	2		
		ethylene glycol	2	2						
2688h	72 y F	drug, N.O.S.	1	1	A/C	Ingst	Int-S	3		
2689i	75 y M	drug, N.O.S.	1	1	A	Unk	Int-A	2		
		cocaine	2	2						
2690h	75 y M	drug, N.O.S.	1	1	U	Ingst + Unk	Int-S	2		
		atenolol	2	2						
		amlodipine	3	3						
2691i	76 y M	drug, N.O.S.	1	1	A/C	Unk	Int-A	2		
2692h	78 y M	drug, N.O.S.	1	1	U	Ingst	Int-S	2		
2693i	80 y M	drug, N.O.S.	1	1	A	Unk	Int-U	2		
2694i	85 y M	drug, N.O.S.	1	1	A	Unk	Unk	2		
2695ph	86 y M	drug, N.O.S.	1	1	U	Ingst + Unk	Int-S	2		
		ethanol (beverage)	2	2						
2696i	95 y F	drug, N.O.S.	1	1	U	Unk	Unk	2		
2697phi	12 m F	drug, N.O.S.	1	1	A	Unk	Unk	2		
2698i	60+ y M	drug, N.O.S.	1	1	A	Unk	Unk	2		
2699h	Unknown adult (≥ 20 yrs) M	drug, N.O.S.	1	1	U	Ingst + Inhal	Int-U	2		
		substance (non-drug), N.O.S.	2	2						

See Also case 5, 6, 59, 69, 97, 366, 468, 561, 591, 706, 772, 958, 1011, 1116, 1234, 1284, 1311, 1400, 1407, 1432, 1491, 1746, 1774, 1789, 1818, 1826, 1898, 1967, 1983, 1985, 2016, 2068, 2092, 2181, 2192, 2237, 2242, 2251, 2254, 2286, 2359, 2427

Veterinary Drugs

2700ph	45 y F	veterinary drug, unknown	1	1	A	Unk	Int-S	1	phenytoin	5.4 mcg/mL In Blood (unspecified) @ Unknown
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See Also case 345, 486, 625, 981, 1008, 1053, 1650, 1651, 2391, 2402, 2649

Listing of 2,700 (1,422 Direct + 1,278 Indirect) fatalities classified as Relative Contribution to Fatality category 1-Undoubtedly responsible, 2-Probably responsible, or 3-Contributory).

Annual Report ID: Bracketed [case number]=Narrative provided for this case in [Appendix C](#)

i=death, indirect report; identified through other sources (news feeds, medical examiner data, or other) about which no inquiry to the PC was made, p=prehospital cardiac and/or respiratory arrest, h=hospital records reviewed, a=autopsy report reviewed.

Age Gender: y years, m months, d days, F female, M male, F-Pregnant pregnant, U unknown

Substance: EC enteric coated, ER extended release, TD transdermal

Cause Rank: Designates and orders the substance(s) deemed to have made the greatest contribution to the death. Cause rank permits 2 or more substances to be judged indistinguishable in terms of contribution to the death. Additional agents implicated in the death are listed below the primary agent(s) in the order of their contribution to the fatality.

Chronicity: C=chronic exposure, A=acute exposure, A/C=acute on chronic, U=unknown

Route: Aspir=Aspiration (with ingestion), B-S=Bite/sting, Derm=Dermal, Ingst=Ingestion, Inhal=Inhalation/nasal, Oc=Ocular, Ot=Otic, Oth=Other, Par=Parenteral, Rec=Rectal, Unk=Unknown, Vag=Vaginal

Reason: AR-D=Adverse reaction-Drug, AR-F=AR-Food, AR-O=AR-Other, Int-A=Intentional-Abuse, Int-M=Int-Misuse, Int-S=Int-Suspected Suicide, Int-U=Int-Unknown, Oth-C=Other-Contamination/tampering,

Oth-M=Oth-Malicious, Oth-W=Oth-Withdrawal, Unk=Unknown reason, Unt-B=Unintentional-Bite/sting, Unt-E=Unt-Environmental, Unt-F=Unt - Food poisoning, Unt-G=Unt-General, Unt-M=Unt-Misuse,

Unt-O=Unt-Occupational, Unt-T=Unt - Therapeutic error, Unt-U =Unt-Unknown

RCF (Relative Contribution to Fatality): 1=Undoubtedly responsible, 2=Probably responsible, 3=Contributory. Provided by the RPC for Indirect cases and the America's Poison Centers Fatality Review Team for the direct (non-Indirect) cases.

Appendix B

Table 22(A) & Table 22(B), Demographic profile of SINGLE SUBSTANCE exposure cases by generic category
Nonpharmaceuticals (Table 22(A))

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category																			
	No. of Case Mentions	No. of Single Exposures	Age				Reason				Treated in			Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Adhesives/Glues																			
Miscellaneous Adhesives/Glues																			
Cyanoacrylates (Superglues, etc)	4,630	4,559	1,691	339	345	1,707	13	424	40	4,380	95	14	57	1,399	611	903	187	3	0
Epoxy	1,172	1,113	348	111	48	502	5	88	11	1,049	22	10	28	244	162	240	50	5	0
Non-Toxic Adhesives/Glues (White Glue, Paper Glue, etc)	719	674	363	200	56	38	4	200	9	597	64	6	0	30	80	40	4	0	0
Toluene/Xylene (Adhesives Only)	179	177	48	10	10	92	0	15	2	164	5	2	6	34	27	34	3	1	0
Unknown Types of Adhesive, Glue, Cement or Paste	3,588	3,384	1,355	359	191	1,124	5	311	39	3,148	134	38	47	537	525	457	103	2	0
Category Total:	10,288	9,907	3,805	1,019	650	3,463	27	847	96	9,338	320	70	138	2,244	1,405	1,674	347	11	0
Alcohols																			
Miscellaneous Alcohols																			
Ethanol (Beverages)	54,020	9,320	3,122	273	1,143	4,019	18	576	169	3,986	4,373	388	336	3,572	1,034	1,440	1,345	394	50
Ethanol (Non-Beverage, Non-Rubbing)	1,431	933	437	31	43	359	4	54	5	765	118	11	9	179	163	93	43	19	0
Higher Alcohols (Butanol, Amyl Alcohol, Propanols, etc)	90	61	14	5	8	28	0	6	0	45	14	0	1	16	5	14	4	1	0
Isopropanol (Excluding Rubbing Alcohols and Cleaning Agents)	3,563	3,018	1,078	106	183	1,414	8	208	21	2,286	653	20	27	872	498	538	308	47	0
Methanol (Excluding Automotive Products and Cleaning Agents)	604	467	74	6	22	312	0	47	6	372	64	6	5	203	72	73	36	19	12
Other Types of Alcohol	97	84	25	10	4	34	1	10	0	70	8	0	2	24	22	17	4	0	1
Unknown Types of Alcohol	862	254	45	18	17	154	1	15	4	90	117	13	2	138	22	50	43	14	2
Rubbing Alcohols																			
Rubbing Alcohols: Ethanol with Methyl Salicylate	5	5	3	0	0	2	0	0	0	5	0	0	0	0	1	0	0	0	0
Rubbing Alcohols: Ethanol without Methyl Salicylate	213	194	90	7	8	77	0	10	2	164	26	0	3	35	31	29	10	0	0
Rubbing Alcohols: Isopropanol with Methyl Salicylate	134	125	63	5	7	46	0	4	0	104	15	0	4	38	34	28	10	0	0
Rubbing Alcohols: Isopropanol without Methyl Salicylate	7,589	6,570	2,735	210	395	2,793	6	383	48	5,125	1,275	72	34	1,705	983	1,152	455	67	1
Rubbing Alcohols: Unknown	338	277	86	10	20	138	7	16	0	183	83	5	2	110	39	37	28	5	0
Category Total:	68,946	21,308	7,772	681	1,850	9,376	45	1,329	255	13,195	6,746	515	425	6,892	2,904	3,471	2,286	566	66
Arts/Crafts/Office Supplies																			
Miscellaneous Arts/Crafts/Office Supplies																			
Artist Paints (Non-Water Color)	3,230	3,072	2,150	337	132	359	8	80	6	2,928	107	6	15	154	451	163	17	1	0
Artist Paints (Water Color)	1,064	1,030	800	130	36	46	4	14	0	991	33	2	1	20	123	26	0	0	0
Chalks	571	556	478	49	9	13	1	4	2	540	11	1	0	22	78	29	0	0	0
Clays	2,144	2,071	1,646	257	60	86	4	15	3	2,012	46	2	6	110	221	108	6	0	0
Crayons	1,345	1,288	911	216	66	76	9	7	3	1,223	53	0	3	34	115	44	1	0	0
Gazes	108	106	25	18	12	40	0	11	0	99	1	2	2	8	19	14	2	0	0

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason			Treated in Health Care Facility			Outcome				
			≤ 5	6-12	13-19	≥ 20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Office Supplies: Miscellaneous Other Types of Arts/Crafts/ Writing Products Pencils Pens or Inks Typewriter Correction Fluids Unknown Types of Arts/Crafts/ Writing Products	70	69	33	6	8	18	0	4	0	67	2	0	0	7	13	1	1	0	
	6,515	6,192	4,213	894	250	593	40	186	16	5,872	219	49	33	335	834	291	45	3	
	1,045	998	348	490	89	48	7	9	7	839	136	12	1	53	117	42	3	0	
	8,073	7,828	4,423	2,150	684	381	45	112	33	7,153	558	30	45	311	980	231	23	0	
	238	229	125	39	20	42	0	3	0	202	24	2	0	20	50	12	0	0	
	109	107	63	26	6	9	1	2	0	97	6	0	2	5	14	9	0	0	
	Category Total:	24,512	23,546	15,215	4,612	1,372	1,711	119	447	70	22,023	1,196	106	108	1,079	3,015	970	98	4
	Automotive/Aircraft/Boat Products																		
	Automotive Products: Brake Fluids	757	709	133	21	48	439	0	61	7	672	29	1	3	240	123	151	46	3
	Automotive Products: Ethylene Glycol (Including Antifreeze)	6,819	6,339	447	91	542	4,453	14	714	78	5,477	651	114	21	2,209	1,120	977	408	131
Automotive Products: Glycol and Methanol Mixtures	99	94	20	5	10	48	1	9	1	82	8	3	0	26	29	18	4	0	
Automotive Products: Hydrocarbons (Transmission Fluids, Power Steering Fluids, etc)	1,639	1,503	352	47	124	845	4	110	21	1,394	66	16	10	512	222	453	107	5	
Automotive Products: Methanol (Dry Gas, Windshield Washing Solutions, etc)	1,552	1,479	127	54	146	940	3	200	9	1,358	84	18	6	372	288	294	48	7	
Automotive Products: Other Glycols	198	187	54	16	3	96	0	17	1	170	11	5	1	39	38	26	7	1	
Miscellaneous Automotive/Aircraft/Boat Products																			
Automotive/Aircraft/Boat Products: Non-Toxic	20	20	13	0	0	7	0	0	0	20	0	0	0	4	4	4	0	0	
Automotive/Aircraft/Boat Products: Other	1,171	1,102	310	34	65	585	0	102	6	1,058	17	5	16	336	160	302	73	4	
Automotive/Aircraft/Boat Products: Unknown	161	146	34	5	8	86	1	12	0	128	10	3	2	60	21	35	13	0	
Category Total:	12,416	11,579	1,490	273	946	7,499	23	1,225	123	10,359	876	165	59	3,798	2,005	2,260	706	151	
Batteries																			
Disc Batteries																			
Disc Batteries: Alkaline (MNO2)	311	303	191	40	9	51	0	12	0	293	6	1	0	225	174	27	5	0	
Disc Batteries: Lithium	855	804	109	57	87	411	4	113	23	746	42	3	7	256	184	187	31	2	
Disc Batteries: Mercuric Oxide	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	
Disc Batteries: Nickel Cadmium	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Disc Batteries: Other	27	26	11	7	1	7	0	0	0	26	0	0	0	11	2	1	0	0	
Disc Batteries: Silver Oxide	30	27	13	1	0	11	0	2	0	27	0	0	0	20	17	2	1	0	
Disc Batteries: Unknown	1,931	1,866	1,239	266	72	243	12	25	9	1,737	94	9	1	1,427	790	133	44	12	
Disc Batteries: Zinc-Air	293	274	63	13	1	187	1	6	3	264	2	1	1	233	196	10	1	0	
Miscellaneous Batteries																			
Automotive/Aircraft/Boat Batteries	1,095	1,062	96	38	63	713	4	136	12	1,036	8	3	11	295	140	260	69	2	
Other Types of Battery	232	225	56	16	22	109	7	13	2	202	18	1	2	36	58	33	3	1	
Penlight/Flashlight/Dry Cell Batteries	6,406	6,221	3,820	594	288	1,137	24	313	45	5,632	482	42	26	1,337	2,094	522	49	0	
Unknown Types of Battery	76	73	21	8	7	27	2	7	1	69	2	1	0	21	18	9	4	0	
Category Total:	11,258	10,883	5,619	1,040	550	2,897	54	628	95	10,034	654	61	48	3,861	3,673	1,184	207	26	
(continued)																			

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in Health Care Facility				Outcome		
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death
Bites and Envenomations																		
Aquatic																		
Fish Stings	488	486	15	35	70	328	0	28	10	478	2	0	6	238	7	184	66	0
Jellyfish and Other Coelenterate Stings	240	236	40	69	36	76	1	13	1	235	0	0	0	64	6	83	24	0
Other or Unknown Marine Animal Bites and/or Envenomations	590	571	345	41	26	126	4	18	11	543	19	7	1	100	86	52	13	2
Exotic Snakes																		
Exotic Snake: Unknown If Poisonous	3	3	0	0	0	2	0	1	0	3	0	0	0	3	0	1	0	0
Exotic Snakes: Non-Poisonous	19	19	0	3	2	13	0	0	1	19	0	0	0	16	1	8	3	0
Exotic Snakes: Poisonous	43	42	1	2	5	30	0	4	0	42	0	0	0	32	3	10	14	2
Insects																		
Ant or Fire Ant Bites	378	337	87	37	14	147	1	40	11	325	1	11	0	46	16	86	13	2
Bee, Wasp, or Hornet Stings	2,021	1,928	328	190	71	1,084	6	220	29	1,922	2	3	1	321	15	589	153	7
Caterpillars	911	909	244	100	64	431	0	65	5	900	4	1	3	157	25	288	32	1
Centipede or Millipede Bites	227	227	81	14	10	112	1	7	2	225	1	0	0	41	18	71	7	0
Mosquito Bites	75	69	18	4	1	28	0	14	4	69	0	0	0	10	0	10	7	0
Other Insect Bites and/or Stings	2,693	2,607	619	202	135	1,321	9	276	45	2,522	10	48	16	558	93	674	161	2
Scorpion Stings	6,762	6,750	890	686	421	4,371	5	300	77	6,745	0	2	0	1,170	66	3,520	427	0
Tick Bites	528	510	125	43	18	224	5	81	14	506	2	0	1	129	23	73	15	0
Mammals																		
Bat Bites	968	957	105	85	62	570	10	113	12	948	0	0	1	525	188	90	1	0
Cat Bites	906	899	58	84	79	591	1	62	24	899	0	0	0	616	33	397	22	4
Dog Bites	2,932	2,922	434	654	314	1,349	11	111	49	2,920	0	0	1	2,308	24	1,354	116	4
Fox Bites	25	25	1	2	1	18	0	2	1	25	0	0	0	21	3	8	0	0
Human Bites	19	18	2	3	0	8	1	3	1	18	0	0	0	5	0	4	1	0
Other Mammal Bites	826	812	75	81	75	459	10	92	20	796	4	3	4	457	55	221	15	0
Raccoon Bites	131	128	5	7	17	82	1	12	4	124	2	1	0	92	16	53	1	0
Rodent or Lagomorph Bites (Squirrels, Rats, Mice, Gerbils, Hamsters, Rabbits, etc)	853	827	176	95	67	381	10	86	12	769	2	43	9	319	38	179	10	0
Skunk Bites	10	10	2	0	0	5	0	2	1	10	0	0	0	5	0	1	0	0
Miscellaneous Bites and Envenomations																		
Other or Unknown Animal Bites	220	215	29	23	16	113	1	29	4	207	6	0	1	93	12	52	30	2
Other or Unknown Reptile Bites	276	268	75	59	9	93	3	23	6	251	10	3	2	89	12	74	13	0
Unknown Types of Insect or Spider Bite and/or Envenomation	1,643	1,608	472	119	78	751	4	169	15	1,579	9	10	5	306	50	309	87	1
Miscellaneous Snake Bites and Envenomations																		
Unknown or Known Non-Poisonous Snake Bites	607	602	56	86	76	356	3	20	5	597	3	1	1	409	33	294	48	1
Unknown Types of Snake Envenomation	1,889	1,865	135	239	200	1,240	3	36	12	1,860	3	2	0	1,699	71	865	579	32
Snakes																		
Copperhead Envenomations	2,555	2,494	101	183	203	1,963	0	37	7	2,492	2	0	0	2,394	21	772	1,446	56
Coral Envenomations	90	90	7	9	8	62	0	1	3	90	0	0	0	79	7	46	17	0
Cottonmouth Envenomations	278	273	6	17	25	223	0	2	0	269	2	0	0	255	5	87	140	0

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason			Treated in Health Care Facility			Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Rattlesnake Envenomations	858	814	21	50	59	670	1	9	4	811	3	0	0	787	14	231	427	46	0
Unknown Crotalid Envenomations	1,079	1,054	63	94	94	792	0	6	5	1,052	0	1	0	1,013	11	314	540	59	1
Spiders																			
Black Widow Spider Bites and/or Envenomations	1,358	1,342	116	72	90	991	1	56	16	1,334	2	3	1	708	39	464	317	13	0
Brown Recluse Spider Bites and/or Envenomations	690	681	70	51	43	430	3	77	7	677	1	0	0	325	14	156	154	28	1
Other Necrotizing Spider Bites and/or Envenomations	38	36	5	3	2	24	0	1	1	35	0	0	1	14	1	8	7	1	0
Other Spider Bites and/or Envenomations	2,158	2,125	336	134	123	1,284	5	207	36	2,113	5	3	3	600	38	609	182	5	0
Tarantula Bites and/or Envenomations	33	33	4	1	3	20	0	4	1	30	0	0	2	19	1	8	7	0	0
Category Total: Building and Construction Products	35,421	34,792	5,147	3,577	2,517	20,768	100	2,227	456	34,440	95	142	59	16,023	1,045	12,245	5,095	308	7
Insulation																			
Asbestos	373	322	48	16	13	168	5	63	9	317	1	2	1	42	48	31	1	0	0
Fiberglass	784	745	247	57	53	271	8	94	15	716	10	5	6	131	90	114	13	0	0
Other Types of Insulation	111	100	28	4	4	52	0	12	0	98	1	0	1	16	13	19	5	0	0
Unknown Types of Insulation	329	308	159	28	10	87	2	20	2	292	6	1	8	60	40	56	8	0	0
Urea or Formaldehyde Insulations	6	6	2	0	0	4	0	0	0	6	0	0	0	3	3	0	0	0	0
Miscellaneous Building and Construction Products																			
Caulking Compounds and Construction Putties	1,790	1,716	998	117	38	401	7	139	16	1,652	33	4	18	134	323	138	11	1	0
Cement or Concrete (Excluding Glues)	1,164	1,105	287	36	45	631	5	89	12	1,068	15	1	13	449	129	267	156	9	0
Other Types of Building or Construction Products	2,312	2,108	887	130	94	783	7	190	17	2,022	38	8	30	418	333	334	70	3	0
Soldering Flux	132	130	36	3	11	68	0	12	0	123	3	0	3	44	17	42	10	1	0
Unknown Types of Building or Construction Products	73	60	20	4	1	24	0	9	2	57	0	0	1	8	9	4	4	1	0
Category Total: Chemicals	7,074	6,600	2,712	395	269	2,489	34	628	73	6,351	107	21	81	1,305	1,005	1,005	278	15	0
Acids																			
Hydrochloric Acid	1,729	1,446	56	29	142	1,038	0	158	23	1,362	36	11	18	627	91	526	146	14	0
Hydrofluoric Acid	585	502	11	2	26	428	0	30	5	487	8	3	1	392	63	194	107	7	0
Other Types of Acid	5,760	4,902	928	276	269	2,559	21	796	53	4,599	165	43	58	1,686	582	1,512	397	24	2
Unknown Types of Acid	111	91	7	1	9	65	0	7	2	88	2	1	0	48	10	22	19	1	0
Miscellaneous Chemicals																			
Acetone (Excluding Nail Polish Removers)	1,718	1,482	503	73	103	663	7	119	14	1,345	80	22	13	367	195	316	52	7	0
Alkalis (Excluding Cleaning Agents, Bleaches, Batteries, and Detergents)	3,902	3,183	436	105	271	2,047	11	282	31	2,788	165	37	143	1,689	290	967	563	57	2
Ammonia (Excluding Cleaning Agents)	2,139	1,584	156	60	168	979	2	195	24	1,437	84	24	21	632	180	486	156	12	1
Borates or Boric Acid (Excluding Topicals and Pesticides)	5,184	4,892	1,085	273	431	2,532	2	531	38	4,636	135	47	54	515	720	343	27	0	0
Chlorates (Excluding Matches and Fireworks)	52	37	4	2	4	24	0	2	1	30	6	0	1	18	1	6	11	0	0

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason			Treated in Health Care Facility			Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Cyanides (Excluding Rodenticides)	208	145	6	1	12	96	0	27	3	92	10	31	1	89	19	27	17	5	1
Dioxins	8	5	0	0	0	5	0	0	0	5	0	0	0	3	0	0	3	0	0
Ethylene Glycol (Excluding Automotive, Aircraft, or Boat Products)	635	521	68	25	28	342	3	46	9	366	106	12	2	256	90	74	40	57	8
Formaldehyde or Formalin	654	577	35	11	49	386	1	83	12	529	17	10	11	262	55	187	61	5	0
Ketones	262	231	54	1	13	149	0	11	3	225	4	1	1	111	40	85	25	1	0
Methylene Chloride (Excluding Paint Strippers)	221	192	18	13	9	126	1	25	0	186	2	0	3	79	28	49	8	3	0
Nitrates and Nitrites (Excluding Medications and Substances of Abuse)	1,172	1,062	233	297	117	351	3	54	7	774	256	13	6	337	177	163	49	32	26
Other Chemicals	19,468	14,949	4,937	1,460	781	6,157	91	1,378	145	13,643	641	171	388	3,087	2,097	2,735	611	51	6
Other Chemicals-Unknown If Toxic	1	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0
Other Glycols (Excluding Automotive, Aircraft, or Boat Products)	646	532	184	24	27	251	3	39	4	477	27	4	18	151	82	73	23	4	1
Phenol or Cresolates (Excluding Disinfectants)	208	193	14	7	19	123	1	20	9	182	4	0	3	76	29	50	24	0	0
Strychnine (Excluding Rodenticides)	25	22	6	0	0	14	0	2	0	12	2	3	4	9	2	3	1	0	0
Toluene Diisocyanate	660	623	117	36	14	346	1	99	10	593	14	1	12	150	190	138	25	1	0
Unknown Chemicals	6,641	6,143	1,000	326	290	3,341	50	955	181	4,664	207	804	206	1,922	677	1,310	427	53	1
Category Total:	51,989	43,315	9,858	3,022	2,782	22,023	197	4,859	574	38,520	1,971	1,238	965	12,506	5,618	9,267	2,792	334	48
Cleaning Substances (Household)																			
Automatic Dishwasher																			
Detergents																			
Automatic Dishwasher Detergents: Granules (Unit Dose)	1,214	1,207	1,118	10	8	53	2	14	2	1,186	5	4	0	75	235	201	6	0	0
Automatic Dishwasher Detergents: Granules (Various Containers)	1,124	1,090	846	18	15	150	3	53	5	1,071	8	5	3	81	171	172	14	0	0
Automatic Dishwasher Detergents: Granules with Liquids (Unit Dose)	6,740	6,693	6,091	80	37	381	4	94	6	6,643	14	16	4	485	1,140	1,238	62	2	0
Automatic Dishwasher Detergents: Liquids (Unit Dose)	489	487	391	17	8	52	2	14	3	482	1	0	1	72	48	108	10	0	0
Automatic Dishwasher Detergents: Liquids (Various Containers)	680	646	373	14	24	184	0	46	5	623	7	14	1	104	94	108	30	1	1
Automatic Dishwasher Detergents: Tablets	2,141	2,104	1,857	23	9	178	4	29	4	2,086	6	4	4	193	312	444	26	1	0
Automatic Dishwasher Rinse Agents	655	624	430	11	18	133	1	30	1	606	10	3	2	64	113	101	13	0	0
Other or Unknown Types of Automatic Dishwasher Detergent	2,779	2,730	2,299	28	29	289	4	77	4	2,692	18	16	3	254	374	488	48	1	0

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason			Treated in Health Care Facility			Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Bleaches	205	146	56	5	8	60	0	17	0	139	6	0	1	31	26	29	5	0	0
	36,340	27,516	8,395	1,090	1,973	13,100	71	2,586	301	24,381	2,184	445	304	7,926	3,656	7,550	1,081	49	3
	216	171	43	13	11	84	0	19	1	129	27	4	9	49	19	47	4	1	0
	1,475	1,080	294	40	80	562	2	94	8	934	100	24	11	360	114	285	62	4	0
Cleaners																			
Anionic or Nonionic Cleaners Other or Unknown Types of Household Cleaner	1,327	1,177	760	29	38	286	2	58	4	1,129	22	11	6	129	297	158	6	0	0
	2,546	2,149	1,136	85	92	653	6	171	6	1,980	88	52	21	440	315	350	62	0	0
Disinfectants																			
Disinfectants: Hypochlorite (Non-Bleach Products)	2,227	1,844	668	89	79	813	5	172	18	1,727	71	19	22	476	257	489	86	3	0
Disinfectants: Other or Unknown	7,622	6,705	2,943	625	346	2,194	24	525	48	6,103	354	110	76	834	1,030	1,182	135	7	0
Disinfectants: Phenol	338	309	141	27	13	105	0	22	1	276	24	4	4	58	44	62	9	2	0
Disinfectants: Pine Oil	2,630	2,036	825	127	96	795	6	154	33	1,868	97	28	19	370	379	443	47	4	0
Drain Cleaners																			
Drain Cleaners: Acids	288	235	28	10	10	142	0	43	2	223	12	0	0	81	30	59	30	1	0
Drain Cleaners: Alkalis	2,246	1,907	242	47	63	1,263	0	259	33	1,772	82	16	21	637	200	570	208	37	2
Drain Cleaners: Hydrochloric Acid	22	16	1	0	1	11	0	3	0	14	1	0	1	5	2	3	2	0	0
Drain Cleaners: Other or Unknown	827	708	311	18	7	310	0	56	6	665	22	5	10	145	127	109	50	3	0
Drain Cleaners: Sulfuric Acid	556	448	25	13	18	289	2	99	2	425	12	3	6	159	48	116	69	6	0
Fabric Softeners/Antistatic Agents																			
Fabric Softener/Antistatic Agent: Other or Unknown	20	16	14	0	0	2	0	0	0	16	0	0	0	0	1	0	1	0	0
Fabric Softeners/Antistatic Agents: Aerosol or Spray	69	67	52	2	1	7	1	4	0	65	0	1	1	1	14	6	0	0	0
Fabric Softeners/Antistatic Agents: Dry or Powder (Unit Dose)	5	4	3	1	0	0	0	0	0	4	0	0	0	1	1	1	0	0	0
Fabric Softeners/Antistatic Agents: Dry or Powder (Various Containers)	6	6	4	1	1	0	0	0	0	6	0	0	0	1	0	1	1	0	0
Fabric Softeners/Antistatic Agents: Liquid (Unit Dose)	5	5	2	0	0	1	0	2	0	5	0	0	0	1	1	0	1	0	0
Fabric Softeners/Antistatic Agents: Liquid (Various Containers)	689	595	346	21	23	176	1	24	4	549	31	8	2	85	99	63	9	0	0
Fabric Softeners/Antistatic Agents: Solid or Sheet	318	311	240	15	7	36	0	8	5	299	8	3	0	11	53	10	2	0	0
Glass Cleaners																			
Glass Cleaners: Ammonia Containing	471	412	282	17	22	74	1	15	1	377	26	5	3	46	96	58	4	0	0
Glass Cleaners: Anionics or Nonionics	112	95	52	5	4	30	0	4	0	84	8	1	0	14	17	17	0	0	0
Glass Cleaners: Isopropanol	784	679	386	48	43	166	0	34	2	621	43	2	2	78	124	84	6	0	0
Glass Cleaners: Other or Unknown Types of Household	2,439	2,032	1,290	97	149	392	7	78	19	1,851	140	22	5	272	373	256	26	0	0

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in Health Care Facility				Outcome		
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death
Hand Dishwashing	7,674	6,297	2,753	380	255	2,317	15	527	50	5,927	132	174	28	550	614	1,146	82	3
Antionic or Nonionic Hand Dishwashing Detergents																		0
Other or Unknown Types of Household Hand Dishwashing Detergent	1,155	988	416	45	48	363	5	105	6	925	20	39	4	91	105	163	13	2
Laundry Additives																		
Enzyme and/or Microbiological Laundry Additives	57	51	31	2	0	15	0	3	0	51	0	0	0	5	8	1	0	0
Laundry Bleaching and/or Brightening Agents (without Detergent)	67	49	19	0	1	25	0	4	0	48	1	0	0	6	4	1	0	0
Laundry Detergent Boosters	960	886	694	40	15	101	6	29	1	845	21	12	5	73	151	83	5	0
Other or Unknown Laundry Additives or Miscellaneous Products	1,571	1,469	1,022	77	61	245	1	58	5	1,382	47	19	12	163	230	191	21	0
Water Softeners																		
Laundry Detergents: Granules (Unit Dose)	47	43	17	2	4	13	1	6	0	38	1	2	2	7	5	4	3	0
Laundry Detergents: Granules (Various Containers)	304	289	172	15	12	68	2	19	1	270	10	8	1	44	48	46	6	0
Laundry Detergents: Granules with Liquids (Unit Dose)	2,425	2,245	1,419	80	87	508	7	130	14	2,147	70	5	14	326	312	372	45	2
Laundry Detergents: Liquids (Unit Dose)	238	234	194	11	5	18	0	5	1	229	0	0	0	78	29	82	11	0
Laundry Detergents: Liquids (Various Containers)	11,949	11,803	9,863	598	269	822	28	211	12	11,478	235	18	21	3,896	1,741	4,528	515	20
Laundry Detergents: Other or Unknown Types of Household Laundry Detergent and/or Fabric Cleaner	5,083	4,724	2,809	167	206	1,261	7	252	22	4,425	218	28	20	830	601	1,002	108	5
Laundry Detergents: Soaps	257	220	132	7	12	48	1	18	2	211	6	1	2	39	25	53	5	1
Laundry Prewash/Stain Removers																		
Laundry Prewash/Stain Removers: Aerosol or Spray Solvent Based	240	221	132	15	6	50	2	16	0	205	6	7	3	23	34	29	5	0
Laundry Prewash/Stain Removers: Aerosol or Spray Surfactant Based	71	70	58	5	0	6	1	0	0	69	0	1	0	12	10	23	0	0
Laundry Prewash/Stain Removers: Dry Solvent Based	403	365	206	15	12	107	1	24	0	347	10	0	3	37	39	74	8	0
Laundry Prewash/Stain Removers: Dry Surfactant Based	6	6	3	0	0	2	0	1	0	5	0	1	0	0	0	1	0	0
Laundry Prewash/Stain Removers: Liquid Solvent Based	115	109	89	3	2	12	0	3	0	105	1	1	0	12	19	10	2	0
Laundry Prewash/Stain Removers: Liquid Surfactant Based	201	189	125	5	6	43	1	9	0	183	4	2	0	23	36	31	0	0
Laundry Prewash/Stain Removers: Liquid Solvent Based	1,151	1,079	875	18	25	132	3	25	1	1,059	14	2	4	102	154	177	14	0
Laundry Prewash/Stain Removers: Other or Unknown	1,335	1,192	847	41	32	230	0	39	3	1,158	18	8	6	108	192	200	14	1

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age							Reason			Treated in Health Care Facility			Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Laundry Prewash/Stain Removers: Other or Unknown Solvent Based	31	30	21	0	3	3	0	2	1	29	1	0	0	3	4	3	1	0	0
Laundry Prewash/Stain Removers: Other or Unknown Surfactant Based	34	30	27	0	0	3	0	0	0	30	0	0	0	1	5	2	0	0	0
Miscellaneous Cleaners																			
Miscellaneous Cleaning Agents: Acids	2,694	2,325	934	79	86	1,023	3	188	12	2,178	55	62	25	371	390	431	63	2	0
Miscellaneous Cleaning Agents: Alkalis	7,900	6,680	2,966	189	276	2,651	7	537	54	6,276	258	51	73	1,507	1,096	1,506	324	24	0
Miscellaneous Cleaning Agents: Anionics or Nonionics	4,707	4,107	2,266	212	177	1,183	9	236	24	3,871	128	47	40	501	520	710	72	4	0
Miscellaneous Cleaning Agents: Cationics	2,392	2,188	925	125	126	856	2	138	16	2,014	106	39	19	433	343	477	81	2	0
Miscellaneous Cleaning Agents: Ethanol (Excluding Automotive Products)	238	217	123	10	11	57	1	14	1	203	7	2	5	27	36	44	1	0	0
Miscellaneous Cleaning Agents: Glycols (Excluding Automotive Products)	352	314	139	32	21	93	3	22	4	283	14	11	4	37	36	42	9	0	0
Miscellaneous Cleaning Agents: Isopropanol (Excluding Automotive Products and Glass)	523	482	180	71	39	151	2	37	2	433	40	5	1	62	80	84	12	0	0
Miscellaneous Cleaning Agents: Methanol (Excluding Automotive Products)	28	28	2	0	3	19	0	3	1	27	0	0	1	8	2	9	4	0	0
Miscellaneous Cleaning Agents: Other or Unknown	5,558	4,966	2,712	263	190	1,401	15	340	45	4,646	144	102	40	656	911	872	84	6	0
Household Cleaning Agents: Miscellaneous Cleaning Agents: Phenol (Excluding Disinfectants)	13	11	2	0	1	7	0	1	0	9	0	1	0	4	1	5	0	0	0
Miscellaneous Cleaning Substances (Household)																			
Ammonia Cleaners (All Purpose)	635	418	97	7	25	237	2	44	6	373	26	6	7	95	63	116	15	0	0
Carpet, Upholstery, Leather, or Vinyl Cleaners	2,951	2,698	1,649	82	73	717	3	159	15	2,585	51	20	22	326	411	450	46	3	0
Hydrofluoric Acid or Bifluoride Wheel Cleaners	37	35	3	1	3	28	0	0	0	34	0	0	0	23	6	13	5	0	1
Starches, Fabric Finishes, or Sizing	63	61	39	4	0	16	1	1	0	59	2	0	0	5	9	10	0	0	0
Oven Cleaners																			
Oven Cleaners: Acids	14	12	3	0	0	7	0	2	0	12	0	0	0	1	0	1	0	0	0
Oven Cleaners: Alkalis	2,053	1,977	278	56	108	1,210	8	286	31	1,826	45	45	38	549	188	528	166	8	0
Oven Cleaners: Detergent Types	10	9	4	1	1	3	0	0	0	8	0	1	0	2	2	0	1	0	0
Oven Cleaners: Other or Unknown	332	314	52	14	21	176	1	48	2	288	2	19	3	85	55	51	19	5	0
Rust Removers																			
Rust Removers: Acids Other Than Hydrofluoric Acid Types	525	435	102	6	13	266	2	40	6	414	10	5	4	117	73	108	24	0	0
Rust Removers: Alkalis	7	7	0	0	2	3	0	2	0	7	0	0	0	3	2	3	1	0	0

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in Health Care Facility				Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death	
Rust Removers: Anionics or Nonionics	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	
Rust Removers: Hydrofluoric Acid	113	108	14	1	3	78	0	12	0	105	2	1	0	60	15	33	16	0	0
Rust Removers: Other or Unknown	156	138	15	4	5	96	0	17	1	128	4	2	2	24	21	37	7	1	0
Spot Removers/Dry Cleaning Agents																			
Spot Removers/Dry Cleaning Agents: Anionics or Nonionics	126	103	70	3	5	19	0	6	0	98	3	1	1	7	24	18	1	0	0
Spot Removers/Dry Cleaning Agents: Glycols	24	23	13	2	2	6	0	0	0	22	0	1	0	2	7	5	0	0	0
Spot Removers/Dry Cleaning Agents: Isopropanol	8	7	3	0	0	3	0	1	0	7	0	0	0	1	3	2	0	0	0
Spot Removers/Dry Cleaning Agents: Other Halogenated Hydrocarbon Containing Products	5	3	0	0	0	2	0	1	0	3	0	0	0	1	0	0	1	0	0
Spot Removers/Dry Cleaning Agents: Other Hydrocarbon and/or Non-Halogenated Containing	663	622	393	12	13	153	1	46	4	603	9	3	6	93	122	92	10	2	0
Spot Removers/Dry Cleaning Agents: Other or Unknown	164	148	70	6	9	55	0	7	1	133	10	3	2	42	26	34	7	0	0
Toilet Bowl Cleaners																			
Toilet Bowl Cleaners: Acids	3,046	2,309	1,200	53	86	791	3	161	15	2,199	82	5	17	426	430	471	72	7	1
Toilet Bowl Cleaners: Alkalis	2,774	2,260	1,656	62	55	396	4	81	6	2,170	69	4	14	311	504	348	36	2	0
Toilet Bowl Cleaners: Other or Unknown	3,954	3,583	2,943	72	59	397	12	86	14	3,494	50	9	10	355	772	320	25	3	0
Wall/Floor/Tile Cleaners																			
Wall/Floor/Tile/All-Purpose Cleaning Agents: Acids	1,061	780	417	31	29	233	1	64	5	734	22	7	12	127	119	148	14	2	1
Wall/Floor/Tile/All-Purpose Cleaning Agents: Alkalis	5,967	5,038	2,536	185	202	1,734	8	345	28	4,741	190	41	44	973	867	1,085	146	11	0
Wall/Floor/Tile/All-Purpose Cleaning Agents: Anionics or Nonionics	9,718	8,067	4,153	319	367	2,723	20	430	55	7,407	341	175	53	1,565	1,374	1,306	141	11	1
Wall/Floor/Tile/All-Purpose Cleaning Agents: Cationics	2,532	2,211	1,369	95	89	540	2	109	7	2,070	89	29	11	297	336	491	31	2	0
Wall/Floor/Tile/All-Purpose Cleaning Agents: Ethanol	155	132	104	1	6	15	1	5	0	129	3	0	0	12	23	17	1	0	0
Wall/Floor/Tile/All-Purpose Cleaning Agents: Glycols	810	641	343	18	21	189	3	63	4	602	23	10	5	92	104	86	9	3	0
Wall/Floor/Tile/All-Purpose Cleaning Agents: Isopropanol	656	530	305	27	24	138	1	33	2	482	39	5	2	93	85	80	9	2	0
Wall/Floor/Tile/All-Purpose Cleaning Agents: Methanol	2	2	0	0	0	2	0	0	0	2	0	0	0	0	0	1	0	0	0
Wall/Floor/Tile/All-Purpose Cleaning Agents: Other or Unknown	1,886	1,663	1,063	59	58	412	2	63	6	1,572	45	19	13	226	269	275	30	3	0
Category Total:	179,832	154,492	83,011	6,254	6,503	47,450	346	9,918	1,010	144,445	6,111	1,884	1,141	29,487	23,501	33,358	4,458	259	15

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in Health Care Facility			Outcome					
			≤5	6-12	13-19	≥20	Unknown			Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death	
							Child	Adult	Age											
Cosmetics/Personal Care Products																				
Dental Care Products																				
False Teeth Cleaning Agents	2,029	2,013	192	31	39	1,527	4	210	10	1,952	29	9	17	103	287	147	5	0	0	
Other Dental Care Products (Excluding Fluoride Supplements)	1,089	1,053	424	66	35	424	0	98	6	967	21	1	58	88	149	109	20	0	0	
Hair Care Products																				
Toothpastes (with Fluoride)	9,304	9,032	7,401	392	179	829	10	208	13	8,774	150	10	58	197	1,398	506	21	1	0	
Toothpastes (without Fluoride)	1,328	1,262	1,066	45	12	95	4	38	2	1,237	9	0	9	17	156	54	3	0	0	
Curl Activators	22	20	15	0	2	3	0	0	0	20	0	0	0	3	5	1	0	0	0	
Hair Coloring Agents (Excluding Peroxides)	1,777	1,704	636	56	108	712	3	174	15	1,510	29	8	151	329	217	343	62	3	0	
Hair Oils	759	740	577	16	18	104	1	23	1	713	9	2	10	87	131	67	10	1	0	
Hair Relaxers (with Other Alkalines)	66	60	43	1	0	13	0	3	0	59	1	0	0	31	14	18	5	0	0	
Hair Relaxers (with Other Non-Alkalines)	17	16	10	0	0	5	1	0	0	16	0	0	0	6	2	2	3	0	0	
Hair Relaxers (with Sodium Hydroxide)	92	92	51	2	2	32	2	3	0	86	1	1	4	54	8	27	18	1	0	
Hair Rinses, Conditioners, Relaxers	1,757	1,629	1,247	61	50	212	3	51	5	1,544	54	3	13	120	243	145	13	0	0	
Hair Sprays	838	747	396	37	51	191	1	63	8	686	38	7	7	88	99	134	19	0	0	
Other Hair Care Products (Excluding Peroxides)	2,533	2,414	1,615	102	108	478	2	97	12	2,299	41	9	55	358	317	380	58	2	0	
Permanent Wave Solutions	62	57	13	1	7	25	0	10	1	55	0	0	2	26	1	27	2	0	0	
Shampoos	4,257	3,989	2,517	235	178	853	7	181	18	3,691	201	15	53	445	419	688	48	3	0	
Hand Sanitizers	19,772	18,920	11,845	2,278	1,099	3,260	20	376	42	16,002	2,472	291	51	2,418	3,567	1,864	431	74	1	
Hand Sanitizers: Ethanol Based	256	239	132	19	12	63	1	12	0	184	52	0	0	59	41	24	23	1	0	
Hand Sanitizers: Isopropanol Based	512	498	405	32	12	44	1	4	0	456	31	5	2	13	80	18	1	0	0	
Hand Sanitizers: Non-Alcohol Based	2,051	1,774	832	247	152	453	15	65	10	1,315	368	56	8	498	271	281	107	18	2	
Miscellaneous Cosmetics/Personal Care Products																				
Baby Oils	1,056	1,022	892	31	13	70	3	12	1	1,004	6	2	4	119	171	107	6	1	1	
Bath Oils and/or Bubble Baths	3,276	3,186	2,668	318	41	126	10	20	3	3,087	52	5	17	168	510	277	16	1	0	
Creams, Lotions, and Make-Up	15,041	14,413	11,240	483	333	1,850	28	438	41	13,811	218	35	282	605	1,841	762	64	0	0	
Deodorants	6,252	6,072	4,677	362	386	492	15	117	23	5,635	317	44	38	296	831	461	29	0	1	
Depilatories	474	460	138	19	53	200	1	41	8	355	22	1	80	135	56	121	39	0	0	
Douches	19	15	4	0	2	6	0	3	0	13	0	0	2	4	2	1	2	0	0	
Eye Products	960	920	642	38	42	158	1	37	2	868	20	2	26	85	109	99	17	0	0	
Lipsticks and Lip Balms (with Camphor)	510	503	414	23	20	35	0	10	1	480	12	1	7	9	86	31	3	0	0	
Lipsticks and Lip Balms (without Camphor)	3,103	2,999	2,503	198	78	140	7	59	14	2,850	68	2	68	70	319	157	4	1	0	
Perfumes, Colognes, and Aftershaves	5,181	4,918	3,380	456	332	587	8	136	19	4,486	284	82	28	490	755	885	47	0	1	
Peroxides	5,499	4,841	1,180	218	327	2,504	12	534	66	4,450	241	19	92	929	568	1,114	172	11	0	
Powders Made of Material Other Than Talc	799	767	589	46	16	89	2	23	2	727	21	8	8	44	108	101	5	0	0	
Powders Made of Talc	746	716	481	39	30	130	3	32	1	676	25	3	7	87	121	88	8	0	0	

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in Health Care Facility			Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Soaps (Bar, Hand or Complexion) Suntan and/or Sunscreen Products	10,079	9,406	5,542	681	441	2,267	23	416	36	8,780	389	92	92	819	993	1,428	100	3	2
	4,749	4,641	3,799	260	87	395	8	81	11	4,529	50	11	34	170	615	413	32	0	0
Mouthwashes																			
Mouthwashes: Ethanol Containing	4,191	3,771	615	348	320	2,059	4	395	30	3,046	643	14	41	614	467	378	169	15	3
Mouthwashes: Fluoride Containing	3,815	3,750	2,058	926	92	543	8	114	9	3,646	74	3	12	65	481	117	5	1	0
Mouthwashes: Non Ethanol Containing	1,955	1,875	437	198	115	914	3	187	21	1,758	81	2	21	90	234	98	10	2	0
Mouthwashes: Unknown	195	151	22	6	12	84	1	24	2	127	19	1	1	25	25	12	4	1	1
Nail Products																			
Acrylic Nail Adhesives	1,916	1,899	653	306	264	573	6	76	21	1,832	46	5	10	791	204	549	133	3	0
Acrylic Nail Primers	214	208	145	5	12	35	0	10	1	204	1	0	3	84	37	59	12	1	0
Acrylic Nail Removers	17	15	6	1	0	7	0	1	0	15	0	0	0	5	1	4	0	0	0
Miscellaneous Nail Products	784	754	458	35	41	180	1	37	2	724	5	8	16	156	115	152	20	2	0
Nail Polish Removers (Acetone Containing)	1,379	1,323	795	74	72	316	6	57	3	1,239	47	14	8	164	210	221	17	0	0
Nail Polishes	3,324	3,214	2,611	188	86	250	6	65	8	3,116	56	10	20	280	468	454	22	0	0
Other Nail Polish Removers	424	402	283	15	17	71	1	15	0	388	9	2	2	37	92	63	5	0	0
Unknown Nail Polish Removers	2,083	1,951	1,221	103	107	409	7	93	11	1,823	93	22	7	285	345	307	23	2	0
Category Total:	126,573	120,451	76,870	8,998	5,403	23,813	239	4,649	479	111,235	6,305	805	1,424	11,566	17,169	13,294	1,813	148	12
Deodorizers																			
Air Freshener																			
Air Fresheners: Aerosols	1,856	1,781	1,147	104	74	344	10	94	8	1,681	53	17	17	167	248	259	24	1	0
Air Fresheners: Liquids	7,642	7,549	6,387	226	102	650	13	149	22	7,372	63	39	24	524	1,278	1,058	35	2	0
Air Fresheners: Solids	1,089	1,065	887	39	23	93	8	12	3	1,028	12	6	2	75	175	67	3	0	0
Air Fresheners: Unknown Form	989	960	703	60	28	133	1	32	3	931	20	6	2	77	172	126	9	0	0
Miscellaneous Deodorizers																			
Diaper Pail Deodorizers	18	17	10	3	1	3	0	0	0	17	0	0	0	3	4	2	1	0	0
(Excluding Moth Repellants)																			
Other Types of Deodorizer (Not For Personal Use)	5,502	5,263	3,457	281	167	1,069	12	258	19	5,075	109	41	31	608	865	708	58	3	1
Toilet Bowl Deodorizers	205	195	140	19	3	30	0	3	0	187	2	3	0	28	50	14	3	0	0
Unknown Types of Deodorizer (Not for Personal Use)	64	60	34	3	2	19	1	1	0	56	2	1	1	10	11	7	3	0	0
Category Total:	17,365	16,890	12,765	735	400	2,341	45	549	55	16,347	261	113	77	1,492	2,803	2,241	136	6	1
Dyes																			
Miscellaneous Dyes																			
Dyes: Fabrics	358	337	227	26	17	53	3	10	1	318	8	2	5	30	62	21	1	0	0
Dyes: Foods (Including Easter Egg)	489	439	300	80	19	28	3	9	0	384	38	2	12	17	73	21	1	0	0
Dyes: Leathers	44	42	30	3	1	5	0	2	1	42	0	0	0	3	6	2	1	0	0
Dyes: Other	533	496	252	66	70	88	1	18	1	452	22	1	20	42	85	47	3	4	0
Dyes: Unknown	79	74	49	11	3	9	0	2	0	72	1	1	0	11	16	9	0	0	0
Category Total:	1,503	1,388	858	186	110	183	7	41	3	1,268	69	6	37	103	242	100	6	4	0
Essential Oils																			
Miscellaneous Essential Oil																			
Cinnamon Oil	521	455	288	48	16	77	4	20	2	400	31	1	21	39	28	128	13	0	0
Clove Oil	504	468	256	15	7	146	0	40	4	409	19	4	35	60	70	84	3	0	0
Eucalyptus Oil	1,376	1,254	692	44	43	378	4	89	4	1,162	46	7	25	205	278	172	25	2	0
Miscellaneous Essential Oils	13,717	13,065	9,181	455	301	2,410	51	621	46	12,498	235	64	232	961	2,109	1,950	104	5	0

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age				Reason				Treated in Health Care Facility				Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death
Pennyroyal Oil	17	14	4	2	0	7	0	1	0	12	2	0	0	4	2	0	0	0
Tea Tree Oil	2,217	2,068	984	56	60	772	4	179	13	1,911	65	16	63	255	232	23	4	0
Category Total:	18,352	17,324	11,405	620	427	3,790	63	950	69	16,392	398	92	376	1,524	2,915	168	11	0
Fertilizers																		
Miscellaneous Fertilizers																		
Household Plant Foods (Generally for Indoor Plants)	1,392	1,359	646	96	45	465	5	93	9	1,312	26	16	4	61	252	70	2	0
Other Types of Fertilizer	1,463	1,336	749	108	37	338	4	85	15	1,274	26	14	15	110	230	123	0	0
Outdoor Fertilizers	1,503	1,420	808	91	36	399	2	77	7	1,362	22	16	19	109	250	112	14	1
Plant Hormones	111	100	47	1	3	39	1	9	0	98	1	0	1	11	23	11	1	0
Unknown Types of Fertilizer	121	107	58	9	2	28	0	9	1	105	1	0	1	8	21	10	1	0
Category Total:	4,590	4,322	2,308	305	123	1,269	12	273	32	4,151	76	46	40	299	776	326	30	1
Fire Extinguishers																		
Miscellaneous Fire Extinguishers	2,074	1,982	177	185	259	1,048	36	230	47	1,755	69	123	25	647	293	550	133	1
Category Total:	2,074	1,982	177	185	259	1,048	36	230	47	1,755	69	123	25	647	293	550	133	1
Foreign Bodies/Toys/ Miscellaneous Foreign Bodies/Toys/ Miscellaneous																		
Asbes	233	214	155	2	2	44	0	11	0	213	1	0	0	17	30	16	1	0
Bubble Blowing Solutions	2,122	2,080	1,810	151	40	63	5	9	2	2,041	25	3	6	125	193	411	16	0
Charcoals	511	388	233	21	7	94	1	28	4	349	15	3	17	39	55	15	3	0
Christmas ornaments	233	228	156	17	2	40	0	13	0	226	1	0	1	23	46	18	0	0
Coins	2,215	2,168	1,540	560	29	25	3	9	2	2,104	51	4	2	803	454	219	27	3
Desiccants	15,593	15,449	10,705	2,070	486	1,600	79	458	51	14,706	514	161	22	808	1,899	187	13	0
Expanding Water Beads	590	582	459	102	11	6	2	2	0	564	16	1	0	145	182	30	1	0
Feces/Urine	5,612	4,797	3,529	188	93	651	36	262	38	4,606	37	109	19	195	554	171	18	2
Glass	2,268	2,202	479	135	94	988	13	443	50	2,074	20	95	10	196	333	93	10	0
Glow Products	8,470	8,455	5,679	2,225	214	203	45	74	15	8,260	154	2	12	319	838	1,540	25	0
Incense (Punk)	218	208	145	3	11	32	1	16	0	202	1	0	3	19	28	16	4	0
Other Types of Foreign Body, Toy, or Miscellaneous	36,071	34,502	23,577	5,071	1,189	3,261	179	1,084	141	32,875	1,018	292	171	4,398	6,349	1,549	152	4
Substance																		
Oxygen Absorbers	1,143	1,127	336	339	93	273	9	69	8	972	103	41	6	54	265	35	2	0
Soil	1,806	1,567	1,135	77	49	232	6	61	7	1,498	33	11	19	96	212	87	7	0
Toys	17,227	17,075	13,852	2,509	287	273	60	84	10	16,620	334	31	31	1,945	3,310	796	28	2
Unknown Types of Foreign Body, Toy, or Miscellaneous	4,757	4,705	3,799	631	99	122	15	31	8	4,583	80	19	11	382	874	214	6	0
Thermometers																		
Thermometers: Mercury	800	793	117	53	37	390	10	165	21	784	6	1	2	72	187	7	3	0
Thermometers: Other	417	403	110	36	11	146	9	86	5	394	5	1	3	22	80	16	3	0
Thermometers: Unknown	82	82	19	5	3	34	0	21	0	81	1	0	0	3	9	0	0	0
Category Total:	100,368	97,025	67,835	14,195	2,757	8,477	473	2,926	362	93,152	2,415	774	335	9,661	15,898	5,420	319	11
Fumes/Gases/Vapors																		
Miscellaneous Fumes/Gases/Vapors																		
Carbon Dioxide	739	681	55	84	85	344	4	96	13	623	33	4	15	159	93	159	30	2
Carbon Monoxide	15,004	13,681	1,530	1,008	895	7,866	123	1,941	318	13,103	352	33	65	6,039	2,319	3,375	1,493	372
Chloramine Gas	3,189	3,022	78	38	190	2,079	15	575	47	2,907	86	2	16	455	380	693	168	7
Chlorine Gas	5,391	5,079	251	246	285	3,164	25	1,004	104	4,883	140	11	38	1,014	640	1,341	374	14

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age				Reason				Treated in Health Care Facility				Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death
Chlorine Gas (When Household Acid is Mixed with Hypochlorite)	5,564	5,329	193	100	312	3,641	39	925	119	5,159	141	4	3	690	1,363	344	6	2
Hydrogen Sulfide (Sewer Gas)	866	784	41	39	30	531	20	108	15	773	6	0	2	399	99	231	14	4
Methane and Natural Gas	6,032	5,752	970	414	315	2,931	55	959	108	5,680	16	16	27	1,073	1,400	1,015	156	1
Other Types of Fume, Gas or Vapor	2,475	2,285	193	110	155	1,387	21	347	72	1,991	228	12	25	627	287	468	179	0
Polymer Fume Fever	10	10	0	0	0	9	0	1	0	8	0	0	0	2	1	2	0	0
Simple Asphyxiants	2,749	2,476	220	238	210	1,490	8	270	40	2,240	176	11	28	865	337	666	212	2
Unknown Types of Fume, Gas or Vapor	2,384	2,303	100	82	117	1,315	51	556	82	2,144	22	102	13	485	175	386	124	0
Category Total:	44,403	41,402	3,631	2,359	2,594	24,757	361	6,782	918	39,511	1,200	195	232	11,808	6,647	9,699	3,185	55
Heavy Metals																		
Miscellaneous Heavy Metals																		
Aluminum	961	882	406	74	90	220	2	87	3	765	17	83	10	63	171	49	7	0
Arsenic (Excluding Pesticides)	858	749	38	29	19	557	3	91	12	425	7	111	16	417	100	69	37	4
Barium, Soluble Salts	46	22	1	1	5	12	0	2	1	15	3	1	3	4	3	6	0	1
Cadmium	92	53	1	0	1	45	0	5	1	42	0	4	1	22	9	5	0	0
Copper	705	592	74	44	80	331	4	51	8	503	22	15	27	147	62	128	23	4
Fireplace Flame Colors	16	15	8	3	0	3	1	0	0	15	0	0	0	6	5	2	0	0
Gold	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Lead	2,498	2,349	1,214	194	89	653	12	167	20	2,099	33	102	28	1,186	620	201	82	9
Manganese	65	44	7	2	0	30	0	4	1	33	1	1	4	23	7	7	2	0
Mercury (Other)	305	275	14	8	18	201	0	29	5	206	6	26	23	108	42	15	19	3
Mercury, Elemental (Excluding Thermometer)	921	872	49	33	76	530	5	156	23	746	18	24	50	235	172	43	21	3
Metal Fume Fever	264	223	14	4	29	150	0	24	2	206	6	2	7	90	20	61	21	0
Other Types of Heavy Metal	2,188	1,696	510	112	92	790	4	161	27	1,294	90	29	270	271	182	270	53	2
Thallium	81	60	2	1	2	42	0	13	0	17	4	22	2	30	4	6	5	1
Unknown Types of Heavy Metal	81	72	9	4	3	35	1	19	1	51	3	9	3	34	5	6	0	0
Category Total:	9,082	7,905	2,348	509	504	3,599	32	809	104	6,418	210	429	444	2,636	1,402	867	278	26
Hydrocarbons																		
Miscellaneous Hydrocarbons																		
Benzene	123	89	1	3	5	63	0	14	3	81	0	8	0	54	12	18	2	0
Carbon Tetrachloride	56	54	2	1	2	29	0	19	1	53	0	1	0	12	24	15	0	0
Diesel Fuels	1,103	1,039	141	23	57	658	5	140	15	948	65	14	6	299	116	318	51	4
Freon and Other Propellants	6,106	5,907	344	218	434	3,917	28	825	141	5,269	505	55	28	1,777	775	1,368	448	54
Gasolines	8,859	8,512	927	463	715	5,215	27	1,081	84	7,792	533	91	37	1,877	899	2,547	287	18
Kerosenes	494	451	166	23	16	183	4	53	6	423	19	4	2	175	52	123	38	3
Lamp Oils	734	718	467	23	17	169	2	37	3	710	5	2	0	216	126	60	63	0
Lighter Fluids and/or Naphtha	1,507	1,426	761	39	85	404	6	114	17	1,292	68	48	9	455	253	332	67	1
Lubricating Oils and/or Motor Oils	3,137	2,890	1,232	135	155	1,113	6	224	25	2,709	95	59	14	622	567	526	70	3
Mineral Seal Oil	28	28	9	4	2	12	0	1	0	27	0	1	0	7	5	3	1	0
Mineral Spirits	1,556	1,422	295	41	92	827	2	147	18	1,308	67	19	16	502	165	395	104	0
Other Types of Halogenated Hydrocarbon	202	180	15	7	13	114	0	27	4	170	5	2	1	56	19	46	16	0
Other Types of Hydrocarbon	2,760	2,533	883	111	123	1,150	13	229	24	2,415	56	24	28	747	390	537	148	1
Toluene and/or Xylene (Excluding Adhesives)	523	419	38	5	18	293	1	54	10	400	5	2	7	201	39	145	41	3
Turpentine	193	158	22	2	6	116	0	9	3	125	24	4	3	58	26	44	10	1
Unknown Types of Hydrocarbon	496	456	159	19	28	199	4	37	10	414	27	10	0	138	96	111	24	8
Category Total:	27,877	26,282	5,462	1,117	1,768	14,462	98	3,011	364	24,136	1,474	344	151	7,196	3,564	6,688	1,380	18

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age				Reason				Treated in				Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Industrial Cleaners																			
Miscellaneous Industrial Cleaners																			
Industrial Cleaner: Disinfectants	2,009	1,844	183	135	160	1,087	8	236	35	1,637	143	38	18	492	213	505	113	4	0
Industrial Cleaner: Other or Unknown	1,433	1,265	230	47	85	772	2	117	12	1,155	43	40	22	467	130	413	105	2	0
Industrial Cleaners: Acids	1,769	1,466	289	40	75	857	2	181	22	1,353	33	62	11	465	186	403	96	5	0
Industrial Cleaners: Alkalies	2,460	2,257	295	44	186	1,496	5	206	25	2,135	71	35	12	1,152	173	776	322	30	0
Industrial Cleaners: Anionics or Nonionics	456	417	147	17	15	206	1	29	2	385	22	7	2	101	53	95	23	0	1
Industrial Cleaners: Cationics	1,605	1,461	255	150	131	804	0	110	11	1,262	147	24	19	470	253	390	76	2	1
Category Total: Infectious and Toxin-Mediated Diseases	9,732	8,710	1,399	433	652	5,222	18	879	107	7,927	459	206	84	3,147	1,008	2,582	735	43	2
Algae Associated Exposures																			
Cyanobacteria Exposure (Blue Green Algae)	410	395	88	67	32	159	4	42	3	377	3	4	11	65	68	93	13	0	0
Karenia brevis Exposure (Red Algae Tide)	74	72	6	5	3	45	0	10	3	69	0	0	2	12	0	24	2	0	0
Unknown Type of Algae Associated Exposure	11	11	6	0	0	2	0	3	0	9	0	2	0	0	2	0	0	0	0
Botulinum Toxins																			
Botulism	427	388	114	10	5	210	3	41	5	265	15	14	83	108	43	24	18	20	2
Ichthyosarcotoxins																			
Ciguatera Poisoning	89	87	1	0	3	73	1	9	0	65	3	0	19	55	3	21	27	3	0
Clupeotoxic Fish Poisoning	6	6	1	0	1	3	0	1	0	5	0	1	0	0	0	0	4	0	0
Other Types of Seafood Poisoning	78	75	8	7	3	39	0	15	3	64	2	1	8	17	6	12	6	1	0
Palytoxin Poisoning	70	68	5	1	4	56	0	2	0	60	1	0	6	42	3	24	17	0	0
Paralytic Shellfish Poisoning	81	77	4	6	5	47	5	8	2	72	2	0	3	22	1	20	3	0	0
Scombroid Fish Poisoning	108	97	6	1	6	68	0	16	0	60	0	0	36	23	2	21	17	2	0
Tetrodon Poisoning	330	325	33	75	33	140	3	34	7	296	23	3	2	55	62	33	6	0	0
Infectious Diseases																			
Bacterial Diseases	592	553	87	32	23	323	3	73	12	489	9	10	35	141	38	57	24	6	0
Fungal Diseases	204	187	27	16	13	89	3	35	4	173	0	8	4	15	12	14	4	0	0
Other Types of Bacterial Food Poisoning (Salmonella, Shigella, Vibrio, Staphylococcus, Streptococcus, etc)	48	43	12	1	3	17	0	9	1	39	0	2	1	7	3	2	1	0	0
Parasitic Diseases	29	27	10	2	0	10	0	4	1	23	0	1	1	6	3	5	2	0	0
Prion Diseases	2	2	0	0	0	1	0	1	0	1	0	0	1	1	0	1	0	0	0
Unknown Types of Bacterial Food Poisoning	215	206	50	13	4	106	0	30	3	200	0	3	3	19	12	22	3	0	0
Unknown Types of Suspected Food Poisoning	9,216	8,718	1,685	666	565	4,320	41	1,280	161	7,999	30	109	545	646	559	1,267	242	12	1
Viral Diseases	1,527	581	35	14	4	432	1	53	42	560	0	5	7	258	16	102	41	2	0
Category Total: Information Calls	13,517	11,918	2,178	916	707	6,140	64	1,666	247	10,826	88	163	767	1,492	833	1,742	430	46	3
Food Information Calls																			
Information Calls About Food Products, Additives or Supplements	1,332	1,208	394	116	70	428	30	149	21	1,010	37	28	119	74	168	89	10	1	0
Obsolete: Information Calls About Possibly Spoiled Foods	537	531	131	54	32	220	1	89	4	517	3	6	5	9	9	11	3	1	0
Category Total:	1,869	1,739	525	170	102	648	31	238	25	1,527	40	34	124	83	177	100	13	2	0
(continued)																			

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in Health Care Facility			Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Lacrimators																			
Miscellaneous Lacrimators																			
Lacrimators: Capsicum Defense Sprays	3,471	3,417	573	818	516	1,013	139	272	86	2,689	112	458	57	747	146	1,502	155	2	0
Lacrimators: CN (Chloroacetophenone)	164	157	28	27	27	54	0	15	6	118	5	29	1	54	7	62	9	2	0
Lacrimators: CS (O-Chlorobenzylidene Malonitrile)	38	29	2	2	3	22	0	0	0	23	2	2	1	15	4	14	6	0	0
Lacrimators: Other	55	29	0	1	5	18	0	5	0	24	0	2	2	11	0	10	3	0	0
Lacrimators: Unknown	79	74	7	8	6	36	3	14	0	52	0	13	2	31	4	35	2	0	0
Category Total:	3,807	3,706	610	856	557	1,143	142	306	92	2,906	119	504	63	858	161	1,623	175	4	0
Matches/Fireworks/Explosives																			
Miscellaneous Matches/Fireworks/Explosives																			
Explosives	127	116	59	5	8	29	0	13	2	107	5	3	0	39	25	14	9	2	0
Fireworks	735	731	608	54	13	39	0	13	4	704	14	7	2	107	200	70	5	0	0
Matches	167	164	129	3	5	23	0	4	0	156	3	1	2	16	29	7	3	0	0
Other Types of Match, Firework, or Explosive	54	52	39	4	2	4	0	1	2	47	3	1	1	10	9	11	4	0	0
Unknown Types of Match, Firework, or Explosive	1	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
Category Total:	1,084	1,064	836	66	28	95	0	31	8	1,015	25	12	5	173	263	102	21	2	0
Miscellaneous Foods																			
Foods																			
Capsicum Peppers	1,812	1,754	299	396	296	585	9	149	20	1,142	287	36	265	241	51	647	109	2	0
Food Additives	4,124	3,062	1,204	207	146	1,201	9	232	63	2,370	426	57	179	477	495	446	71	3	2
Food Products	21,705	19,989	7,839	1,796	942	6,831	103	2,202	276	16,332	447	952	2,082	1,199	2,049	1,599	233	9	0
Other Adverse Reactions to Food	904	856	131	61	61	393	8	193	9	457	12	28	348	102	36	133	40	3	0
Category Total:	28,545	25,661	9,473	2,460	1,445	9,010	129	2,776	368	20,301	1,172	1,073	2,874	2,019	2,631	2,825	453	17	2
Mushrooms, Naturally Occurring																			
Miscellaneous Mushrooms, Naturally Occurring																			
Group 1 Mushrooms: Cyclopeptides	113	105	22	6	10	61	0	5	1	67	28	1	6	64	27	15	13	7	0
Group 1A Mushrooms: Orellanine	5	4	0	0	0	3	0	0	1	2	2	0	0	3	0	1	1	0	0
Group 2 Mushrooms: Muscimol (Ibotenic Acid)	167	136	18	5	17	89	0	6	1	36	87	2	10	102	10	44	44	7	0
Group 3 Mushrooms: Monomethylhydrazine (MMH)	34	29	2	4	2	17	0	1	3	20	2	0	7	9	6	7	3	1	0
Group 4 Mushrooms: Muscarine and Histamine	51	35	7	0	2	21	0	5	0	23	10	0	2	16	4	10	8	1	0
Group 5 Mushrooms: Coprine	8	7	5	1	0	1	0	0	0	7	0	0	0	0	4	1	0	0	0
Group 6 Mushrooms: Hallucinogenics (Psilocybin and Psilocin)	2,139	1,510	198	90	510	628	4	51	29	375	1,068	4	45	1,146	104	386	557	30	0
Group 7 Mushrooms: Gastrointestinal Irritants	360	334	115	33	18	156	0	10	2	242	56	1	32	149	53	112	42	1	0
Mushrooms: Miscellaneous, Non-Toxic	334	275	92	23	12	119	0	28	1	220	9	0	45	54	41	36	11	1	0

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason					Treated in Health Care Facility					Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death		
Mushrooms: Other Potentially Toxic	221	186	58	21	12	81	0	13	1	143	17	0	25	52	30	32	13	3	2		
Mushrooms: Unknown	4,862	4,594	2,449	554	360	1,061	10	133	27	3,652	715	18	167	1,444	1,380	688	269	40	2		
Category Total:	8,294	7,215	2,966	737	943	2,237	14	252	66	4,787	1,994	26	339	3,039	1,659	1,332	961	91	4		
Other/Unknown Nondrug Substances																					
Miscellaneous Other/Unknown Nondrug Substances																					
Other Non-Drug Substances	17,252	15,901	5,029	1,359	817	6,183	119	2,051	343	12,399	669	1,564	452	3,543	1,901	2,019	564	138	16		
Unknown Substances Unlikely to be Drug Products	6,842	6,544	997	311	221	3,967	25	802	221	4,886	138	806	189	1,398	417	692	270	84	5		
Category Total:	24,094	22,445	6,026	1,670	1,038	10,150	144	2,853	564	17,285	807	2,370	641	4,941	2,318	2,711	834	222	21		
Paints and Stripping Agents																					
Miscellaneous Paints and Stripping Agents																					
Other Types of Paint, Varnish or Lacquer	499	466	173	24	13	203	2	48	3	442	12	4	7	100	49	94	27	4	0		
Unknown Types of Paint, Varnish or Lacquer	3,200	2,997	1,583	181	116	814	22	222	59	2,881	57	16	32	500	421	301	76	4	1		
Varnishes and Lacquers	541	501	91	12	17	306	3	63	9	474	2	8	16	105	69	124	19	0	0		
Paints																					
Anti-Algae Paints	19	19	2	1	0	14	0	0	2	17	0	0	1	5	0	4	1	0	0		
Anti-Corrosion Paints	59	51	7	1	1	34	0	7	1	48	2	0	0	11	4	7	4	0	0		
Oil-Base Paints	1,758	1,627	351	97	112	855	6	188	18	1,495	43	8	61	326	212	346	72	6	0		
Water Base Paints (Acrylic, Latex, etc)	3,115	2,992	2,002	170	89	585	9	123	14	2,904	45	4	27	246	412	214	29	3	0		
Wood stains	587	551	178	13	16	264	3	69	8	519	5	2	21	70	76	111	10	1	0		
Stripping Agents																					
Methylene Chloride Stripping Agents	233	219	24	6	14	130	0	41	4	204	7	1	6	85	13	76	26	4	0		
Other Types of Stripping Agent	345	323	52	3	21	217	0	27	3	308	3	1	7	126	25	109	35	2	0		
Unknown Types of Stripping Agent	65	55	10	0	2	29	1	12	1	50	2	0	2	18	2	19	6	0	0		
Category Total:	10,421	9,801	4,473	508	401	3,451	46	800	122	9,342	178	44	180	1,592	1,283	1,405	305	24	1		
Pesticides																					
Fumigants																					
Aluminum Phosphide	74	65	3	2	4	51	0	5	0	62	1	1	1	36	5	21	9	1	1		
Methyl Bromide	14	13	6	0	0	7	0	0	0	13	0	0	0	5	1	2	0	0	0		
Other Fumigants	42	36	1	3	1	25	0	5	1	33	2	0	1	12	3	9	2	0	0		
Sulfuryl Fluoride	234	206	33	13	3	123	0	32	2	184	1	14	6	36	37	41	5	0	0		
Unknown Fumigants	100	94	12	3	4	57	5	13	0	80	2	6	5	24	6	39	3	0	0		
Fungicides (Non-medicinal)																					
Carbamate Fungicides	50	42	11	3	0	26	0	2	0	42	0	0	0	13	9	12	1	0	0		
Copper Compound Fungicides	132	126	21	5	4	73	0	19	4	126	0	0	0	15	14	19	5	0	0		
Other Types of Non-Medicinal Fungicide	701	591	91	22	14	353	48	54	9	553	8	7	16	100	116	122	21	0	0		
Other/Unknown Type of Non-Medicinal Fungicide	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0		
Phthalimide Fungicides	19	13	5	0	0	6	0	1	1	13	0	0	0	0	4	0	0	0	0		
Unknown Types of Non-Medicinal Fungicide	32	20	3	0	0	14	1	2	0	20	0	0	0	10	7	7	0	0	0		
Wood Preservatives	88	84	17	1	0	56	1	8	1	81	0	0	2	15	15	13	5	1	0		

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in			Outcome						
			≤5	6-12	13-19	≥20	Unknown			Unint	Int	Other	Adv Rxn	Health Care Facility		None	Minor	Moderate	Major	Death	
							Child	Adult	Age												
Herbicides (Including Algaecides, Defoliants, Desiccants, Plant Growth Regulators)	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	
	7	6	1	0	0	3	0	1	1	6	0	0	0	0	1	1	1	1	0	0	
	1,379	1,164	261	64	34	645	6	142	12	1,108	16	11	20	183	232	226	32	5	0	0	
	466	440	100	15	6	260	1	53	5	417	13	0	8	78	103	82	13	2	0	0	
	2,351	2,064	309	72	50	1,336	3	271	23	1,914	49	40	43	441	316	423	57	4	0	0	
	1,731	1,406	276	59	36	818	16	192	9	1,335	21	6	36	228	222	298	23	5	0	0	
	114	99	3	2	6	74	0	12	2	89	2	5	0	54	17	26	10	1	1	1	
	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
	126	87	11	3	3	56	0	11	3	82	2	0	1	25	10	21	5	0	1	1	
	399	336	63	23	10	195	3	41	1	298	9	13	9	76	55	68	4	3	2	2	
	22	19	5	0	2	8	0	4	0	16	1	0	2	1	4	5	1	0	0	0	
	Insecticides (Including Insect Growth Regulators, Molluscicides, Nematicides)	919	860	265	27	25	408	1	114	20	807	23	12	10	142	144	133	23	2	0	0
		278	258	50	15	5	128	0	55	5	244	7	4	2	32	33	54	6	0	0	0
		110	93	24	5	4	49	0	10	1	86	2	0	5	12	22	16	1	0	0	0
		173	170	24	8	8	97	0	30	3	160	5	2	2	40	17	40	12	1	0	0
		144	83	35	6	0	39	0	2	1	78	0	0	4	18	13	8	2	0	0	0
		19	18	3	1	0	11	0	2	1	17	0	1	0	6	1	5	0	0	0	0
		71	65	45	6	1	11	0	2	0	55	5	0	3	10	9	15	2	0	0	0
		1,794	1,685	450	59	60	882	8	204	22	1,530	98	15	24	500	307	307	96	22	3	3
		15	15	3	1	0	8	0	3	0	15	0	0	0	1	2	1	0	0	0	0
438		411	71	16	13	231	0	70	10	398	6	1	3	67	58	77	13	0	0	0	
9,338		8,728	3,920	389	213	3,233	40	847	86	8,355	130	56	133	933	1,366	1,031	114	2	0	0	
1		1	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	
3,663		3,455	802	198	107	1,852	12	447	37	3,190	123	21	105	686	405	885	182	9	0	0	
2		2	0	0	0	0	0	2	0	1	1	0	0	1	0	0	0	0	0	0	
18,412		17,333	3,730	796	605	9,776	89	2,145	192	16,050	521	163	454	3,048	2,058	4,266	633	32	0	0	
36		36	5	1	1	27	0	2	0	27	1	0	8	1	3	5	0	0	0	0	
3,475		3,141	605	144	94	1,758	15	465	60	2,734	106	131	113	875	358	598	170	13	3	3	
1		1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in Health Care Facility				Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death	
Miscellaneous Pesticides	15	12	0	0	1	8	0	3	0	10	1	1	0	1	3	1	1	0	0	
	9,213	9,105	8,164	163	56	540	22	140	20	9,001	50	19	13	571	1,447	203	18	0	0	
	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	
	616	592	151	35	23	290	4	83	6	552	11	6	21	74	77	99	12	0	0	
	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	
	2,676	2,611	1,206	328	137	741	6	181	12	2,373	64	38	117	237	342	596	58	3	0	
	2,030	1,994	1,403	113	36	341	6	85	10	1,923	19	12	32	91	272	318	15	0	0	
	1,460	1,417	509	94	40	519	7	223	25	1,342	35	15	21	201	316	149	18	2	0	
	15	15	7	0	1	6	0	1	0	15	0	0	0	2	3	1	0	0	0	
	120	118	55	1	5	41	0	15	1	116	0	0	2	7	14	7	2	0	0	
	159	149	50	7	10	60	1	20	1	134	2	5	8	26	9	24	5	0	0	
	1,033	1,013	450	64	19	333	12	123	12	935	34	15	17	159	197	101	16	2	0	
	6	6	0	1	4	0	0	1	0	3	2	0	1	0	2	0	0	0	0	
	1,639	1,585	1,069	47	13	327	8	101	20	1,498	42	21	14	415	418	66	6	3	0	
	535	515	376	16	3	92	0	19	9	493	15	5	1	122	117	21	2	0	0	
	3	3	0	0	0	3	0	0	0	3	0	0	0	2	0	2	0	0	0	
	2,857	2,771	2,025	78	41	475	8	121	23	2,682	45	15	19	708	686	63	16	4	0	
	1,009	972	672	33	9	204	2	46	6	924	27	7	7	239	233	50	11	0	0	
	6	5	1	0	0	3	0	1	0	3	0	2	0	1	1	1	0	0	0	
	44	31	2	0	0	17	0	11	1	10	7	9	0	15	5	1	3	1	0	
	2,390	2,225	1,230	88	60	597	7	199	44	1,906	136	135	18	722	478	112	33	4	0	
	59	57	39	2	0	14	0	2	0	49	6	2	0	24	19	4	0	0	0	
	92	87	12	4	5	52	2	12	0	77	6	2	0	25	23	11	2	0	2	
	72,952	68,554	28,687	3,036	1,776	27,363	334	6,655	703	64,275	1,657	818	1,307	11,367	10,636	10,707	1,670	122	14	
	45	37	5	0	7	22	0	3	0	31	1	1	3	10	2	10	0	0	0	
	411	377	237	42	13	65	2	15	3	358	14	1	4	46	69	29	6	1	0	
	46	46	43	2	0	1	0	0	0	46	0	0	0	0	9	1	0	0	0	
	6	6	5	0	0	1	0	0	0	6	0	0	0	1	2	1	0	0	0	
	508	466	290	44	20	89	2	18	3	441	15	2	7	57	82	41	6	1	0	
	7,667	7,534	3,666	938	304	2,142	22	414	48	6,922	285	37	254	524	1,293	348	61	0	0	
	790	748	375	70	43	219	2	37	2	664	61	4	13	111	142	66	37	6	0	

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Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason			Treated in Health Care Facility			Outcome						
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death		
Plants: Cardiac Glycosides (Excluding Drugs) Plants: Colchicine Plants: Depressants Plants: Gastrointestinal Irritants (Excluding Oxalate Containing Plants) Plants: Hallucinogenics (Code as Street Drug Unless Plant Part Involved) Plants: Nicotine (Excluding Tobacco Products) Plants: Non-Toxic Plants: Other Toxic Types Plants: Oxalates Plants: Skin Irritants (Excluding Oxalate Containing Plants) Plants: Solanine Plants: Stimulants Plants: Toxalbumins Plants: Unknown Toxic Types or Unknown if Toxic	1,743	1,703	852	193	58	483	6	98	13	1,536	106	15	31	223	396	109	35	3	0		
	14	14	6	0	0	7	0	1	0	12	1	0	1	5	5	2	0	0	0		
	184	146	86	9	11	28	0	7	5	123	10	0	12	14	27	9	3	0	0		
	6,827	6,606	4,054	803	207	1,223	38	249	32	6,085	327	13	152	624	1,014	667	86	2	0		
	326	271	54	23	59	114	0	17	4	153	87	2	26	105	42	43	35	3	0		
	884	860	176	112	46	449	4	69	4	759	61	11	23	172	211	102	27	3	0		
	3,547	3,182	1,822	542	97	543	17	135	26	2,738	221	13	192	199	451	213	27	3	0		
	5,982	5,702	3,476	731	221	975	18	247	34	5,145	330	18	185	559	996	430	103	11	0		
	6,163	6,074	4,544	671	146	560	16	123	14	5,707	267	6	70	468	883	1,206	55	4	0		
	4,953	4,615	2,040	470	204	1,458	24	386	33	4,164	161	19	250	534	515	650	153	1	0		
Plants: Solanine Plants: Stimulants Plants: Toxalbumins Plants: Unknown Toxic Types or Unknown if Toxic Category Total:	2,804	2,755	1,586	218	75	697	10	157	12	2,526	75	9	132	189	502	187	24	3	0		
	222	205	66	15	12	88	0	22	2	186	12	3	3	40	50	10	2	1	0		
	350	334	91	33	18	149	1	36	6	271	39	8	9	108	54	67	21	3	0		
	8,428	7,915	4,913	1,038	246	1,307	47	312	52	7,217	404	28	225	604	1,230	667	94	6	1		
	50,884	48,664	27,807	5,866	1,747	10,442	205	2,310	287	44,208	2,447	186	1,578	4,479	7,811	4,776	763	49	1		
	Polishes and Waxes Miscellaneous Polishes and Waxes Category Total:	235	204	88	3	4	86	5	16	2	200	2	1	1	40	26	37	8	0	0	
		741	701	543	19	11	101	1	22	4	675	10	6	6	69	151	89	10	1	0	
		1,115	1,054	626	41	36	273	4	67	7	1,015	20	7	11	122	192	135	14	1	0	
		2,091	1,959	1,257	63	51	460	10	105	13	1,890	32	14	18	231	369	261	32	2	0	
		Radiation Ionizing Radiation Beta Radiation Gamma Radiation Ionizing Radiation: Type Unknown Neutron Radiation Radon Specific Nonpharmaceutical Radionuclides X-ray Radiation Miscellaneous Radiation Nonpharmaceutical Radiation: Type Unknown Non-ionizing Radiation Extremely Low-frequency Radiation Infrared Radiation Microwave Radiation Non-ionizing Radiation: Type Unknown Radio Frequency Radiation	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
7			6	1	0	0	3	0	2	0	6	0	0	0	5	2	0	0	0	0	0
88			83	6	1	1	52	1	21	1	62	0	5	12	39	10	2	4	0	0	0
1			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
68			58	10	6	1	17	9	13	2	55	0	3	0	17	6	6	1	0	0	0
68			55	5	1	4	29	0	16	0	42	6	4	1	18	13	6	0	0	0	0
16	12		1	0	0	8	0	0	3	9	0	0	3	4	4	1	0	0	0	0	
2	2		0	0	0	0	0	2	0	2	0	0	0	1	0	0	0	0	0	0	
1	1		1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	
6	6		0	0	0	4	0	1	1	4	0	1	1	0	2	0	0	0	0	0	
13	13	0	0	0	10	0	3	0	12	0	1	0	1	1	0	0	0	0	0		
32	32	1	1	0	22	0	8	0	25	0	3	1	16	3	5	1	0	0	0		
9	9	0	0	1	7	0	1	0	8	0	1	0	5	0	1	1	0	0	0	0	

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Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason					Treated in Health Care Facility				Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death	
Ultraviolet Radiation	16	16	1	4	1	9	0	1	0	16	0	0	0	5	0	2	3	0	0	
Visible Light Radiation (Lasers)	11	11	2	0	0	5	0	4	0	9	0	2	0	0	0	0	0	0	0	
Category Total:	339	305	28	13	8	167	10	72	7	252	6	20	18	112	41	23	10	0	0	
Sporting Equipment																				
Miscellaneous Sporting Equipment																				
Fishing Baits	67	65	45	8	4	6	0	2	0	64	0	0	1	5	12	4	0	0	0	
Fishing Products, Miscellaneous	12	10	8	0	0	2	0	0	0	9	0	0	0	1	5	0	0	0	0	
Gun Bluing Compounds	25	25	2	1	4	14	0	4	0	23	0	1	1	7	8	4	1	0	0	
Hunting Products, Miscellaneous	399	392	224	38	23	87	3	14	3	363	9	13	3	117	126	46	12	0	0	
Other Types of Sporting Equipment	9	9	5	1	1	1	0	0	1	9	0	0	0	2	0	2	0	0	0	
Category Total:	512	501	284	48	32	110	3	20	4	468	9	14	5	132	151	56	13	0	0	
Swimming Pool/Aquarium																				
Miscellaneous Swimming Pool/Aquarium																				
Algicides	443	404	118	19	17	190	1	52	7	390	5	2	3	66	60	71	19	0	0	
Aquarium Products, Miscellaneous	824	764	537	47	22	121	2	30	5	739	18	4	1	64	164	53	11	0	0	
Bromine Shock Treatments	49	46	13	9	1	19	0	4	0	43	1	0	2	7	2	14	0	0	0	
Chlorine Shock Treatments	2,615	2,445	464	279	115	1,316	3	246	22	2,359	38	9	25	641	167	799	227	9	0	
Other Types of Swimming Pool or Aquarium Product	2,282	2,120	499	267	120	978	33	201	22	2,022	39	5	42	522	201	698	173	4	0	
Swimming Pool and Aquarium Test Kits	157	141	73	14	9	37	0	8	0	137	3	0	1	19	19	24	3	0	0	
Category Total:	6,370	5,920	1,704	635	284	2,661	39	541	56	5,690	104	20	74	1,319	613	1,659	433	13	0	
Tobacco/Nicotine/eCigarette Products																				
eCigarettes: Nicotine Containing																				
eCigarettes: Nicotine Device	4,156	4,046	3,639	87	85	186	9	33	7	3,829	148	10	51	477	695	1,078	65	9	1	
Flavor Unknown																				
eCigarettes: Nicotine Device With Added Flavors	1,884	1,861	1,681	55	34	79	1	9	2	1,747	64	6	27	159	310	566	28	5	0	
eCigarettes: Nicotine Device Without Added Flavors	1,249	1,225	1,080	42	22	60	3	13	5	1,149	50	4	19	115	224	311	14	4	0	
eCigarettes: Nicotine Liquid	553	542	446	16	21	45	1	10	3	501	26	2	9	108	109	128	13	1	0	
Flavor Unknown																				
eCigarettes: Nicotine Liquid With Added Flavors	237	231	197	9	0	23	0	2	0	203	6	3	4	27	50	58	3	0	0	
eCigarettes: Nicotine Liquid Without Added Flavors	40	40	31	1	0	7	0	1	0	38	1	0	1	2	6	7	0	0	1	
Miscellaneous Tobacco Products																				
Chewing Tobacco	779	765	660	26	14	52	1	10	2	738	11	3	8	136	182	179	15	0	0	
Cigarettes	2,251	2,137	1,833	38	25	187	3	48	3	2,005	56	27	32	286	540	317	23	1	0	
Cigars	130	123	87	4	5	21	0	5	1	106	7	0	10	24	29	19	3	0	0	
Dissolvable Tobacco	24	24	18	2	1	2	0	1	0	16	2	0	0	5	3	6	1	0	0	
Filter Tips Only (i.e. Butts)	28	28	21	0	1	5	0	1	0	28	0	0	0	0	9	1	0	0	0	
Heat Not Burn Tobacco	6	6	4	0	0	2	0	0	0	5	0	0	1	0	1	0	0	0	0	
Other Types of Tobacco Product	1,720	1,644	1,160	23	48	352	3	49	9	1,476	117	5	41	361	420	344	57	2	0	
Snuff	251	244	206	3	5	22	1	6	1	227	8	1	3	37	51	56	5	0	0	
Unknown Types of Tobacco Product	1,766	1,655	1,261	43	47	239	2	53	10	1,490	93	8	59	330	326	281	45	1	0	
Category Total:	15,074	14,571	12,324	349	308	1,282	24	241	43	13,558	589	69	265	2,067	2,955	3,351	272	23	2	

(continued)

(continued)

Table 22A. Demographic profile of SINGLE SUBSTANCE Nonpharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in			Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Waterproofers/Sealants																			
Miscellaneous Waterproofers/Sealants																			
Waterproofers/sealants: aerosols	144	139	39	7	6	67	0	19	1	127	2	1	6	15	24	24	3	0	0
Waterproofers/sealants: liquids	115	109	34	5	2	54	3	9	2	95	5	4	5	21	17	26	4	1	0
Waterproofers/sealants: solids	11	10	5	3	0	2	0	0	0	9	1	0	0	1	3	0	0	0	0
Waterproofers/sealants: unknown form	34	33	9	2	2	14	0	5	1	33	0	0	0	2	4	10	0	0	0
Category Total: Weapons of Mass Destruction	304	291	87	17	10	137	3	33	4	264	8	5	11	39	48	60	7	1	0
Miscellaneous Weapons of Mass Destruction																			
Anthrax	6	3	0	0	0	3	0	0	0	1	0	2	0	2	1	0	0	0	0
Nerve Gases	4	2	1	0	0	1	0	0	0	2	0	0	0	1	0	1	0	0	0
Other Biological Weapons	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Other Chemical Weapons	16	11	0	0	1	8	0	2	0	6	1	1	0	7	0	2	4	0	0
Other Suspicious Powders	102	96	14	2	6	56	0	16	2	66	6	22	0	46	11	19	8	4	0
Other Suspicious Substances (Non-Powder)	403	363	38	17	12	205	1	76	14	140	21	156	10	139	33	49	25	14	1
Suspicious Powders in Envelope or Package	59	53	4	1	3	29	1	12	3	24	4	21	1	21	8	6	7	3	0
Category Total: Nonpharmaceuticals Total:	591	529	57	20	22	303	2	106	19	240	32	202	11	216	53	77	44	21	1
	1,004,911	885,412	419,299	67,989	41,915	282,525	3,531	62,230	7,923	810,272	40,334	12,911	14,536	161,490	128,972	142,620	30,892	3,176	291

Pharmaceuticals (Table 22(B))

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in		Outcome					
		Age					Reason				Health Care Facility		Outcome					
		≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Analgesics																		
Acetaminophen Alone																		
46,730	31,837	6,461	1,752	8,378	14,195	13	899	139	15,948	15,141	19	375	18,979	8,262	5,470	2,727	816	76
18,269	16,707	15,035	1,398	128	114	17	12	3	16,396	177	4	65	2,295	3,321	289	47	10	0
25,966	16,058	4,183	915	3,696	6,789	15	381	79	8,314	7,134	5	254	9,509	3,857	2,796	1,566	563	94
Acetaminophen Combinations																		
5,612	3,293	557	228	1,549	883	3	61	12	1,147	2,036	3	60	2,265	672	939	553	27	2
498	427	387	32	5	2	0	0	1	419	6	0	2	31	91	8	1	0	0
1,606	689	59	23	80	478	0	38	11	305	306	1	67	377	147	154	53	21	3
5,236	3,002	419	107	562	1,799	2	92	21	1,024	1,914	2	28	2,066	568	713	640	109	2
8,133	3,453	316	115	299	2,534	1	166	22	1,713	1,497	14	159	2,001	807	694	452	127	9
89	38	1	1	6	28	0	2	0	14	20	0	3	27	8	8	6	4	0
5,172	2,299	157	31	349	1,657	3	85	17	816	1,295	26	101	1,580	428	402	409	342	6
18	5	1	0	2	2	0	0	0	3	2	0	0	3	1	1	0	0	0
Acetylsalicylic Acid Alone																		
3,819	1,824	1,101	183	177	331	0	28	4	1,424	359	1	18	607	507	104	84	13	1
1,819	1,083	256	51	273	473	0	24	6	474	554	2	29	691	200	198	225	20	2
8,084	3,448	956	218	658	1,540	2	56	18	1,566	1,651	1	71	2,232	734	562	714	108	10
Acetylsalicylic Acid Combinations																		
754	509	134	33	30	297	1	14	0	296	179	1	20	283	84	84	99	15	2

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in		Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Acetylsalicylic Acid in Combination with Other Drugs, Pediatric Formulations	6	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	14	8	0	1	2	5	0	0	0	4	4	0	0	4	3	1	3	0	0
	6	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	3	0	0	1	2	0	0	0	0	2	0	1	3	0	2	1	0	0
	322	261	103	17	34	83	0	24	0	229	21	0	10	52	41	41	5	1	0
	390	294	102	13	42	120	0	17	0	199	85	1	9	103	46	78	24	5	0
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,199	994	682	22	46	225	0	18	1	852	66	2	69	250	252	107	46	14	0
	4	2	1	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Nonsteroidal Antiinflammatory Drugs	113	44	9	5	16	13	0	0	1	14	30	0	0	36	11	11	5	1	0
	465	307	40	4	6	241	1	10	5	218	38	0	47	156	47	71	30	7	3
	1,070	505	100	19	36	306	1	41	2	430	52	0	19	80	109	27	4	0	0
	76,424	57,001	34,672	3,512	8,265	9,428	59	899	166	44,466	11,811	15	481	14,261	12,270	4,641	1,197	91	1
	1,636	984	171	28	168	572	2	35	8	521	441	1	14	476	178	181	140	18	1
	14	3	1	0	0	2	0	0	0	2	1	0	0	1	0	1	0	0	0
	257	127	26	5	8	84	0	4	0	89	24	0	14	37	29	14	5	0	0
	34	24	8	0	4	12	0	0	0	15	9	0	0	9	3	2	1	0	1
	8,959	4,981	1,291	186	1,230	2,025	2	210	37	2,915	1,904	6	115	2,093	1,236	775	173	11	1
	7,887	4,554	1,355	171	225	2,416	3	357	27	3,919	464	5	147	823	918	332	64	5	1
Other Acetaminophen and Acetylsalicylic Acid Combinations	11	6	0	0	2	2	0	1	1	1	3	0	1	3	0	2	0	0	0
	6,101	3,856	901	212	1,185	1,430	2	108	18	1,825	1,892	4	115	2,111	729	914	534	23	3

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age							Reason					Treated in Health Care Facility					Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death				
Acetaminophen and Acetylsalicylic Acid without Other Ingredients	104	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Pharmaceutical and Illegal Opioid Preparations	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Alfentanil	3,845	2,157	715	57	52	1,175	5	134	19	1,231	579	110	181	1,536	390	450	446	123	0				
Buprenorphine	36	11	1	0	0	8	0	2	0	10	1	0	0	7	1	5	0	1	0				
Butorphanol	704	414	84	53	36	216	1	21	3	307	84	1	13	127	94	55	23	5	0				
Codine	8	5	1	0	1	1	0	2	0	4	0	0	0	1	2	0	0	0	0				
Difenoxin	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Dihydrocodeine	3,856	2,135	141	14	150	1,714	1	92	23	405	1,534	79	45	1,781	309	254	433	726	18				
Fentanyl (Prescription)	2,875	1,510	23	3	30	1,405	1	40	8	70	1,365	51	4	1,317	110	130	253	798	20				
Heroin	1,458	523	74	17	44	326	0	43	19	325	147	1	35	239	120	78	43	11	0				
Hydrocodone Alone or in Combination (Excluding Combination Products with Acetaminophen, Acetylsalicylic Acid or Ibuprofen)	662	304	23	4	10	247	0	19	1	167	113	1	16	181	61	52	53	20	0				
Hydromorphone	5	2	0	0	0	2	0	0	0	1	0	0	1	1	0	2	0	0	0				
Lorazepam	18	8	2	1	0	5	0	0	0	4	2	0	2	6	1	2	3	0	0				
Meperidine	1,648	802	94	18	27	625	1	31	6	369	306	34	51	657	124	111	212	155	3				
Methadone	1,508	753	69	5	24	595	0	49	11	443	245	7	43	445	172	111	124	54	2				
Morphine	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Nalbuphine	6,677	3,551	236	35	277	2,840	6	116	41	559	2,704	202	12	2,750	455	567	669	856	135				
Non-Prescription Fentanyl or Other or Unknown	4,042	2,400	116	10	115	2,080	0	62	17	174	1,778	334	30	2,082	107	137	372	1,428	96				
Opioids	6,345	2,739	344	121	247	1,835	0	154	38	1,361	1,166	29	126	1,634	529	531	399	280	11				
Oxycodone Alone or in Combination (Excluding Combination Products with Acetaminophen or Acetylsalicylic Acid)	26	8	1	0	0	6	0	1	0	5	3	0	0	4	2	1	1	2	0				
Oxymorphone	6	3	0	0	0	3	0	0	0	3	0	0	0	2	0	1	1	0	0				
Pentazocine	6	2	0	0	0	0	0	2	0	1	0	0	1	1	0	0	0	1	0				
Propoxyphene	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Remifentanyl	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Sufentanil	102	55	2	0	4	47	0	1	1	4	45	2	2	50	1	6	13	28	1				
Synthetic Opioids, Analogs and Precursors (Excluding Pharmaceutical Preparations)	113	53	3	0	1	48	0	1	0	23	27	2	1	37	6	10	15	6	0				
Tapentadol	5,683	2,287	263	48	159	1,697	3	97	20	1,056	1,058	10	118	1,471	494	471	394	96	5				
Tramadol																							

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in		Outcome					
			Age					Reason				Health Care Facility		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Serotonin 5-HT 1B,1D Receptor Agonists																			
Serotonin 5-HT 1B,1D Receptor Agonists: Other or Unknown	407	205	54	27	28	85	0	11	0	150	32	0	21	64	47	29	11	2	1
Serotonin 5-HT 1B,1D Receptor Agonists: Sumatriptan	815	422	99	37	49	220	0	15	2	278	77	0	60	188	97	76	43	3	1
Category Total:	277,679	179,038	71,849	9,733	28,728	63,295	145	4,478	810	112,547	60,403	976	3,059	78,056	38,689	22,705	13,328	6,949	511
Anesthetics																			
Inhalation Anesthetics																			
Nitrous Oxide	351	276	17	21	29	196	0	11	2	58	199	0	13	215	13	66	83	23	1
Other Types of Inhalation Anesthetic	112	94	3	1	3	78	0	8	1	78	5	5	6	55	7	21	23	1	0
Local and/or Topical Anesthetics																			
Dibucaine	8	6	4	1	0	1	0	0	0	6	0	0	0	0	2	1	0	0	0
Lidocaine	2,889	2,579	642	124	155	1,425	0	206	27	2,060	125	11	364	579	430	381	136	34	4
Other or Unknown Local and/or Topical Anesthetic	2,677	2,437	1,061	114	116	953	2	182	9	2,071	96	7	252	468	512	294	113	31	0
Miscellaneous Anesthetics																			
Ketamine and Analogs	528	244	5	2	12	195	0	25	5	62	124	15	35	179	18	55	65	20	0
Other Types of Anesthetic	26	21	2	0	0	14	0	5	0	14	3	0	4	8	0	2	1	0	0
Unknown Types of Anesthetic	4	4	1	0	0	2	0	1	0	4	0	0	0	0	0	1	0	0	0
Category Total:	6,595	5,661	1,735	263	315	2,864	2	438	44	4,353	552	38	674	1,504	982	821	421	109	5
Anticholinergic Drugs																			
Miscellaneous Anticholinergic Drugs																			
Anticholinergic Drugs (Excluding Cough and Cold Preparations, and Plants)	3,764	1,899	213	80	100	1,327	1	168	10	1,477	199	11	189	483	283	234	153	20	0
Category Total:	3,764	1,899	213	80	100	1,327	1	168	10	1,477	199	11	189	483	283	234	153	20	0
Anticoagulants																			
Miscellaneous Anticoagulants																			
Glycoprotein IIa/IIb Inhibitors	12	5	0	1	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0
Heparins	217	175	23	5	6	130	0	9	2	143	16	2	14	84	39	20	19	2	0
Other Antiplatelets	2,860	850	156	18	11	601	0	60	4	789	41	0	17	134	174	22	7	2	0
Other Types of Anticoagulant	7,849	3,521	525	29	26	2,672	3	247	19	3,264	192	1	52	613	630	79	47	8	1
Unknown Types of Anticoagulant	14	5	1	0	0	4	0	0	0	2	2	0	1	2	1	0	0	0	0
Warfarin (Excluding Rodenticides)	1,235	600	79	9	13	453	0	43	3	491	81	1	21	179	97	41	39	12	0
Category Total:	12,187	5,156	784	62	56	3,864	3	359	28	4,694	332	4	105	1,012	941	162	112	24	1

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in		Outcome					
			Age					Reason				Health Care Facility		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Anticonvulsants																			
Anticonvulsants: Carbamazepine and Analogs																			
Carbamazepine	2,011	939	83	13	50	758	0	29	6	421	352	0	117	660	141	207	249	48	0
Oxcarbazepine	4,227	1,847	325	246	454	783	2	27	10	1,003	781	1	38	986	343	452	250	43	0
Anticonvulsants: Gamma Aminobutyric Acid and Analogs																			
Gabapentin	20,914	6,966	1,023	152	414	5,031	4	300	42	3,301	3,355	33	157	3,908	1,600	1,397	771	182	3
Other Types of Gamma Aminobutyric Acid	3,037	1,149	176	37	55	837	0	40	4	626	440	11	51	609	229	259	155	29	0
Anticonvulsants: Anticonvulsant																			
Anticonvulsants: Hydantoins																			
Fosphenytoin	5	3	1	0	0	2	0	0	0	2	0	0	1	3	0	0	1	2	0
Phenytoin	1,139	780	19	3	13	725	0	18	2	269	125	0	322	643	70	225	266	40	0
Miscellaneous																			
Anticonvulsants																			
Felbamate	57	16	2	3	1	9	0	1	0	15	1	0	0	3	2	2	0	0	0
Lamotrigine	11,331	4,303	520	207	866	2,520	4	162	24	2,643	1,471	6	146	2,100	721	944	611	124	1
Levetiracetam	6,085	3,151	919	298	308	1,519	0	100	7	2,496	580	1	43	884	731	358	127	19	0
Other Types of Anticonvulsant (Excluding Barbiturates)	1,944	880	162	101	89	493	1	32	2	725	131	1	13	309	182	140	77	23	0
Anticonvulsant (Excluding Barbiturates)																			
Primidone	381	113	10	2	7	92	0	1	1	84	21	0	8	47	23	34	11	2	0
Succinimides	180	113	50	30	11	19	0	3	0	107	6	0	0	22	21	10	1	1	0
Topiramate	3,658	1,319	298	123	270	571	0	51	6	775	490	1	41	702	344	282	133	9	0
Unknown Types of Anticonvulsant (Excluding Barbiturates)	11	5	0	0	1	2	0	2	0	4	1	0	0	1	0	0	0	0	0
Category Total:																			
Valproic Acid	6,642	2,553	173	123	319	1,860	0	63	15	1,002	1,002	6	417	1,728	473	534	510	85	2
Zonisamide	805	380	83	40	49	182	0	26	0	328	48	0	3	88	70	37	16	2	0
Antidepressants																			
Lithium Salts	5,941	3,324	69	34	384	2,751	1	69	16	787	1,041	10	1,287	2,871	403	783	1,290	167	7
Lithium																			
Miscellaneous																			
Antidepressants																			
Antidepressants: Type	29	9	1	0	3	3	0	1	1	1	8	0	0	6	3	1	1	0	0
Unknown to Consumer																			
Bupropion	20,488	10,868	719	282	1,594	7,684	5	544	40	7,167	3,433	9	167	5,771	2,009	1,627	2,011	600	13
Other Types of Antidepressant	545	287	8	4	21	244	0	6	4	33	187	39	15	251	19	57	112	40	0
Trazodone	22,841	8,806	660	273	1,497	6,141	4	172	59	2,379	6,191	12	126	6,771	1,660	2,587	2,161	142	6

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in		Outcome					
			Age					Reason				Health Care Facility		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Monoamine Oxidase Inhibitors (MAOI)																			
Isocarboxazid	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Other Types of Monoamine Oxidase Inhibitor (MAOI)	53	23	1	1	0	17	0	3	1	22	0	0	0	1	4	6	2	0	0
Selective Serotonin Reuptake Inhibitors (SSRI)																			
Phenelzine	28	15	1	0	0	14	0	0	0	6	4	0	5	10	1	1	6	1	0
Selegiline	43	13	0	0	0	13	0	0	0	11	2	0	0	3	4	0	0	1	0
Tranylcypromine	33	7	0	0	0	6	0	0	0	1	1	0	5	7	0	0	3	2	1
Serotonin Norepinephrine Reuptake Inhibitors (SNRI)																			
Citalopram	4,419	1,763	328	127	386	852	1	61	8	958	746	4	45	895	398	300	245	44	0
Escitalopram	16,311	7,666	1,053	535	2,660	3,115	2	269	32	3,668	3,762	13	172	4,216	1,658	1,610	1,038	56	1
Fluoxetine	16,199	7,539	831	661	3,484	2,315	7	198	43	3,001	4,338	8	147	4,629	2,062	1,733	796	74	0
Fluvoxamine	694	253	23	12	50	149	0	17	2	151	84	1	17	101	43	38	21	2	0
Other Types of Selective Serotonin Reuptake Inhibitor (SSRI)	2,168	988	232	45	245	427	0	32	7	564	387	1	28	506	261	198	95	11	0
Paroxetine	2,027	780	142	38	147	413	1	34	5	404	339	6	26	423	181	151	100	4	0
Sertraline	23,175	11,893	2,628	773	3,981	4,081	3	359	68	6,017	5,453	6	333	6,431	2,531	2,779	1,422	94	3
Norepinephrine Reuptake Inhibitors (SNRI)																			
Duloxetine	6,342	2,275	472	56	417	1,220	0	95	15	1,222	908	9	114	1,183	470	475	314	20	0
Nefazodone	5	3	0	0	0	2	0	0	1	2	0	1	0	0	0	0	0	0	0
Other Types of Serotonin Norepinephrine Reuptake Inhibitor (SNRI)	772	363	61	15	82	187	0	16	2	239	102	2	18	155	73	77	30	5	0
Venlafaxine	6,748	2,750	418	94	522	1,576	0	121	19	1,475	1,141	18	95	1,518	578	503	456	82	0
Tetracyclic Antidepressants																			
Maprotiline	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mirtazapine	5,028	1,572	195	43	221	1,064	1	43	5	619	876	4	55	1,017	324	433	246	23	0
Tricyclic Antidepressants (TCA)																			
Amitriptyline	4,017	1,784	225	75	283	1,137	1	53	10	717	964	3	38	1,274	246	283	493	243	12
Amoxapine	11	5	0	0	1	2	0	1	1	1	3	0	0	4	0	1	1	0	0
Clomipramine	268	133	17	1	21	89	0	4	1	76	39	1	15	72	20	18	18	5	0
Desipramine	29	11	1	0	1	9	0	0	0	8	1	0	2	3	4	1	0	1	0
Doxepin	1,422	537	31	18	62	404	0	20	2	194	322	1	11	386	77	115	137	53	2
Imipramine	150	53	10	7	8	28	0	0	0	31	17	0	5	27	12	12	7	2	0
Loxapine	67	24	2	0	2	20	0	0	0	4	17	1	1	19	2	8	7	0	0
Nortriptyline	761	300	31	10	48	196	0	10	5	148	123	1	20	174	58	57	55	20	1
Other Types of Tricyclic Antidepressant (TCA)	209	86	2	4	7	71	0	0	2	20	45	8	2	74	3	15	34	15	1
Protriptyline	6	3	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason			Treated in		Outcome					
			Age						Reason			Treated in		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Tricyclic Antidepressants (TCA) Formulated with a Benzodiazepine	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Tricyclic Antidepressants (TCA) Formulated with a Phenothiazine	3	2	1	0	0	1	0	0	0	1	1	0	0	1	1	0	0	0	0
Tricyclic Antidepressants (TCA): Type Unknown to Consumer	14	3	0	0	1	1	0	1	0	1	1	0	0	3	0	0	2	0	0
Trimipramine	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
Category Total: Antihistamines	140,850	64,140	8,163	3,108	16,129	34,235	26	2,130	349	29,933	30,536	158	2,750	38,805	13,108	13,865	11,101	1,707	47
Histamine H2 Antagonists																			
Cimetidine and Other Histamine-2 Blockers	8,829	6,724	5,040	363	165	947	8	185	16	6,415	219	0	78	508	1,345	196	17	0	0
Less Sedating Antihistamines																			
Cetirizine	19,763	14,847	9,970	2,153	938	1,549	10	205	22	13,941	772	5	88	1,342	2,898	548	71	6	0
Fexofenadine	3,141	2,145	665	273	221	855	1	125	5	2,011	99	0	30	197	365	80	13	1	0
Levocetirizine	2,193	1,677	999	315	80	240	1	40	2	1,581	62	0	11	123	307	55	9	1	0
Loratadine	13,969	10,684	6,259	1,780	742	1,622	13	253	15	10,045	537	0	61	955	1,993	352	59	1	0
Other Less Sedating Antihistamines	159	106	61	4	2	31	0	8	0	100	6	0	0	15	16	7	1	0	0
Miscellaneous Antihistamines																			
Other Antihistamines	1,937	1,210	641	207	144	191	4	21	2	960	227	0	19	295	152	116	84	6	0
Alone (Excluding Cough and Cold Preparations)																			
Sedating Antihistamines																			
Diphenhydramine Alone	40,066	26,694	9,769	1,753	6,215	8,327	19	460	151	14,201	11,710	31	456	13,736	4,470	4,451	5,171	823	18
Hydroxyzine	20,690	7,977	790	364	2,414	4,144	3	182	80	2,012	5,763	9	120	5,879	1,990	2,202	1,317	84	0
Obsolete: Diphenhydramine Alone (Prescription)	27	18	8	1	4	4	0	1	0	11	5	0	0	8	4	1	3	3	0
Obsolete: Diphenhydramine Alone (Unknown if Over the Counter or Prescription)	945	686	350	57	115	146	1	17	0	474	197	1	11	268	102	83	81	9	0
Other Sedating Antihistamines	6,242	4,091	1,947	295	366	1,283	5	165	30	3,171	728	3	149	1,272	956	531	248	42	0
Category Total: Antimicrobials	117,961	76,859	36,499	7,565	11,406	19,339	65	1,662	323	54,922	20,325	49	1,023	24,598	14,598	8,622	7,074	976	18
Anthelmintics																			
Diethylcarbamazine	13	12	5	0	1	5	0	1	0	12	0	0	0	1	0	1	0	0	0
Levamisole	24	14	5	0	0	8	0	1	0	12	2	0	0	4	2	0	1	1	1
Other Types of Anthelmintic	2,146	1,910	780	162	57	779	1	112	19	1,471	302	9	104	385	334	187	74	10	1

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in		Outcome				
			Age						Reason				Health Care Facility		Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death	
Piperazine Unknown Types of Anthelmintic	130	126	89	5	3	18	1	9	1	115	11	0	0	11	22	6	1	0	0
10	6	3	0	0	2		0	0	1	4	1	0	0	1	1	0	0	0	0
Antibiotics	27,673	22,017	10,027	2,327	1,117	7,259	52	1,134	101	18,891	1,053	11	1,966	2,686	3,378	1,600	316	40	1
Systemic Antibiotic Preparations (Oral, Intravenous, Intramuscular)	4,096	3,878	2,413	249	85	879	10	215	27	3,689	56	1	119	122	525	189	14	0	0
Topical Antibiotic Preparations (Dermal, Otic, Ophthalmic, Nasal)	312	227	130	16	4	61	2	12	2	196	4	0	25	16	27	13	1	0	0
Unknown Types of Antibiotic Preparation																			
Antifungals	1,181	853	320	39	31	397	0	58	8	763	16	1	71	91	132	54	12	0	1
Systemic Antifungal Preparations (Oral, Intravenous, Intramuscular)																			
Topical Antifungal Preparations (Dermal, Otic, Ophthalmic, Nasal)	5,445	5,124	2,965	183	95	1,513	8	334	26	4,930	68	12	94	329	688	327	24	2	0
Unknown Types of Antifungal Preparation	11	9	2	0	0	6	0	1	0	9	0	0	0	0	2	1	0	0	0
Antiparasitics	959	498	118	19	37	296	0	27	1	406	62	0	27	178	127	49	37	9	1
Antimalarials	1,544	854	209	22	63	468	2	85	5	665	86	0	102	145	115	98	15	1	0
Metronidazole	25	23	8	1	2	9	0	3	0	19	2	0	1	5	7	0	0	0	0
Other Types of Antiparasitic																			
Antituberculars	63	37	2	2	4	29	0	0	0	19	6	0	10	25	1	3	8	2	1
Isoniazid	28	8	0	0	0	7	0	1	0	7	1	0	0	1	4	1	0	0	0
Other Types of Antitubercular	82	51	13	1	5	30	0	2	0	41	4	0	6	19	6	5	7	1	0
Rifampin	3	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	1	0	0
Unknown Types of Antitubercular																			
Antivirals	428	160	37	18	31	68	0	6	0	112	33	0	13	72	39	17	23	3	0
Amantadine	2,347	1,584	63	9	31	1,309	1	160	11	1,361	92	0	125	214	236	109	27	1	0
Antiretrovirals	414	357	111	87	29	120	0	9	1	327	4	0	26	25	56	20	7	0	0
Other Anti-Influenza Agents	1,507	1,042	231	21	55	656	1	71	7	838	96	0	101	221	152	101	55	5	0
Systemic Antiviral Preparations (Oral, Intravenous, Intramuscular)																			
Topical Antiviral Preparations (Dermal, Otic, Ophthalmic, Nasal)	161	156	63	8	8	53	0	22	2	151	0	0	5	5	17	13	1	0	0
Unknown Types of Antiviral Preparations	345	206	64	5	7	108	0	20	2	166	17	2	19	32	42	11	4	0	0

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in		Outcome					
			Age					Reason				Health Care Facility		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Miscellaneous																			
Antimicrobials																			
Other Types of Antimicrobial	246	226	141	8	5	57	0	14	1	212	5	0	9	24	34	17	3	1	0
Unknown Types of Antimicrobial	9	7	2	0	0	4	0	1	0	7	0	0	0	1	0	2	0	0	0
Category Total:	49,202	39,387	17,801	3,182	1,670	14,143	78	2,298	215	34,425	1,921	36	2,823	4,615	5,947	2,824	631	76	6
Antineoplastics																			
Miscellaneous																			
Antineoplastics																			
Antineoplastic Drugs	2,752	2,140	277	41	54	1,548	11	192	17	1,954	48	7	119	644	395	224	98	32	12
Category Total:	2,752	2,140	277	41	54	1,548	11	192	17	1,954	48	7	119	644	395	224	98	32	12
Asthma Therapies																			
Miscellaneous Asthma Therapies																			
Albuterol	3,745	3,372	1,411	623	271	892	7	144	24	2,645	433	6	257	509	496	431	204	7	0
Aminophylline or Theophylline	116	72	7	2	0	61	0	2	0	31	11	0	27	49	8	14	23	5	1
Leukotriene Antagonist or Inhibitor	4,939	3,186	1,747	495	156	670	1	108	9	3,023	135	0	16	317	580	88	9	0	0
Non-Selective Beta Agonists	2,420	2,362	807	496	141	773	1	136	8	2,279	49	5	21	605	176	896	188	1	0
Other Asthma Therapeutic Agents	280	231	71	18	7	117	0	17	1	200	13	1	15	35	34	21	13	0	0
Terbutaline and Other Beta-2 Agonists	1,032	900	146	116	28	525	1	80	4	812	52	1	29	102	116	68	49	1	0
Unknown Asthma Therapeutic Agents	6	4	0	1	0	2	0	1	0	0	3	0	1	2	0	0	1	0	0
Category Total:	12,538	10,127	4,189	1,751	603	3,040	10	488	46	8,990	696	13	366	1,619	1,410	1,518	487	14	1
Cardiovascular Drugs																			
Angiotensin Converting Enzyme Inhibitor																			
Angiotensin Converting Enzyme Inhibitor in Combination with Diuretic	1,375	715	214	34	31	412	1	23	0	619	87	0	6	207	212	36	29	1	0
Angiotensin Converting Enzyme Inhibitor in Combination with Other Drugs (Excluding Calcium Antagonists)	8	8	2	1	0	5	0	0	0	7	0	0	1	3	3	0	0	0	0
Angiotensin Converting Enzyme Inhibitor, Alone	12,897	5,023	1,637	280	188	2,700	0	206	12	4,292	643	2	59	1,537	1,533	251	152	7	2
Angiotensin Receptor Blocker																			
Angiotensin Receptor Blocker in Combination with Diuretic	1,705	982	172	22	22	705	0	57	4	917	58	0	4	206	244	50	26	1	0

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason					Treated in Health Care Facility				Outcome		
			≤5	6-12	13-19	≥20	196	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death
Angiotensin Receptor Blocker in Combination with Other Drugs (Excluding Calcium Antagonists)	916	260	41	1	5	196	0	0	16	1	237	20	0	0	71	8	12	0	0
Angiotensin Receptor Blocker, Alone	12,263	5,310	917	141	151	3,760	2	326	13	4,874	353	2	64	1,010	1,322	256	103	3	0
Antihyperlipidemic																			
Antihyperlipidemic Combinations (Excluding Calcium Antagonists)	28	12	3	0	0	8	0	1	0	12	0	0	0	0	2	0	0	0	0
Antihyperlipidemic, Alone	14,413	4,227	1,403	164	132	2,195	2	313	18	3,945	191	0	74	498	687	137	25	1	0
Antihypertensives																			
Antihypertensive (Excluding Diuretics), Alone	6,631	3,634	917	1,519	734	420	3	36	5	2,888	622	5	90	1,745	964	605	577	34	1
Antihypertensive in Combination with Diuretic	3	3	2	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0
Antihypertensive in Combination with Other Drugs (Excluding Diuretics)	9	5	1	0	0	3	0	1	0	4	1	0	0	0	1	0	1	0	0
Beta Blockers																			
Beta Blocker in Combination with Diuretic	159	78	14	2	3	55	0	3	1	64	9	0	4	24	20	5	11	0	0
Beta Blocker in Combination with Other Drugs (Excluding Calcium Antagonists)	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beta Blocker, Alone	29,717	11,402	2,405	347	586	7,542	5	474	43	8,793	2,257	7	245	4,609	3,365	893	1,092	140	25
Calcium Antagonist																			
Calcium Antagonist in Combination with Angiotensin Converting Enzyme Inhibitor	313	181	30	3	5	133	0	9	1	155	23	0	1	65	57	7	19	2	1
Calcium Antagonist in Combination with Angiotensin Receptor Blocker	143	93	18	3	4	62	0	5	1	84	8	1	0	40	37	3	4	2	0
Calcium Antagonist in Combination with Antihyperlipidemic	18	5	3	0	0	2	0	0	0	5	0	0	0	2	0	1	1	0	0
Calcium Antagonist in Combination with Diuretic	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in		Outcome					
			Age					Reason				Health Care Facility		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death	
Calcium Antagonist in Combination with Other Drugs	79	41	6	2	1	29	0	3	0	38	3	0	0	14	11	4	1	0	1
Calcium Antagonist, Alone	16,604	6,422	1,123	180	245	4,568	1	279	26	5,408	880	3	93	3,095	2,165	486	535	135	39
Miscellaneous																			
Cardiovascular Drugs																			
Alpha Blockers	6,225	1,662	229	44	210	1,089	0	88	2	1,034	553	4	58	761	375	271	202	9	0
Antiarrhythmics	2,489	1,240	116	13	21	1,012	1	68	9	1,113	46	0	71	640	423	91	139	49	11
Cardiac Glycosides	1,304	942	34	4	4	893	0	6	1	315	36	1	524	843	95	96	397	118	33
Clonidine	11,359	5,661	1,557	1,422	1,188	1,401	3	74	16	3,554	1,913	12	97	3,813	950	1,074	1,792	190	2
Hydralazine	1,822	639	90	13	25	486	0	24	1	501	122	0	14	273	162	92	63	0	0
Long-Acting Nitrates	865	209	28	5	5	163	0	8	0	181	22	0	5	75	46	31	19	0	0
Nitroglycerin	764	448	182	18	11	204	1	29	3	347	78	2	17	194	164	39	21	5	0
Nitroprusside	11	7	0	0	0	7	0	0	0	1	0	0	6	7	0	0	2	2	0
Other Types of Cardiovascular Drug	551	220	37	9	11	146	0	14	3	198	16	0	4	72	49	22	22	0	0
Other Types of Vasodilator	1,718	1,053	352	39	34	562	0	64	2	842	116	2	87	352	252	131	68	3	1
Unknown Types of Cardiovascular Drug	42	18	2	0	2	12	1	1	0	10	8	0	0	14	6	2	3	2	0
Unknown Types of Vasodilator	17	13	3	0	0	8	0	2	0	11	1	0	1	3	0	4	1	0	0
Vasopressors	283	228	56	31	18	106	0	14	3	211	7	1	8	80	25	58	33	2	0
Category Total:	124,736	50,741	11,594	4,297	3,636	28,885	20	2,144	165	40,661	8,073	42	1,536	20,248	13,241	4,654	5,349	706	116
Cold and Cough Preparations																			
Acetaminophen and Acetylsalicylic Acid with Decongestant and/or Antihistamine																			
Acetaminophen and Acetylsalicylic Acid with Antihistamine without Opioids	3	2	1	0	1	0	0	0	0	1	1	0	0	2	2	0	0	0	0
Acetaminophen and Acetylsalicylic Acid with Decongestant and Antihistamine without Opioids	11	6	2	1	2	1	0	0	0	4	2	0	0	1	3	0	0	0	0
Acetaminophen and Acetylsalicylic Acid with Decongestant without Opioids	6	4	1	0	0	2	0	1	0	4	0	0	0	1	1	0	0	0	0
Acetaminophen, Acetylsalicylic Acid, and Dextromethorphan with Antihistamine	8	3	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
Acetaminophen, Acetylsalicylic Acid, and Dextromethorphan with Decongestant	12	5	1	0	1	3	0	0	0	3	1	0	1	1	0	1	1	0	0

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason					Treated in		Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Acetaminophen, Acetylsalicylic Acid, and Dextromethorphan with Decongestant and Antihistamine	7	5	4	0	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0
Obsolete: Acetaminophen and Acetylsalicylic Acid with Decongestant and/or Antihistamine	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Combinations without Phenylpropanolamine or Opioids																			
Obsolete: Acetaminophen, Acetylsalicylic Acid, and Dextromethorphan Combinations with Decongestant and/or Antihistamine without Phenylpropanolamine	4	2	1	0	0	1	0	0	0	2	0	0	0	0	0	1	0	0	0
Acetaminophen with Decongestant and/or Antihistamine																			
Acetaminophen and Codeine with Antihistamine	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Acetaminophen and Codeine with Decongestant	4	3	1	0	0	2	0	0	0	2	1	0	0	1	1	1	0	0	0
Acetaminophen and Codeine with Decongestant and Antihistamine	14	9	6	2	0	1	0	0	0	8	1	0	0	1	0	1	0	0	0
Acetaminophen and Dextromethorphan with Antihistamine	5,570	2,288	674	183	394	952	2	68	15	1,253	920	4	79	1,030	458	344	229	34	0
Acetaminophen and Dextromethorphan with Decongestant	5,161	2,499	1,130	266	327	687	0	82	7	1,970	383	2	122	571	475	239	73	5	2
Acetaminophen and Dextromethorphan with Decongestant and Antihistamine	2,778	1,743	1,031	212	135	322	1	36	6	1,432	245	2	48	379	341	194	56	5	0
Acetaminophen and Other Opioid with Antihistamine	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acetaminophen and Other Opioid with Decongestant and Antihistamine	5	3	2	0	0	1	0	0	0	2	1	0	0	1	1	0	0	0	0

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Table 228. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in Health Care Facility				Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Acetaminophen with Antihistamine without Opioids	424	255	51	18	60	123	0	3	0	93	156	0	4	175	37	64	61	7	0
Acetaminophen with Decongestant and Antihistamine without Opioids	1,144	637	384	112	55	69	0	13	4	543	72	0	15	121	112	49	18	1	0
Acetaminophen with Decongestant without Opioids	763	400	166	28	75	113	0	16	2	298	84	0	14	95	79	38	10	1	0
Obsolete: Acetaminophen and Dextromethorphan Combinations with Decongestant and/or Antihistamine without Phenylpropanolamine	5	2	1	0	1	0	0	0	0	2	0	0	0	0	1	0	0	0	0
Acetylsalicylic Acid with Decongestant and/or Antihistamine																			
Acetylsalicylic Acid and Dextromethorphan with Antihistamine	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Acetylsalicylic Acid and Dextromethorphan with Decongestant	3	2	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Acetylsalicylic Acid and Dextromethorphan with Decongestant and Antihistamine	7	4	2	1	0	1	0	0	0	3	1	0	0	0	0	0	0	0	0
Acetylsalicylic Acid with Decongestant and Antihistamine without Opioids	48	36	21	4	5	5	0	1	0	31	3	0	2	2	8	2	0	0	0
Acetylsalicylic Acid with Decongestant without Opioids	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Antihistamine and/or Decongestant																			
Antihistamine and Decongestant with Codeine	24	16	4	2	0	10	0	0	0	13	3	0	0	6	6	5	0	0	0
Antihistamine and Decongestant with Dextromethorphan	3,286	2,722	1,752	607	103	234	0	24	2	2,529	114	3	61	373	539	227	65	6	0

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason					Treated In Health Care Facility	Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other		Adv Rxn	None	Minor	Moderate	Major
Antihistamine and Decongestant with Other Opioid	9	8	2	4	0	2	0	0	0	8	0	0	0	2	1	1	0	0
Antihistamine and Decongestant without Opioid	2,978	2,366	1,499	370	103	348	0	45	1	2,226	87	1	34	346	494	179	46	3
Antihistamine with Codeine	130	91	16	6	11	51	0	6	1	70	15	0	2	30	18	10	1	0
Antihistamine with Dextromethorphan	2,835	2,191	675	272	255	952	0	32	5	1,381	759	0	29	909	306	372	396	27
Antihistamine with Other Opioid	53	44	4	1	1	31	0	7	0	36	4	0	3	17	3	7	5	1
Antihistamine without Opioid	1,056	628	266	26	91	229	0	13	3	350	267	0	8	334	152	100	89	10
Decongestant with Codeine	23	16	4	1	1	9	0	1	0	15	0	0	1	3	3	0	0	0
Decongestant with Dextromethorphan	1,977	1,506	1,080	219	61	134	1	11	0	1,365	99	0	32	195	297	96	44	3
Decongestant with Other Opioid	6	5	0	1	0	3	0	1	0	3	0	0	1	1	0	1	0	0
Decongestant without Opioid	3,363	2,218	912	131	213	860	1	91	10	1,979	154	2	72	289	407	127	61	3
Obsolete: Antihistamine and/or Decongestant with Dextromethorphan without	33	23	0	0	4	19	0	0	0	1	22	0	0	21	0	7	7	2
Phenylpropanolamine	2	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Obsolete: Antihistamine and/or Decongestant without																		
Phenylpropanolamine and Opioid																		
Miscellaneous Cold and Cough Preparations																		
Acetaminophen in Combination with Dextromethorphan (Without Decongestants or Antihistamines)	212	125	60	23	12	26	0	4	0	98	25	0	2	30	18	13	12	0
Cough and Cold Preparations (Not Otherwise Classified)	3,522	2,611	1,917	185	124	330	4	42	9	2,221	300	6	64	431	402	157	95	12
Dextromethorphan Preparations (Not Otherwise Classified)	11,086	8,166	2,733	1,029	1,264	2,889	8	214	29	5,497	2,378	17	213	2,987	1,159	1,248	1,175	74
Dextromethorphan With Expectorants	990	747	352	102	89	193	0	11	0	580	130	0	21	166	99	83	56	1
Expectorants Without Dextromethorphan	2,381	1,549	392	82	127	802	1	137	8	1,336	151	1	45	213	243	74	24	3

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in Health Care Facility				Outcome			
			Age						Reason				Treated in Health Care Facility				Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death		
Non-Opiod Antitussives Excluding Dextromethorphan	2,718	2,040	469	96	213	1,115	1	136	10	1,656	255	1	118	737	520	312	77	17	4	
Obsolete: Expectorants or Antitussives (Without Narcotics or Narcotic Analogs)	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
Obsolete: Unknown Types of Cough and Cold Preparation	7	3	1	1	0	1	0	0	0	2	1	0	0	2	2	0	0	0	0	
Non-Acetylsalicylic Acid Salicylates with Decongestant and/or Antihistamine	2	2	2	0	0	0	0	0	0	2	0	0	0	1	2	0	0	0	0	
Non-Acetylsalicylic Acid Salicylates and Dextromethorphan with Antihistamine	3	3	3	0	0	0	0	0	0	3	0	0	0	1	0	1	0	0	0	
Non-Acetylsalicylic Acid Salicylates and Dextromethorphan with Decongestant and Antihistamine	1	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	
Non-Acetylsalicylic Acid Salicylates with Decongestant without Opioid																				
Phenylpropanolamine Containing Preparations																				
Acetaminophen and Phenylpropanolamine Combinations with Decongestant and/or Antihistamine without Opioid	13	8	5	0	0	3	0	0	0	5	3	0	0	5	1	0	3	0	0	
Acetaminophen, Acetylsalicylic Acid, and Phenylpropanolamine Combinations with Decongestant and/or Antihistamine without Opioid	2	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in Health Care Facility				Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Acetaminophen, Acetylsalicylic Acid, Phenylpropanolamine, and Dextromethorphan Combinations with Decongestant and/or Antihistamine	28	13	4	5	3	1	0	0	0	12	1	0	0	3	0	1	0	0	0
Acetaminophen, Phenylpropanolamine, and Dextromethorphan Combinations with Decongestant and/or Antihistamine	12	7	4	0	1	2	0	0	0	6	1	0	0	1	1	1	0	0	0
Acetaminophen, Phenylpropanolamine, and Other Opioid Combinations with Decongestant and/or Antihistamine	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acetylsalicylic Acid, Phenylpropanolamine, and Dextromethorphan Combinations with Decongestant and/or Antihistamine	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Antihistamine and/or Decongestant with Phenylpropanolamine and Dextromethorphan	51	42	24	8	2	6	0	1	1	38	2	0	2	7	5	6	1	0	0
Antihistamine and/or Decongestant with Phenylpropanolamine and Dextromethorphan	16	11	7	3	0	1	0	0	0	11	0	0	0	2	4	0	0	0	0
Non-Acetylsalicylic Acid Salicylates and Phenylpropanolamine Combinations with Decongestant and/or Antihistamine without Opioid	1	1	1	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
Other Phenylpropanolamine Preparations (Excluding Street Drugs and Diet Aids)	253	204	90	3	1	102	0	7	1	203	1	0	0	23	55	6	5	0	0
Category Total:	53,071	35,288	15,773	4,006	3,735	10,638	19	1,003	114	27,320	6,644	39	994	9,519	6,259	3,969	2,619	216	10

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in		Outcome			
			Age						Reason				Health Care Facility		Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major
Diagnostic Agents																		
Miscellaneous Diagnostic Agents																		
Diagnostic Tablets for Glucose or Ketones	2	2	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0
Other Types of Diagnostic Agent	2,515	2,380	718	109	61	1,152	3	308	29	2,256	34	1	75	220	276	293	33	4
Unknown Types of Diagnostic Agent	11	10	4	0	0	4	0	2	0	9	0	0	1	2	2	0	1	0
Category Total:	2,528	2,392	722	109	61	1,158	3	310	29	2,267	34	1	76	222	278	295	33	5
Dietary Supplements/Herbals/Homeopathic Amino Acids																		
Creatine	188	134	70	12	23	21	0	7	1	104	10	2	18	24	16	14	6	1
Other Amino Acid Dietary Supplements	770	450	196	35	31	158	1	22	7	317	43	3	87	92	60	67	16	2
Botanical Products																		
Citrus Aurantium (Single Ingredient)	4	4	2	0	0	2	0	0	0	3	0	0	1	2	0	2	0	0
Echinacea	103	71	39	8	5	19	0	0	0	60	3	0	7	7	14	7	1	0
Ginkgo Biloba	105	60	23	3	3	26	0	5	0	48	7	0	5	8	8	6	1	0
Ginseng	65	37	13	2	1	19	0	2	0	21	5	0	11	10	0	6	1	0
Kava Kava	150	73	13	1	3	47	1	7	1	27	26	1	14	37	6	15	14	3
Ma Huang/Ephedra (Single Ingredient)	9	3	2	0	0	0	0	0	1	3	0	0	0	1	1	0	0	0
Multi-Botanicals with Citrus Aurantium	20	19	9	2	0	8	0	0	0	13	2	0	4	6	3	2	3	0
Multi-Botanicals with Ma Huang	17	13	4	2	1	6	0	0	0	5	4	0	3	4	1	4	1	0
Multi-Botanicals without Ma Huang or Citrus Aurantium	1,701	1,410	916	99	57	293	0	40	5	1,133	105	2	157	272	235	125	55	4
Other Single Ingredient Botanicals	3,906	3,063	1,639	167	91	943	4	199	20	2,571	154	5	305	386	445	270	58	2
St. John's Wort	168	132	101	3	2	21	1	4	0	121	5	0	6	10	20	9	2	0
Valerian	166	90	36	4	7	34	0	8	1	54	20	0	14	27	15	8	3	0
Yohimbe	54	39	2	1	1	31	0	4	0	9	3	0	27	27	2	7	16	0
Cultural Medicines																		
Asian Medicines	62	49	26	0	1	17	0	5	0	40	1	1	5	21	13	5	4	2
Ayurvedic Medicines	746	511	286	41	69	105	0	10	0	366	79	1	61	133	97	60	21	1
Hispanic Medicines	4	3	0	0	0	3	0	0	0	1	1	0	1	2	1	1	0	0
Other Cultural Medicines	81	63	28	4	1	23	0	7	0	43	10	0	9	23	11	8	7	0
Energy Products																		
Energy Drinks: Caffeine Containing (From Any Source Including Guarana, Kola Nut, Tea, Yerba Mate, Cocoa, etc)	1,593	1,385	736	233	202	187	4	17	6	1,040	177	4	144	268	233	237	101	8

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason					Treated in Health Care Facility			Outcome			
			Age					Reason					Treated in Health Care Facility			Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Energy Drinks: Caffeine Only (Without Guarana, Kola Nut, Tea, Yerba Mate, Cocoa, etc)	803	650	415	85	66	75	0	9	0	523	76	3	45	75	113	83	25	0	0
	100	25	8	3	6	8	0	0	0	14	6	0	4	9	4	2	4	1	0
	1	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0
Energy Drinks: Ethanol and Caffeine Only (Without Guarana, Kola Nut, Tea, Yerba Mate, Cocoa, etc)	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Energy Drinks: Ethanol Containing Without Caffeine (From Any Source)	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Energy Drinks: No Caffeine (From Any Source)	20	18	7	5	2	4	0	0	0	15	1	0	2	1	1	2	0	0	0
Energy Drinks: Unknown	857	680	330	169	77	92	1	9	2	520	77	4	74	108	121	101	39	0	0
Energy Products: Other	220	171	88	20	20	40	1	2	0	117	29	0	23	62	27	30	17	3	0
Hormonal Products																			
Androgen or Androgen Precursor Dietary Supplements	242	174	56	7	16	86	0	7	2	93	34	3	42	70	22	28	24	4	0
Glandular Dietary Supplements	17	9	2	0	0	7	0	0	0	6	0	0	3	3	0	2	0	0	0
Melatonin Alone	54,341	48,429	39,337	5,626	1,687	1,475	78	180	46	45,550	2,404	31	254	6,051	8,019	3,424	136	6	0
Melatonin in Combination with Other Substances	2,069	1,917	1,570	222	62	55	1	5	2	1,797	91	0	19	215	344	202	9	0	0
Phytoestrogen Dietary Supplements	35	23	5	0	1	14	1	2	0	16	3	0	4	6	4	2	2	0	0
Miscellaneous Dietary Supplements/Herbals/																			
Homeopathic																			
Homeopathic Agents	10,090	9,371	8,258	411	89	482	15	105	11	9,035	107	9	189	654	1,497	252	14	3	0
Unknown Dietary Supplements or Homeopathic Agents	2,545	2,024	1,264	181	81	422	4	64	8	1,702	114	8	189	306	330	163	49	12	2
Other Dietary																			
Supplements																			
Fatty Acid Supplements	389	273	211	21	4	28	0	5	4	253	10	0	8	27	39	11	1	0	0
Glucosamine (with or without Chondroitin)	563	406	311	1	4	72	1	15	2	390	6	0	9	21	65	13	0	0	0
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(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in Health Care Facility		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major	Death
Other Single Ingredient Non-Botanical Dietary Supplements	1,484	707	467	33	18	166	0	21	2	614	43	74	113	48	13	2	0	0	
Category Total:	83,689	72,488	56,470	7,401	2,631	4,991	113	761	121	66,625	3,657	77	1,788	9,043	11,880	5,216	643	55	4
Diuretics																			
Miscellaneous Diuretics																			
Furosemide	3,068	768	210	21	33	466	1	32	5	688	55	186	152	95	30	3	0	0	0
Other Types of Diuretic	4,044	1,348	388	69	89	740	0	59	3	1,148	154	342	321	99	52	3	0	0	0
Thiazide	3,992	1,129	379	55	41	592	1	56	5	1,001	98	266	285	57	32	2	0	0	0
Unknown Types of Diuretic	85	16	5	1	3	6	0	1	0	10	5	5	4	1	1	0	0	0	0
Category Total:	11,189	3,261	982	146	166	1,804	2	148	13	2,847	312	2	83	799	762	252	115	8	0
Electrolytes and Minerals																			
Miscellaneous																			
Electrolytes and Minerals																			
Minerals																			
Calcium and Calcium Salts	10,188	8,671	7,365	553	131	501	15	94	12	8,354	207	8	56	435	1,447	193	22	2	1
Chromium, Trivalent	163	143	43	15	7	57	0	16	5	132	6	1	4	22	18	15	3	0	0
Colloidal Silver	152	132	59	14	3	45	0	10	1	94	18	0	18	42	15	16	5	0	1
Fluoride (Excluding Vitamins, Hydrofluoric Acid & Mouthwashes)	738	700	479	87	18	86	3	23	4	616	13	3	68	55	113	59	4	1	0
Germanium and Germanium Salts	3	3	0	0	0	3	0	0	0	3	0	0	0	2	0	1	1	0	0
Iron and Iron Salts (Excluding Vitamins with Iron)	7,767	5,780	2,380	252	765	2,105	5	250	23	4,513	765	6	455	1,508	1,080	809	192	20	1
Magnesium and Magnesium Salts	7,399	5,713	3,135	413	193	1,694	16	242	20	4,955	310	17	398	691	953	582	78	1	3
Multi-Mineral and Multi-Herbal Dietary Supplement	304	245	125	15	30	68	0	5	2	159	47	0	37	78	44	32	30	5	0
Multi-Mineral Dietary Supplements	248	195	84	21	13	66	0	10	1	154	13	2	24	14	29	29	2	1	0
Other Types of Electrolyte or Mineral	197	165	78	19	12	46	1	7	2	140	6	0	17	21	24	17	3	1	0
Potassium and Potassium Salts	2,065	727	148	18	30	469	4	55	3	567	113	1	42	196	144	71	36	7	2
Selenium and Selenium Salts	94	64	17	2	2	36	0	7	0	46	6	0	9	12	5	9	2	0	0
Sodium and Sodium Salts	3,458	2,880	1,461	520	123	592	22	141	21	2,453	285	35	81	424	498	365	34	2	0
Unknown Types of Electrolyte or Mineral	19	14	5	1	1	6	0	1	0	12	1	0	1	4	2	0	2	0	0
Vanadium and Vanadium Salts	4	2	0	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
Zinc and Zinc Salts	2,618	2,222	974	83	115	885	4	152	9	1,664	128	0	420	185	207	364	18	3	0
Category Total:	35,417	27,656	16,353	2,014	1,443	6,660	70	1,013	103	23,864	1,918	73	1,630	3,689	4,579	2,562	432	43	8
(continued)																			

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated In		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Eye/Ear/Nose/Throat Preparations Miscellaneous Eye/Ear/Nose/Throat Preparations																			
	2,073	1,806	757	292	58	554	1	136	8	1,695	63	2	43	76	228	145	11	0	0
	2,135	1,992	503	96	169	1,000	4	209	11	1,746	103	6	127	226	343	172	44	3	1
	953	914	573	47	15	214	0	60	5	876	6	1	30	32	115	50	4	0	0
	28	27	12	1	2	7	0	4	1	25	1	1	0	7	8	2	1	0	0
	18	16	1	0	1	11	0	3	0	14	0	1	1	5	2	3	2	1	0
	1,376	1,326	708	62	55	414	0	77	10	1,269	35	2	12	185	177	193	41	0	0
	475	409	74	15	3	254	1	60	2	382	1	0	23	44	60	28	14	1	0
	656	633	337	23	31	208	0	33	1	582	15	8	22	151	230	34	5	0	0
	2,825	2,678	1,251	119	77	963	5	239	24	2,456	58	54	89	204	421	103	27	2	0
Ophthalmic Preparations	849	771	284	27	45	335	0	72	8	537	106	84	22	255	174	61	40	7	0
	57	48	8	3	4	26	0	5	2	24	5	14	5	14	2	8	2	1	0
	502	494	236	48	11	156	2	35	6	488	2	0	4	39	60	102	5	0	0
	2,539	2,511	568	104	58	1,476	4	281	20	2,459	8	1	33	368	177	827	75	1	0
	27	25	1	1	2	14	0	7	0	25	0	0	0	3	0	5	1	0	0
	836	816	121	80	102	413	1	89	10	764	30	1	15	36	118	41	2	0	0
	305	284	95	20	25	114	1	26	3	264	11	0	9	21	58	14	3	1	0
	649	596	394	72	14	94	1	19	2	551	23	0	20	23	80	40	2	0	0
	6	4	2	0	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0
	Category Total:	16,309	15,350	5,925	1,010	672	6,255	20	1,355	113	14,161	467	175	455	1,689	2,253	1,828	279	17

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Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated in		Outcome				
			Age					Reason				Health Care Facility		Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Facility	None	Minor	Moderate	Major
Gastrointestinal Preparations																		
Antacids																		
Antacids: Other Types	1,943	1,685	1,311	94	21	215	5	38	1	1,597	45	0	33	67	31	6	0	0
Antacids: Proton Pump Inhibitors	9,921	3,838	1,634	124	232	1,577	4	251	16	3,368	346	2	111	518	146	24	1	0
Antacids: Salicylate-Containing	3,358	2,946	1,999	461	63	361	6	48	8	2,650	162	2	101	356	106	23	6	1
Antidiarrheals																		
Antidiarrheals: Diphenoxylate and Atropine Containing	161	96	26	1	5	58	0	6	0	72	17	2	4	48	10	11	3	0
Antidiarrheals: Loperamide	1,007	664	182	27	30	375	1	44	5	463	120	3	61	196	65	22	13	5
Antidiarrheals: Non-Oploid Containing (Excluding Salicyl Containing)	29	25	15	1	0	7	0	2	0	21	1	1	2	4	2	1	0	0
Antidiarrheals: Paregoric Containing	1	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
Antispasmodics																		
Antispasmodics: Anticholinergic Containing	2,572	1,014	299	54	116	482	1	53	9	720	221	2	63	413	142	97	5	0
Antispasmodics: Other Types	491	221	25	3	3	169	0	21	0	203	4	0	14	35	12	10	0	0
Miscellaneous																		
Gastrointestinal Preparations																		
Laxatives	15,295	13,194	8,197	766	468	3,075	20	624	44	12,028	475	41	606	1,184	1,304	139	8	0
Other Types of Gastrointestinal Preparation	10,130	8,193	6,093	360	113	1,365	12	221	29	7,609	198	12	341	509	388	54	8	0
Unknown Types of Gastrointestinal Preparation	41	24	16	1	0	7	0	0	0	21	1	1	1	2	1	0	0	0
Serotonin 5-HT3 Receptor Antagonists																		
Serotonin 5-HT3 Receptor Antagonists: Ondansetron	3,909	2,367	1,357	242	168	506	4	80	10	2,049	223	2	79	610	170	68	4	0
Serotonin 5-HT3 Receptor Antagonists: Other or Unknown	4	2	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0
Category Total:	48,862	34,270	21,155	2,134	1,219	8,199	53	1,388	122	30,804	1,813	68	1,416	3,943	2,376	455	48	6
Hormones and Hormone Antagonists																		
Hypoglycemic, Combination																		
Hypoglycemic: Biguanide Combinations (Excluding Sulfonylurea)	402	180	19	3	4	137	0	15	2	162	14	0	4	35	6	6	3	1

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Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated In		Outcome					
												Health Care Facility							
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death	
Hypoglycemic, Single Agent	35	17	4	0	1	9	0	3	0	14	1	0	2	2	3	1	0	0	0
	49	27	11	0	2	14	0	0	0	22	2	0	3	22	8	0	11	0	0
	4,384	4,080	93	26	57	3,503	1	374	26	3,397	227	4	430	1,494	430	1,002	299	12	0
	616	578	31	5	7	460	0	66	9	496	28	0	52	136	73	86	33	4	0
	6,622	5,478	146	124	217	4,609	1	350	31	4,510	857	5	63	2,732	1,922	435	950	85	3
	21	6	3	0	0	3	0	0	0	6	0	0	0	1	3	0	0	0	0
	9,586	3,821	661	109	338	2,440	3	252	18	2,885	757	5	128	1,249	639	418	295	86	20
	858	275	62	4	4	190	0	15	0	257	13	0	5	58	64	11	4	1	0
	55	26	6	0	3	14	0	2	1	23	2	0	1	14	12	3	2	0	0
	2,487	959	206	19	14	645	0	73	2	891	33	0	30	170	233	27	20	4	0
Miscellaneous Hormones and Hormone Antagonists	2,783	999	377	38	44	515	1	19	5	772	135	0	62	775	282	57	308	53	0
	369	107	44	4	7	47	0	5	0	98	8	0	0	50	47	10	4	1	0
	496	415	70	8	25	264	0	43	5	327	42	0	45	109	49	60	14	5	0
	11,282	9,146	3,215	733	340	3,970	13	799	76	8,432	206	10	475	640	1,195	387	55	1	0
	1,290	903	275	25	41	472	1	84	5	809	51	3	39	92	131	54	6	0	0
	2,171	1,591	1,003	65	215	261	3	41	3	1,343	199	0	36	183	232	120	9	0	0
	779	571	141	30	22	333	1	41	3	527	24	0	15	69	105	38	2	0	1
	1,004	739	131	105	59	388	0	49	7	684	24	2	27	187	172	47	15	1	1
	1,403	1,073	528	40	59	354	1	81	10	959	40	6	63	114	173	48	8	0	0
	218	126	30	5	4	77	0	9	1	115	7	0	4	17	21	10	3	0	0

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Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in		Outcome				
			Age						Reason				Health Care Facility		Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death	
Thyroid Preparations (Including Synthetics and Extracts)	13,690	9,150	3,432	294	251	4,509	11	615	38	8,787	262	0	62	1,044	1,507	182	47	4	0
Unknown Hormones or Hormone Antagonists	5	3	1	0	0	2	0	0	0	3	0	0	0	0	1	0	0	0	0
Category Total: Miscellaneous Drugs	60,605	40,270	10,489	1,637	1,714	23,216	36	2,936	242	35,519	2,932	35	1,546	9,193	7,345	3,002	2,091	260	26
Alzheimer Drugs																			
Miscellaneous Alzheimer Drugs	2,803	818	67	7	17	695	0	30	2	711	63	0	35	331	133	178	94	5	0
Antidotes																			
Miscellaneous Antidote Drugs	413	224	54	19	9	129	0	11	2	179	16	2	24	84	37	31	13	1	1
Other Miscellaneous Drugs																			
Allopurinol	1,087	311	112	7	8	160	2	22	0	288	20	0	3	61	75	16	2	0	0
Bisphosphonates (Including Combinations)	682	613	7	0	1	551	1	48	5	597	1	0	15	124	107	57	16	0	1
Disulfiram	185	59	7	0	1	45	0	5	1	27	10	3	18	25	9	9	7	3	0
Ergot Alkaloids	35	23	8	0	0	11	1	3	0	18	0	0	4	11	4	3	2	1	0
Hematopoietics	60	54	11	3	4	27	0	9	0	47	1	0	5	11	9	2	1	1	0
Monoclonal Antibodies (Including Fragments)	430	394	39	12	13	288	1	38	3	326	5	0	63	75	52	59	20	1	1
Neuromuscular Blocking Agents (Succinylcholine, Curare, etc)	34	29	2	0	0	23	0	3	1	17	2	0	10	24	6	3	5	4	1
Nicotine Pharmaceuticals	1,150	1,078	627	109	29	240	9	62	2	943	75	5	49	156	246	161	24	1	0
Other Types of Miscellaneous Prescription or Over the Counter Drug	14,002	9,871	2,683	580	725	4,862	16	928	77	8,725	607	23	447	1,711	1,732	860	337	32	1
Parkinson Drugs																			
Decarboxylase Inhibitor, Alone	56	22	5	0	0	15	0	2	0	20	1	0	1	4	7	2	0	0	0
Levodopa (Alone or with Decarboxylase Inhibitor)	1,507	837	120	6	4	654	0	50	3	744	50	2	29	188	144	99	48	2	0
Levodopa and Carbidopa with Other Drugs	51	32	2	0	0	26	0	4	0	27	2	1	2	10	5	1	6	0	0
Other Parkinson Drugs (Including Combinations)	1,387	592	180	25	7	357	0	22	1	470	83	0	30	238	99	161	48	9	0
Category Total: Muscle Relaxants	23,882	14,957	3,924	768	818	8,083	30	1,237	97	13,139	936	36	735	3,053	2,665	1,642	623	60	5
Miscellaneous Muscle Relaxants																			
Baclofen	4,272	1,794	196	54	117	1,383	0	36	8	609	937	31	123	1,435	219	330	516	306	2
Carisoprodol (Formulated Alone)	658	260	10	2	9	231	0	8	0	54	190	2	3	216	32	66	87	26	1

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Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated In		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Cyclobenzaprine	7,635	3,054	574	165	218	1,961	1	118	17	1,524	1,412	3	66	1,842	551	657	582	113	1
Metaxalone	168	77	7	0	7	55	0	7	1	52	18	0	6	26	7	15	7	5	0
Methocarbamol	2,965	1,089	132	27	113	766	0	39	12	497	546	0	35	650	245	259	133	31	0
Other Types of Muscle Relaxant	277	107	9	5	11	75	1	6	0	48	50	2	1	70	17	22	24	3	0
Tizanidine	4,712	1,910	227	49	81	1,497	0	50	6	879	892	15	90	1,336	235	393	640	94	0
Unknown Types of Muscle Relaxant	157	33	3	2	1	25	0	0	2	8	25	0	0	30	11	7	6	2	0
Category Total: Opioid Antagonists	20,844	8,324	1,158	304	557	5,993	2	264	46	3,671	4,070	53	324	5,605	1,317	1,749	2,015	580	4
Miscellaneous Opioid Antagonists																			
Miscellaneous Opioid Antagonist	1,705	695	56	16	63	463	0	69	28	379	167	25	108	296	83	121	78	36	2
Category Total: Radiopharmaceuticals	1,705	695	56	16	63	463	0	69	28	379	167	25	108	296	83	121	78	36	2
Miscellaneous Radiopharmaceutical																			
Specific Pharmaceutical Radionuclides	31	22	3	3	0	14	1	1	0	15	0	1	6	11	2	3	2	1	0
Category Total: Sedative/Hypnotics/ Antipsychotics	31	22	3	3	0	14	1	1	0	15	0	1	6	11	2	3	2	1	0
Antipsychotics																			
Barbiturates																			
Long Acting Barbiturates	1,005	553	84	10	32	393	1	29	4	430	85	4	17	171	113	72	46	22	1
Short or Intermediate Acting Barbiturates	105	58	1	1	5	44	0	7	0	45	10	2	0	20	10	9	4	1	1
Unknown Types of Barbiturate	41	7	0	2	2	2	0	1	0	2	1	0	1	4	3	1	0	0	1
Miscellaneous Sedative/Hypnotics/ Antipsychotics																			
Antipsychotics																			
Atypical Antipsychotics	43,751	16,683	1,514	884	2,981	10,723	10	474	97	5,630	10,100	47	668	12,337	2,817	4,336	4,110	716	10
Benzodiazepines	42,170	15,185	1,708	393	1,477	10,947	4	515	141	4,402	9,942	256	324	11,365	2,744	4,515	3,001	618	15
Bupirone	8,604	2,489	396	94	436	1,457	1	86	19	1,063	1,312	4	89	1,509	644	606	307	14	0
Chloral Hydrate	24	14	5	2	4	2	0	1	0	9	4	0	1	6	3	2	2	0	0
Ethchlorvynol	3	2	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Meprobamate	9	3	0	0	1	1	0	0	1	2	1	0	0	1	0	1	0	1	0
Methaqualone	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonbenzodiazepine Hypnotics	7,374	3,058	223	87	147	2,464	2	110	25	1,083	1,835	21	57	2,169	404	899	677	111	0
Other Types of Sedative/Hypnotic/Anti-Anxiety or Anti-Psychotic Drug	2,600	980	56	27	65	779	0	46	7	325	459	38	135	752	139	213	305	44	3
Phenothiazines	1,543	648	69	22	76	438	1	40	2	316	259	3	59	394	124	119	134	12	0
Sleep Aids, Over the Counter Only (Excluding Diphenhydramine)	1,968	1,387	813	19	97	425	0	28	5	936	438	0	10	599	366	172	200	21	2

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in		Outcome				
			Age						Reason				Health Care Facility		Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death	
Unknown Types of Sedative/Hypnotic/ Anti-Anxiety or Anti-Psychotic Drug	178	62	9	1	7	39	0	4	2	9	43	6	1	50	3	14	22	1	0
Category Total: Serums, Toxoids, Vaccines	109,379	41,129	4,878	1,544	5,330	27,714	19	1,341	303	14,252	24,489	381	1,364	29,377	7,370	10,959	8,808	1,561	33
Miscellaneous Serums, Toxoids, Vaccines	1,611	1,360	246	80	81	774	1	165	13	1,111	7	2	234	442	144	250	55	7	0
Category Total: Stimulants and Street Drugs	1,611	1,360	246	80	81	774	1	165	13	1,111	7	2	234	442	144	250	55	7	0
Cannabinoids and Analogs																			
Cannabidiol (CBD)	2,283	1,868	859	241	179	512	19	50	8	1,325	347	8	172	827	339	378	246	16	0
eCigarettes: Marijuana Device Flavor Unknown	919	698	314	43	249	77	5	9	1	358	300	4	26	434	56	254	144	20	1
eCigarettes: Marijuana Device With Added Flavors	74	64	36	5	17	5	0	1	0	41	18	0	1	27	5	29	6	0	0
eCigarettes: Marijuana Device Without Added Flavors	35	30	16	2	9	2	0	1	0	20	9	0	1	13	6	3	5	0	0
eCigarettes: Marijuana Liquid Flavor Unknown	57	46	25	7	9	5	0	0	0	29	16	0	1	33	5	10	13	1	0
eCigarettes: Marijuana Liquid With Added Flavors	5	4	1	0	1	2	0	0	0	1	2	0	1	2	1	0	2	0	0
eCigarettes: Marijuana Liquid Without Added Flavors	8	6	5	1	0	0	0	0	0	5	1	0	0	2	1	2	0	0	0
Marijuana: Concentrated Extract (Including Oils and Tinctures)	1,014	697	260	38	151	212	1	27	8	387	230	13	55	453	55	179	172	26	0
Marijuana: Dried Plant	6,967	3,398	1,397	369	609	848	8	124	43	1,977	1,039	64	216	2,286	274	834	905	118	0
Marijuana: Edible Preparation	12,890	11,443	4,795	2,025	1,942	2,428	24	187	42	7,296	3,251	126	606	8,241	758	3,784	3,200	249	0
Marijuana: Oral Capsule or Pill Preparation	101	76	26	3	12	28	0	7	0	36	27	0	12	46	10	26	16	1	0
Marijuana: Other or Unknown Preparation	2,787	832	438	81	135	145	3	17	13	528	198	6	31	661	43	206	325	59	2
Marijuana: Pharmaceutical Preparation	53	29	8	1	1	17	1	1	0	19	5	0	5	17	5	6	5	1	0
Marijuana: Topical Preparation	41	38	17	0	0	18	0	2	1	34	3	0	1	4	11	5	2	0	0
Marijuana: Undried Plant	27	12	8	0	0	3	0	1	0	8	2	0	2	11	2	3	2	0	0
Minor Cannabinoids	3,529	3,099	1,062	449	513	979	2	75	19	1,637	1,206	14	202	2,283	165	979	921	83	0
(continued)																			

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Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason					Treated In		Outcome					
			No. of Case Mentions					No. of Single Exposures					Health Care Facility	Adv Rxn	Other	Int	Unint	Unknown Adult	Unknown Age	Unknown Child
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other								
Synthetic Cannabinoids, Analogs and Precursors	703	419	53	20	84	239	2	15	6	105	283	6	10	341	21	116	158	41	1	
Diet Aids:	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Phenylpropanolamine and Caffeine Combinations	4	2	1	0	0	1	0	0	0	2	0	0	0	1	1	1	0	0	0	
Diet Aids:																				
Phenylpropanolamine Only																				
Other Types of Diet Aid, Over the Counter Only	61	44	22	1	4	16	0	1	0	27	6	0	11	16	11	8	5	0	0	
Other Types of Diet Aid, Prescription Only	7	5	2	1	0	2	0	0	0	3	0	1	1	3	1	0	2	0	0	
Unknown Types of Diet Aid	18	8	2	0	0	5	0	0	1	2	2	0	3	6	1	1	1	0	0	
Miscellaneous Stimulants and Street Drugs																				
Amphetamines and Related Compounds	16,094	9,693	2,793	1,524	1,634	3,432	8	244	58	6,990	2,353	30	186	4,389	2,085	1,601	1,480	108	1	
Amyl or Butyl Nitrites (Street Drugs)	482	414	12	0	16	343	0	38	5	150	240	7	9	249	29	67	84	35	1	
Caffeine	3,464	2,665	1,118	227	378	826	2	101	13	1,769	556	14	280	656	337	436	282	22	2	
Cocaine	5,871	1,289	148	23	69	919	0	101	29	223	945	39	15	1,024	162	194	379	164	29	
Ephedrine	49	30	12	5	3	9	0	1	0	20	10	0	0	10	4	2	4	1	0	
gamma-Hydroxybutyric Acid including Analogs or Precursors	563	368	6	1	17	308	1	26	9	85	200	42	15	291	11	52	103	97	0	
Hallucinogenic Amphetamines	104	38	3	1	9	23	0	1	1	5	29	0	2	33	3	10	14	0	0	
Kratom	1,489	880	71	3	32	723	1	39	11	173	519	56	95	671	60	184	305	70	5	
Lysergic acid diethylamide (LSD)	530	247	8	2	176	53	0	6	2	23	216	3	1	215	16	53	123	9	0	
Mescaline/Peyote	62	53	18	4	5	18	0	4	4	37	6	0	9	13	8	7	5	0	0	
Methamphetamines	7,104	2,788	207	33	90	2,167	3	203	85	471	2,109	74	36	2,211	260	488	918	241	136	
Methylphenidate	9,680	6,350	1,380	2,497	1,438	944	3	72	16	5,074	1,106	8	126	1,919	1,344	867	615	21	0	
Other Hallucinogens	9	7	0	0	4	3	0	0	0	0	6	0	0	6	0	0	6	0	0	
Other Stimulants (Excluding Amphetamines)	441	226	50	8	23	136	0	7	2	145	55	2	19	95	34	40	42	2	0	
Other Street Drugs	22	11	2	0	4	4	0	0	1	2	8	0	0	8	1	2	4	0	0	
Other Synthetic Street Drugs	21	14	2	2	5	5	0	0	0	3	10	0	0	10	0	2	6	1	0	
Phenylcyclohexylpiperidine (PCP)	262	85	8	0	8	61	0	7	1	16	51	5	3	60	3	12	29	9	0	
Synthetic Cathinones, Analogs and Precursors	103	57	6	0	7	37	0	6	1	16	39	1	0	41	2	14	11	7	0	
Synthetic Phenethylamines, Analogs, and Precursors	1,188	487	35	3	81	340	0	19	9	57	398	10	10	403	50	110	161	53	3	

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720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778
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Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in		Outcome				
			Age						Reason				Health Care Facility		Outcome				
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	None	Minor	Moderate	Major	Death	
Synthetic Tryptamines, Analogs and Precursors	95	58	0	0	16	34	0	7	1	5	44	1	5	49	6	8	23	5	0
Unknown Hallucinogens	7	7	0	1	4	2	0	0	0	2	4	0	1	5	0	0	2	0	0
Unknown Stimulants or Street Drugs	233	157	14	8	23	89	0	22	1	49	87	18	0	121	17	29	39	19	2
Mushrooms, Processed Preparations																			
Mushrooms, Processed Preparations: Amanita Containing	8	5	1	0	1	3	0	0	0	1	3	0	0	5	0	1	2	2	0
Mushrooms, Processed Preparations: Psilocybin Containing	13	12	1	0	4	7	0	0	0	4	7	1	0	11	3	6	0	0	0
Category Total:	79,478	48,759	15,242	7,629	7,962	16,030	83	1,422	391	29,160	15,946	553	2,170	28,202	6,206	11,009	10,767	1,481	183
Topical Preparations																			
Miscellaneous Topical Preparations																			
Acne Preparations	1,722	1,612	605	112	276	493	0	122	4	1,501	51	1	48	108	181	161	13	0	0
Boric Acid or Borates (As Antiseptics, Excluding Insecticides)	5,565	5,518	243	13	568	3,940	3	690	61	5,438	20	4	54	421	871	255	17	1	0
Calamine (Including All Caladryl Type Products)	1,147	1,117	666	42	14	333	2	59	1	1,093	11	2	6	86	149	127	6	0	0
Camphor	8,291	8,128	5,960	283	190	1,416	11	244	24	7,838	131	30	93	1,122	1,877	959	81	10	0
Camphor and Methyl Salicylate Combinations	907	888	503	48	22	258	1	53	3	849	12	2	24	112	195	109	10	0	0
Diaper Care and Rash Products	16,627	16,357	15,361	186	101	548	42	107	12	16,267	21	14	18	397	2,198	642	32	0	0
Hexachlorophene Containing Antiseptics	28	28	11	3	3	9	0	2	0	21	3	0	4	5	4	4	1	0	0
Hydrogen Peroxide 3% Iodine or Iodide Containing Antiseptics	6,532	5,991	1,482	291	331	3,266	7	589	25	5,643	213	39	63	630	552	1,161	57	4	0
Mercury Containing Antiseptics	1,215	1,126	156	62	92	678	0	126	12	986	69	8	56	177	198	160	18	1	0
Methyl Salicylate	27	25	8	0	1	15	0	0	1	23	1	0	1	7	5	3	1	0	0
Minoxidil, Topical	2,406	2,352	1,338	131	73	650	2	151	7	2,232	43	4	66	278	413	305	10	3	1
Other Types of Rubefacient or Liniment (Excluding Camphor and Methyl Salicylate)	274	261	83	2	7	142	1	25	1	218	17	0	24	77	61	35	19	3	0
Other Types of Topical Antiseptic	2,711	2,643	1,810	74	44	583	5	118	9	2,466	34	5	131	143	359	359	17	1	0
Podophyllin	1,942	1,864	579	90	56	967	4	158	10	1,743	54	4	45	230	262	243	30	2	1
Silver Nitrate	77	74	17	7	3	36	0	10	1	58	7	0	9	23	18	13	4	0	0
Topical Steroids (Including Otic, Ophthalmic, and Dermal Preparations)	87	70	18	4	17	19	1	11	0	57	3	1	8	17	7	20	3	0	0
	6,589	6,432	3,220	488	176	2,048	14	461	25	6,271	39	10	98	138	815	243	8	0	0

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated In		Outcome					
			Age					Reason				Treated In		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Topical Steroids in Combination with Antibiotics (Including Otic, Ophthalmic, and Dermal Preparations)	1,363	1,325	610	104	30	445	2	128	6	1,275	12	2	30	62	159	150	6	1	0
Wart Preparations and Other Keratolytics	942	925	400	94	42	327	4	53	5	850	18	5	47	143	111	167	22	0	0
Category Total:	58,452	56,736	33,070	2,034	2,046	16,173	99	3,107	207	54,829	759	131	825	4,176	8,435	5,116	355	26	2
Unknown Drug																			
Miscellaneous Unknown Drug																			
Miscellaneous Unknown Drugs	26,076	16,867	3,045	805	2,603	9,031	61	897	425	5,215	7,110	1,007	645	13,175	2,334	2,542	3,907	2,374	148
Category Total:	26,076	16,867	3,045	805	2,603	9,031	61	897	425	5,215	7,110	1,007	645	13,175	2,334	2,542	3,907	2,374	148
Veterinary Drugs																			
Miscellaneous Veterinary Drugs																			
Miscellaneous Veterinary Drugs without Human Equivalent	8,402	7,414	1,498	131	151	4,756	10	820	48	7,200	123	19	47	562	1,232	526	98	21	1
Category Total:	8,402	7,414	1,498	131	151	4,756	10	820	48	7,200	123	19	47	562	1,232	526	98	21	1
Vitamins																			
Miscellaneous Vitamins																			
Other Types of Vitamin	660	459	305	36	15	79	2	20	2	416	23	2	17	48	72	18	3	0	0
Unknown Types of Vitamin	703	512	368	57	20	48	2	17	0	455	37	1	17	51	78	11	5	1	2
Multiple Vitamin Liquids:																			
Adult Formulations																			
Multiple Vitamin Liquids:	6	5	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
Adult Formulations with Fluoride (No Iron)																			
Multiple Vitamin Liquids:	282	237	113	23	12	76	0	10	3	198	11	2	25	27	25	21	4	0	0
Adult Formulations with Iron (No Fluoride)																			
Multiple Vitamin Liquids:	7	4	2	0	0	2	0	0	0	3	1	0	0	0	0	0	0	0	0
Adult Formulations with Iron and Fluoride																			
Multiple Vitamin Liquids:	505	404	254	37	13	86	0	13	1	366	19	1	18	33	46	17	8	1	0
Adult Formulations without Iron or Fluoride																			
Multiple Vitamin Liquids:																			
Pediatric Formulations																			
Pediatric Formulations with Fluoride (No Iron)	90	82	81	1	0	0	0	0	0	82	0	0	0	2	5	1	0	0	0
Multiple Vitamin Liquids:																			
Pediatric Formulations with Fluoride (No Iron)																			
Multiple Vitamin Liquids:	431	408	388	13	2	4	0	1	0	398	1	0	9	32	68	21	0	0	0
Pediatric Formulations with Iron (No Fluoride)																			
Multiple Vitamin Liquids:	19	16	16	0	0	0	0	0	0	15	0	0	1	0	0	3	0	0	0
Pediatric Formulations with Iron and Fluoride																			

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age						Reason				Treated in				Outcome			
			Age						Reason				Treated in				Outcome			
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death	
Multiple Vitamin Liquids: Pediatric Formulations without Iron or Fluoride	800	733	645	68	8	8	3	1	0	714	9	0	0	10	49	94	22	2	0	0
Multiple Vitamin Tablets:																				
Adult Formulations	74	61	50	5	1	4	0	1	0	59	0	0	0	2	4	9	0	0	0	0
Multiple Vitamin Tablets: Adult Formulations with Fluoride (No Iron)	4,152	3,191	2,346	102	98	540	2	91	12	2,985	118	2	80	308	618	139	14	0	0	0
Multiple Vitamin Tablets: Adult Formulations with Iron (No Fluoride)	41	28	17	1	0	6	0	3	1	26	0	0	0	2	2	1	0	0	0	0
Multiple Vitamin Tablets: Adult Formulations with Iron and Fluoride	95	81	63	8	5	5	0	0	0	75	5	0	0	0	12	22	5	0	0	0
Multiple Vitamin Tablets: Adult Formulations with Iron Carbonyl (No Fluoride)	10,350	8,380	6,291	917	252	766	18	126	10	7,919	309	3	121	528	1,333	231	25	1	0	0
Multiple Vitamin Tablets: Adult Formulations without Iron or Fluoride																				
Multiple Vitamin Tablets: Pediatric Formulations																				
Multiple Vitamin Tablets: with Fluoride (No Iron)	86	82	72	9	0	1	0	0	0	78	3	0	0	1	2	17	1	0	0	0
Multiple Vitamin Tablets: Pediatric Formulations with Iron (No Fluoride)	3,147	2,911	2,549	276	38	37	3	6	2	2,851	45	0	12	205	540	171	12	0	0	0
Multiple Vitamin Tablets: Pediatric Formulations with Iron and Fluoride	16	15	14	1	0	0	0	0	0	15	0	0	0	0	1	2	0	0	0	0
Multiple Vitamin Tablets: Pediatric Formulations with Iron Carbonyl (No Fluoride)	38	35	32	3	0	0	0	0	0	35	0	0	0	0	2	3	2	0	0	0
Multiple Vitamin Tablets: Pediatric Formulations without Iron or Fluoride																				
Multiple Vitamin Tablets: Pediatric Formulations without Iron or Fluoride	15,745	14,845	12,404	2,120	191	82	27	14	7	14,413	379	0	24	516	2,134	348	9	0	0	0
Multiple Vitamins, Unspecified Adult Formulations																				
Multiple Vitamins, Unspecified Adult Formulations with Fluoride (No Iron)	9	8	8	0	0	0	0	0	0	8	0	0	0	0	0	2	0	0	0	0

(continued)

Table 22B. Demographic profile of SINGLE SUBSTANCE Pharmaceuticals exposure cases by generic category

	No. of Case Mentions	No. of Single Exposures	Age					Reason				Treated In		Outcome					
			Age					Reason				Treated In		Outcome					
			≤5	6-12	13-19	≥20	Unknown Child	Unknown Adult	Unknown Age	Unint	Int	Other	Adv Rxn	Health Care Facility	None	Minor	Moderate	Major	Death
Multiple Vitamins, Unspecified Adult Formulations with Iron (No Fluoride)	741	540	382	29	23	90	0	15	1	498	30	0	12	54	93	32	2	0	0
Multiple Vitamins, Unspecified Adult Formulations with Iron and Fluoride	14	9	4	1	0	4	0	0	0	8	1	0	0	1	2	1	0	0	0
Multiple Vitamins, Unspecified Adult Formulations without Iron or Fluoride	533	451	346	51	14	34	2	4	0	423	18	1	9	28	60	11	1	0	0
Multiple Vitamins, Unspecified Pediatric Formulations																			
Multiple Vitamins, Unspecified Pediatric Formulations with Fluoride (No Iron)	17	14	14	0	0	0	0	0	0	14	0	0	0	0	1	0	0	0	0
Multiple Vitamins, Unspecified Pediatric Formulations with Iron (No Fluoride)	68	63	58	2	2	1	0	0	0	62	1	0	0	2	9	5	0	0	0
Multiple Vitamins, Unspecified Pediatric Formulations without Iron or Fluoride	8	8	8	0	0	0	0	0	0	8	0	0	0	1	2	0	0	0	0
Multiple Vitamins, Unspecified Pediatric Formulations with Iron and Fluoride	706	654	542	92	8	5	7	0	0	637	16	0	0	19	92	15	1	0	0
Other Vitamins																			
Other B Complex Vitamins	4,963	2,863	2,062	180	70	461	6	72	12	2,634	104	2	107	278	457	81	14	1	0
Vitamin A	402	321	159	17	11	111	4	19	0	286	12	0	21	32	47	21	7	1	0
Vitamin B3 (Niacin)	591	429	95	9	21	263	0	39	2	210	34	1	182	77	23	115	17	1	0
Vitamin B6 (Pyridoxine)	440	286	221	12	7	30	1	11	4	262	9	0	13	22	56	14	3	1	0
Vitamin C	2,098	1,255	902	143	45	138	0	22	5	1,145	72	1	32	89	187	65	8	0	0
Vitamin D	10,191	6,793	4,362	424	253	1,524	10	203	17	6,497	182	4	91	734	1,077	254	42	1	0
Vitamin E	720	403	286	20	8	71	0	15	3	371	17	0	12	30	61	13	0	0	0
Category Total:																			
Pharmaceuticals Total:	58,748	46,586	35,463	4,658	1,117	4,476	87	703	82	44,171	1,456	20	818	3,189	7,236	1,638	177	8	2
	1,510,969	933,489	383,400	67,889	97,973	344,371	1,081	34,152	4,623	684,306	204,729	4,092	29,265	310,462	170,307	115,565	75,484	18,029	1,158
GRAND TOTAL (Nonpharmaceuticals + Pharmaceuticals):																			
	2,515,880	1,818,901	802,699	135,878	139,888	626,896	4,612	96,382	12,546	1,494,578	245,063	17,003	43,801	471,952	299,279	258,185	106,376	21,205	1,449

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APPENDIX C

Abstracts of Selected Cases

Selection of Abstracts for Publication

The abstracts included in Appendix C were selected for publication using a 3-stage process consisting of qualifying, ranking, and reading. Changes in place since the 2014 report for the selection of the top 200 cases: include all pregnant subjects with RCF 1-3, all pediatric cases aged 0-2 years old, double the weighting for all cases with autopsy reports, add a weighting for Age of subject (1/age in years), and a weighting for infrequency of substance category (Generic Code).

Qualifying cases were thus: Age 0-2 y/o, Pregnant, or RCF 1-Undoubtedly Responsible, 2-Probably Responsible or 3-Contributory. Fatalities by Indirect report were excluded beginning with the 2008 annual report. The ranking was based on Final Case Weighting (FCW).

$$\text{FCW} = f [1/(\text{num substances in this case}), \text{WCS}, 1/\text{Age (years)}, 1/(\text{num cases in that generic code this year})]$$

Where:

$$\begin{aligned} \text{Weighted Case Score (WCS)} = & \text{Hospital records} * 8.8 \\ & + \text{Postmortem} * 15.2 \\ & + \text{Blood levels} * 6.9 \\ & + \text{Quality/Completeness} * 6.4 \\ & + \text{Novelty/Educational value} * 13.2 \end{aligned}$$

WCS scores were normalized (z-score) within each America's Poison Centers' reviewer before the final weighting: 25% for each (1/NumSubstances, WCS, 1/Age, 1/NumCodes).

The WCS weighting factors were the averages of review team recommendations gathered in 2006.

The top ranked abstracts (200) were each read by individual reviewers who volunteered (See Appendix E) and the 2 managers (DAS and JBM). Each reader judged each abstract as "publish" or "omit" and all abstracts receiving 7 or more of 9 publish votes were selected, further edited, cross-reviewed by the 2 managers, 2 additional Fatality Review Committee members (Diane E Hindman and Susan M. Smolinske) and published in this report.

Abstracts

Abstracts of the cases were selected (see Selection of Abstracts for Publication, above) from the human fatalities judged related to an exposure as reported to US PCs in 2023. A structured format for abstracts was required in the PC preparation of the abstracts and used in the abstracts presented. Abbreviations, units and normal ranges omitted from the abstracts are given at the end of this appendix.

Case 76. Isopropanol and ethanol ingestion: contributory

Scenario/Substances: A 62 y/o female could not get up from the floor for 7 hours after alcohol ingestion. She called EMS who transported her to the ED.

Past Medical History: Alcohol use disorder, alcohol-induced cardiomyopathy.

Laboratory/Diagnostic Findings: Na 146 / Cl 90 / CO₂ <7 / BUN 35 / Cr 3.1 / Glu 126, lactate 9.2 mmol/L, CK 330, AST 83, bilirubin 2.9, ammonia 79 mcmmol/L. ABG-pH 6.92 / pCO₂ 24 / pO₂ 103 / HCO₃ 5. Serum APAP and salicylate not detected. Serum ethanol 155 mg/dL, isopropanol 24 mg/dL, acetone 46.4 mg/dL. CxR: evidence of aspiration, endotracheal tube in place. ECG: HR 123, QRS 100, QTc 610.

Clinical Course: In the ED she was initially conversant but appeared intoxicated. BP 130/62, HR 119, RR 22, O₂ sat 85% on ventilator, T 35.6°C. She began having coffee ground colored emesis and was unable to protect her airway so underwent endotracheal intubation. She was noted to be anuric with new AKI. Oxygenation was poor; consistent with aspiration pneumonia. She was started on a sodium bicarbonate infusion for the acidemia. The toxic alcohol panel was negative for ethylene glycol and methanol. The patient had significant hemodynamic compromise requiring multiple vasopressors and inotropic agents. Endoscopy revealed

no active bleeding, but a non-bleeding AVM was clipped. Based on the prognosis, the family opted for institution of comfort measures, and she died on Day 1. Cardiogenic shock was thought to be due to alcohol-induced cardiomyopathy in the setting of alcoholic ketoacidosis.

Autopsy Findings: Not performed.

Case 77. Acute ethanol/methanol ingestion: undoubtedly responsible

Scenario/Substances: A 62 y/o male was noted by family being altered and staggering after reportedly ingesting stove fuel. Family transported the patient to the ED, and it was later discovered that he took a combination of methanol, ethanol, and hydrocarbons.

Past Medical History: alcohol use disorder, methamphetamine use, and tobacco use.

Physical Exam: (HCF) BP 135/72, HR 95, RR 20, O₂ sat 90%, T 35.4°C. Ill-appearing unresponsive adult male, intubated, and sedated. Bilateral symmetric coarse mechanical breath sounds. Arrived sedated on propofol. GCS 3. Pupils 6mm and nonreactive to light bilaterally. No extraocular movements observed.

Laboratory/Diagnostic Findings: Na 141 / K 4.5 / Cl 98 / CO₂ 3 / BUN 28 / Cr 1.52 / Glu 353, lactate 9.3 mmol/L, AST 37, ALT 53, bilirubin 0.6, Phos 8.8, CK 60, beta-hydroxybutyrate 0.64 mmol/L, WBC 17.1 / Hgb 16.5 / Hct 55.8 / Plt 284, pH <6.6 initially but on follow up pH 6.98 / CO₂ 52 / pO₂ 96 / BE -19. Serum ethanol and ethylene glycol not detected, methanol 244 mg/dL, acetone 3.6 mg/dL.

Clinical Course: The patient was intubated upon arrival to the ED and given sodium bicarbonate and fomepizole. He was started on a sodium bicarbonate infusion at that time, transferred to a tertiary care center, and admitted to the medical ICU. He received IV thiamine, IV folic acid, and IV vitamin B₆. HD was started. On Day 3, methanol was 53.6 mg/dL. The patient received additional dialysis and on Day 4, methanol was recorded to be 24.8 mg/dL before becoming undetectable later that day after a final round of HD. He remained intubated with some movements of the extremities. The patient was extubated between Day 4 and Day 6 and was oriented only to self and following some commands. On Day 12, the patient developed respiratory distress and was reintubated. Head MRI showed hemorrhagic necrosis at the basal ganglia and subcortical white matter. Based on the prognosis, the family opted for institution of comfort measures, and he died on Day 15.

Autopsy Findings: Not available.

Case 99. Acute ethylene glycol (antifreeze) ingestion: undoubtedly responsible

Scenario/Substances: A 67 y/o male with was found unresponsive lying on his bed after a welfare check by police/EMS in which he was noted to have bowel and bladder incontinence, dilated pupils, but still breathing. Patient was last known well 24h prior. EMS administered naloxone with no response and performed BVM breathing for patient en route to the ED. BP 158/85, HR 94, O₂ sat 98%. The patient was intubated with etomidate and rocuronium in the field and remained obtunded on no sedation.

Past Medical History: GERD, anxiety, tobacco smoker, former ethanol drinker, periodontal disease s/p full mouth teeth removal. Home medications: omeprazole.

Laboratory/Diagnostic Findings: Na 146 / K 6.3 / Cl 100 / CO₂ 5 / BUN 23 / Cr 1.4 / Glu 102 / AG 41, serum Osm 486, OG 180, Ca 9.1, Ca (ionized) 1.18, lactate (9h) 12.8, AST 35, ALT 22, bilirubin 0.3. INR 1.3, CK 1,699, WBC 12.5 / Hgb 19.2 / Hct 62.4 / Plt 446, VBG-pH 6.8 / pCO₂ 51 / HCO₃ 8. Serum APAP, ethanol, methanol, and salicylate were not detected. Ethylene glycol 317 mg/dL. UDS was negative. Urinalysis was positive for large blood, 2 RBC, 100 protein. ECG: NSR, HR 94, QRS 126, QTc 525, RBBB, inferior infarct. Head CT, cervical spine CT, and CxR were unremarkable.

Clinical Course: In the ED BP 118/78, HR 47, RR 20, T 33.5°C, GCS 3. 2+ pulses were present, no brainstem reflexes, on no sedation, chapped

lips, appeared dry. Hour 4 the patient developed bradycardia to the 20s and then coded with ROSC achieved after 2 min of CPR and epinephrine push. 7 h into the ED course, the patient developed worsening acidemia; ABG-pH 6.6 / pCO₂ 87 / pO₂ 518 / HCO₃ 8 with "gas" lactate of 29.7, and serum lactate of 12.8. He remained obtunded without any brainstem reflexes and not on any sedation while intubated. During the ED course, the patient also received multiple amps of sodium bicarbonate, calcium chloride, and was started on vasopressor and sodium bicarbonate infusions, along with IVF resuscitation and broad-spectrum IV antibiotics although blood cultures eventually showed no growth. Repeat ECGs: QTc narrowed to 460s and QRS to 90s; RBBB and inferior infarct no longer present. The patient was subsequently started on IV fomepizole, folate, pyridoxine, thiamine, and urgent intermittent HD interspersed by CRRT about 12–13 h into the ED course, but he also required multiple maximum dose vasopressors due to hemodynamic instability. He had eventual improvement of pH to 7.3 about 28 h from presentation. Hospitalization was complicated by hypocalcemia, requiring repeated replacements with calcium gluconate, as well as subclinical focal seizures, and then a clinical seizure on Day 2 that was treated with benzodiazepines, propofol infusion, and valproate. The patient had resolution of his anion and osmolar gaps, and he was weaned off all vasopressors and sedation on Day 3 with no further seizures thereafter. TTE was unremarkable with LVEF 54%. Ethylene glycol became undetectable on Day 4 and fomepizole was discontinued. Later in the hospital course, the patient had intermittent junctional bradycardia from presumed diseased sinus node due to presumed anoxic brain injury versus toxic metabolite but without evidence of high-grade conduction block, and his vitals remained normal with resumption of a dopamine infusion. He continued to receive intermittent HD during the entire hospital course due to anuria, but his creatinine continued to rise to 9.2 and BUN to 124. A brain MRI brain on Day 13 showed T2/Flair signal abnormality predominantly within white matter, involving both cerebral hemispheres, cerebellum, deep nuclei, and brainstem suggestive of toxic leukoencephalopathy. Due to the very poor neurological prognosis and neurologic exam consistent with vegetative state, the patient was extubated and pronounced dead on Day 14.

Autopsy Findings: Not performed.

Case 103. Acute disc battery ingestion: undoubtedly responsible

Scenario/Substances: An 11 m/o female was playing with one of her siblings in the living room. Her father picked her up and put her in her playpen where she napped for about 90 min. She awakened, pulled herself up to a standing position in the playpen, and then started coughing up blood. Her father removed her from the playpen and called 911. EMS found her in respiratory distress and coughing blood. EMS performed 20 min of CPR enroute, including epinephrine x 4.

Past Medical History: Seen at an ED 10 days prior to this event for a low grade fever and wheezing. Mom described her as having coughing and distress due to very thick mucus for 2–3 days before going to the ED. She was diagnosed with stridor and given steroids, breathing treatments, and discharged. X-rays were not performed. She took ibuprofen and APAP after discharge from the ED, and her symptoms subsided except for an occasional cough. Bowel movements were reported to be normal except for the last diaper change where parents reported loose, slightly darker stool, but denied any blood. She was developmentally appropriate for her age. No home medications.

Clinical Course: In the ED, she was coughing, gagging, and vomiting blood. Five hundred mL of blood was suctioned from her mouth and another 200–300 mL of blood by NG tube. She was given 2 units of blood, and resuscitation was ceased during the 3rd unit. X-ray confirmed lodgment of a 2 cm disc battery in the upper third of the thoracic esophagus. Death was pronounced after failing to achieve ROSC.

Autopsy Findings: Ulceration, necrosis, and perforation of tracheoesophageal septum. Distal airway contained abundant necrotic debris and admixed gelatinous purple coagulant extending through the bilateral main-

stem bronchi and into the pulmonary parenchyma. Esophagus was dissected to reveal a coin-shaped battery impacted vertically within the septal soft tissue, surrounded by necrotic ulcer site changes with a focal perforation extending from the esophagus into the underlying tracheal mucosa, approximately 1.5 cm superior to the level of the carina. Foreign body pocket demonstrated extensive peripheral fibrosis and necrotic debris.

Cause of death: complications of esophageal foreign body (coin battery).

Case 106. Acute envenomation (*Solenopsis saevissima*): undoubtedly responsible

Scenario/Substances: A 32 y/o female presented in anaphylactic cardiac arrest after exposure to a fire ant mound.

Past Medical History: depression, fibromyalgia, chronic kidney disease, chronic low back pain, arrhythmia.

Laboratory/Diagnostic Findings: Cr 0.92, Ca 7.3, AST 75, ALT 59, CPK 889, WBC 21. Head CT unremarkable. TTE unremarkable. EEG: myoclonic status epilepticus. MRI: consistent with anoxic brain injury.

Clinical Course: BP 144/84, HR 94, RR 20, O₂ sat 100% on 25% FiO₂ on ventilator. Initial examination: intubated, sedated, responds to painful stimuli in extremities. Patient was initiated on targeted-temperature management protocol after ROSC. She received steroids, diphenhydramine, and was maintained on epinephrine infusion and sedation while intubated. On Day 2 she developed seizure-like activity and myoclonic status epilepticus confirmed on EEG. Midazolam and propofol were administered for seizure control. The patient died 6 days after exposure.

Autopsy Findings: Not available.

Case 107. Acute *Phyllomedusa bicolor* dermal exposure: undoubtedly responsible

Scenario/Substances: A 35 y/o female was taken to a remote campsite to participate in a Kambo ritual. She became afraid, and another person held her down while the frog secretions were applied to burns made to her ankle and leg. She began vomiting violently for about 90 min and complained of severe headache, so EMS was called, and she was transported to the ED.

Past Medical History: No chronic conditions or prescribed medications known.

Physical Exam: (Final HCF) BP 68/37, HR 97, T 33.2°C, O₂ sat 99% on 30% FiO₂. Not diaphoretic, moist axilla. Intubated but unresponsive without sedation. Pupils 6 mm bilaterally, fixed.

Laboratory/Diagnostic Findings: Na 123 / K 3.1 / Cr 0.75 / Glu 337 / AG 18, lactate 6.6 mmol/L, Ca 7.3, troponin 2.58, WBC 17.7 / Hgb 12.3 / Plt 265, VBG-pH 7.2 / pCO₂ 31. CxR: bilateral infiltrates. ECG: QRS 114, QTc 505. Head CT showed cerebral edema.

Clinical Course: On arrival to the ED she was obtunded, hypotensive, hypothermic, and exhibited left-sided deficits and dysarthria. A stroke code was called, head CT indicated cerebral edema, and she was transferred to a tertiary care center. At the receiving hospital she was intubated and mechanically ventilated. IVF and vasopressors were started for hypotension, and hypertonic saline was administered to reduce ICP. She was admitted to the ICU where the next morning another vasopressor was added, empiric antibiotics were started, and potassium and magnesium were repleted (BP 80/40s, MAP 70). Lack of cerebral blood flow was confirmed. Based on the prognosis, the family opted for institution of comfort measures, and she died approximately 30 h post exposure.

Autopsy Findings: The skin of the back and right ankle region demonstrates small round superficial lesions which have an appearance suggesting superficial thermal injury; no other trauma is identified. The brain demonstrates edema/swelling and features of acute hypoxic-ischemic encephalopathy. The acute bronchopneumonia was likely a result of aspiration of emesis. Cause of death: presumed Kambo toxicity. Manner of death: accidental.

Assessment: The exact mechanism of death is not certain. The secretion of the frog reportedly used in the therapy (*Phyllomedusa bicolor*) has

multiple active substances that have varying effects on the body including hypotension and electrolyte disturbances.

Case 108. Acute envenomation (*Loxosceles reclusa*): undoubtedly responsible

Scenario/Substances: A 37 y/o female was bitten on the thigh by a brown recluse spider and presented to a local ED the next day with complaints of fever, chills, nausea, and vomiting. She brought the spider in with her, and it was identified as a brown recluse.

Past Medical History: Renal stones.

Laboratory/Diagnostic Findings: CO₂ 16 / BUN 9.0 / Cr 0.76, lactate 2.2, PT 14.4, INR 1.28, haptoglobin <30, AST 103, ALT 69, bilirubin 2.4, LDH 555, WBC 5.0 / Hgb 14.0 / Hct 39.6, VBG-pH 7.13. UDS was negative. Initial abdominal/pelvis CT was unremarkable. Abdominal ultrasound showed hepatic steatosis with no evidence of cholecystitis or cholelithiasis.

Clinical Course: In the ED, BP 97/56 (on norepinephrine), HR 109, RR 29, T 35.6°C, and O₂ sat 85% on 15L via nonrebreather. The patient was initially treated with fluids, her wound cleaned, and given unspecified supportive care. She rapidly developed hemolytic anemia, hyperbilirubinemia, lactic acidosis, hypotension, tachycardia, labored breathing, and altered mentation. She was given high dose steroids, intravenous antibiotics, sodium bicarbonate, vasopressors, and oxygen. The wound on her thigh continued to worsen with evidence of necrosis. She was placed on 100% oxygen via non-rebreather and received benzodiazepines. The patient denied blood products due to religious beliefs. Over the next 5 days, Hgb/Hct progressively decreased to 3.5/10.7 before becoming undetectable. AST/ALT showed transient minimal increases (143/118), but WBC increased to 73, bilirubin to 36.9, BUN to 31, Cr to 1.4, lactate to 19.6, and LDH to 1,642. CO₂ decreased to 6. PT/INR remained stable at 15.4/1.4 as did the VPG-pH at 7.2. She was transferred to a tertiary care center on HD 6 due to the progressive decline with aggressive hemolytic anemia requiring 3 vasopressors for blood pressure support. She also had nephrotic proteinuria, muddy brown sediment in her urine, and anasarca. She continued to receive high dose steroids, one dose of eculizumab, epoetin-alfa, thiamine, and glycopyrrolate. Plasma exchange and hyperbaric oxygen were ruled out as was endotracheal intubation due to the risks. Hemoglobin-based oxygen carriers were unable to be obtained in a timely manner. Based on the prognosis, the family opted for institution of comfort measures, and she died on Day 7.

Autopsy Findings: Cause of death: Multiorgan failure, severe hemolytic anemia, and shock due to brown recluse spider bite. Manner of death: Natural.

Case 109. Acute envenomation (*crotalinae*), ethanol ingestion: undoubtedly responsible

Scenario/Substances: A 47 y/o male was found in the middle of the road unresponsive after likely being bit by a rattlesnake on his right hand. Police shot but did not identify the snake. He had a cardiac arrest with ROSC on scene after CPR, sodium bicarbonate, and epinephrine.

Physical Exam: 2 puncture wounds on his right hand with significant bleeding and edema, unresponsive, GCS 3.

Laboratory/Diagnostic Findings: Na 155 / K 2.9 / Cl 123 / CO₂ 16.1 / BUN 7 / Cr 1.1 / Glu 140, lactate 13.5 mmol/L; Hgb 5.8 / Hct 17 / Plt 10; PT 35.1, INR 3.2, aPTT 110.2, CK 2391, ABG-pH 6.8 / pCO₂ 82.7 / pO₂ 29.2 / HCO₃ 14.4 / BE -17.6, serum ethanol 194 mg/dL. UDS positive for THC. Head CT: diffuse anoxic brain injury with loss of gray-white differentiation and significant swelling.

Clinical Course: The patient had 2 more cardiac arrests and received ACLS with CPR, epinephrine, sodium bicarbonate, atropine, and IV amiodarone. He was intubated and started on continuous IV dopamine, epinephrine, vasopressin, and norepinephrine. On Day 2, he was transferred to a tertiary care facility. He received 20 total vials of IV Crotalidae immune F(ab')₂ (equine). He received 3 units of Plt and 4 units of cryoprecipitate. Systolic BP was 40 despite maximum dose of 4 vasopressors,

and his pupils were fixed and dilated. Based on the prognosis, comfort measures were instituted, and he died on Day 2 from AKI, hypovolemic shock, and acute hypoxic respiratory failure.

Autopsy Findings: Not performed.

Case 110. Acute envenomation (*Agkistrodon*): undoubtedly responsible

Scenario/Substances: A 41 y/o male was bitten by his pet copperhead snake on the dorsum of the left hand. Shortly thereafter he had a witnessed collapsed 10 min prior to EMS arrival. EMS found him in cardiac arrest with VF and initiated resuscitative measures including defibrillation. These measures continued until approximately 15 min after ED arrival at which time ROSC was achieved.

Past Medical History: Multiple pet copperhead snake bites with anaphylactic reactions requiring resuscitation.

Physical Exam: The patient had been intubated and placed on the ventilator, with BP 89/61 (on phenylephrine and norepinephrine), HR 71, O₂ sat 100% on 50% FiO₂. The dorsum of the left hand had moderate swelling to the wrist, with no bleeding or bruising. Two puncture marks, ½ inch apart, were noted near the fourth finger.

Laboratory/Diagnostic Findings: Na 142 / K 4.4 / Cl 102 / CO₂ 14 / BUN 11 / Cr 1.8, AST 117, ALT 143, CK 144, PT 11.9, PTT 7, INR 1.13, fibrinogen 224 mg/dL, troponin 7 (reference 0–78), WBC 8.3 / Hgb 15.1 / Plt 236. ECG: HR 67 NSR, PR 222, QRS 97, QTC 462, left atrial enlargement, left anterior fascicular block, early R wave transition.

Clinical Course: The patient was given 6 vials of Crotalidae polyvalent Fab early in his ED course. Over the first few hours, phenylephrine was discontinued, and subsequently epinephrine was discontinued. However, the patient again became hypotensive with BP 70/40. Vasopressor therapy was reinstituted, and the patient was given another six vials of the same antivenom. Although the exact time course was not noted, the vasopressors were again discontinued, and blood pressure remained stable. The patient also received targeted temperature management / hypothermia protocol early in his hospital course. Three days after presentation, it was noted that there was almost no swelling of the left hand and arm. The remainder of his hospital course was notable for continued poor neurologic response. A head CT on Day 4 post-presentation revealed ischemic changes of the left frontal basilar ganglia. A head MRI on Day 5 post-presentation revealed anoxic brain injury and ischemic stroke. A head CT on Day 7 post-presentation revealed a large bleed. The patient died 24 days after presentation.

Autopsy Findings: Not performed.

Case 111. Acute hymenoptera bite/sting: undoubtedly responsible

Scenario/Substances: An 81 y/o male was mowing his lawn on a riding mower when a swarm of bees attacked him. His wife tried to assist using bee spray and was also attacked. She made it inside a vehicle and drove 12 miles for help before collapsing. EMS found the husband inside his house, unresponsive, but still breathing and “covered from head to toe with bee stingers”. EMS administered epinephrine and transported him to the ED.

Past Medical History: Hyperlipidemia, HTN and CVA. Home medications: docusate, aspirin, pregabalin, lisinopril, acetaminophen, atorvastatin, omeprazole, hydrochlorothiazide, and potassium chloride.

Clinical Course: In the ED he had mild wheezing and altered mental status. BP 207/128, HR 68, RR 16, O₂ sat 99% on vent, T 36°C. He was intubated, and steroids, diphenhydramine, famotidine, and IV epinephrine were administered. No significant airway edema was noted. CK 2,246, lactate 6.10 mmol/L, troponin 1.28. ECG: no ischemic changes. He was transferred to a tertiary care center where he was hemodynamically stable without vasopressors. Swelling of the face and neck were noted. Na 143/ K 3.0/ Cl 110 / CO₂ 20 / BUN 28 / Cr 1.40 / Glu 229, AST 105, ALT 23, bilirubin 1.00, WBC 38.7 / Hgb 17.2/ Hct 54.4/ Plt 309, PT 17.3, INR 1.4, aPTT 75.6. ABG-pH 7.34 / pCO₂ 39.8 / pO₂ 240 / HCO₃ 21.4 / BE

-4.2. Propofol was initiated, IVF continued, and he was admitted to the ICU. Head CT showed no intracranial hemorrhage or mass effect; chest CT showed no evidence of pulmonary embolism. Leukocytosis was attributed to toxic effect as sepsis workup was negative. Hour 2 at the second facility, he developed VF and had no palpable pulse. CPR was initiated per ACLS including epinephrine, sodium bicarbonate, calcium chloride, and amiodarone without ROSC. He died ~7h post-exposure.

Autopsy Findings: Not performed.

Case 113. Acute magnesium hexafluorosilicate ingestion and methamphetamine: undoubtedly responsible

Scenario/Substances: A 57 y/o male developed severe abdominal pain after accidentally ingesting magnesium hexafluorosilicate cement hardener that had been stored in a secondary container. He vomited several times en route to the ED. He also admitted to methamphetamine use prior to arrival.

Past Medical History: Stimulant use, tobacco use.

Physical Exam: (HCF) BP 99/74, HR 104, RR 33, O₂ sat 97% RA, T 36.7 °C. Dehydrated, unkempt, uncooperative, agitated. Tachycardic with epigastric tenderness.

Laboratory/Diagnostic Findings: Na 141 / K 5.3 / Cl 96 / CO₂ 14.4 / BUN 29 / Cr 2.0 / Glu 199 / AG 35.9, Ca <5.0, AST 59, ALT 26, bilirubin 2.3, WBC 11.9 / Hgb 16.6 / Hct 51.5 / Plt 306, d-dimer 18.09. UDS was positive for amphetamines.

Clinical Course: He received lorazepam for agitation and briefly calmed down. He rapidly became more hypotensive, 10min thereafter became bradycardic, and suffered a PEA cardiac arrest 49min after initial vital signs were documented. He was given multiple rounds of epinephrine in addition to sodium bicarbonate, calcium chloride, flumazenil, and naloxone. ROSC was never obtained, and he was pronounced dead after 30min of CPR.

Autopsy Findings: Not available.

Case 115. Acute sodium nitrate ingestion: undoubtedly responsible

Scenario/Substances: A 14 y/o female was found down while making a social media post stating she was going to kill herself using sodium nitrate.

Past Medical History: Home medications: sertraline.

Clinical Course: In the ED she was in cardiac arrest, intubated, and with CPR in progress. She received several rounds of epinephrine, atropine, bicarbonate, and was started on dopamine infusion but continued to have episodes of PEA. Methylene blue was recommended, but it is unknown if it was given. The patient died 20min after ED arrival.

Autopsy Findings: Antemortem drug blood: sertraline 43ng/mL (therapeutic 32–206ng/mL), desmethylsertraline 56ng/mL, nitrate/nitrite qualitative urine test positive (>1000mmol/L). Cause of death: acute sodium nitrate intoxication.

Case 118. Acute sodium nitrite ingestion: undoubtedly responsible

Scenario/Substances: A 17 y/o male told his mother to call EMS because he ingested poison, a teaspoon of sodium nitrite. He subsequently had a syncopal event and vomited. When EMS arrived, the patient was asystolic. They administered epinephrine and naloxone. The patient had a brief ROSC en route to the hospital.

Physical Exam: Pulseless and apneic on presentation. Cyanotic, pupils fixed, and nonreactive, GCS 3.

Clinical Course: The patient presented to the ED cyanotic and in cardiac arrest. He received a total of 6mg/kg of methylene blue, several doses of epinephrine, and CPR for approximately 1h. The patient became asystolic and was pronounced dead.

Autopsy Findings: Significant pulmonary vascular congestion was noted. The GI tract was noted to have blue-purple and brown staining and

fluid. Nitrate/nitrite concentrations were noted to be greater than 1000mol/L. Presumed positive caffeine and naloxone were also detected. Cause of death: self-induced sodium nitrite intoxication. Manner of death: suicide.

Case 128. Acute sodium hydroxide inhalation, ocular and dermal: undoubtedly responsible

Scenario/Substances: A 21y/o male was exposed to a workplace explosion at a lye factory resulting in traumatic injuries and mixed chemical/thermal burns. He underwent extensive decontamination, was intubated and sedated prior to transfer to a tertiary care center.

Past Medical History: Previously healthy.

Laboratory/Diagnostic Findings: Na 143 / K 3.7 / HCO₃ 29 / BUN 15 / Cr 0.8 / Glu 108 / Ca 7.9, CK 550, ABG-pH 7.39 / pCO₂ 52 / HCO₃ 32. CxR with bilateral opacities, progressively worsening over hospitalization concerning for ARDS.

Clinical Course: BP 124/53, HR 101, O₂ sat 98% on ventilator, T 38.5°C. Mixed chemical and thermal burns over right face/neck, bilateral upper extremities, chest, and groin with estimated 40–50% TBSA partial and full-thickness injuries. Endoscopy revealed grade 3b esophageal injuries with grade 2–3 inhalation injuries. Continuous corneal and conjunctival irrigation was performed over several days without improvement in corneal pH. The patient underwent fluid resuscitation, wound care, and extensive debridement in the operating room. His hospital course was complicated by persistent hyperthermia recalcitrant to cooling blankets and antipyretics. Based on the prognosis, comfort measures were instituted, and he died on Day 5.

Autopsy Findings: Not performed.

Case 134. Acute sodium nitrite ingestion: undoubtedly responsible

Scenario/Substances: A 24 year old male called 911 stating he ingested sodium nitrite in a self-harm attempt. EMS found the patient seizing and unresponsive. He received midazolam for seizures and jaw clenching.

Past Medical History: Depression, prior suicidal ideation, self-harm behaviors

Laboratory/Diagnostic Findings: Na 142 / K 3.6 / CO₂ 19 / BUN 22 / Cr 0.9 / Glu 236 / AG 20, VBG-pH 7.21 / pCO₂ 25 / pO₂ 47 / HCO₃ 10, COHgb 1.6, MetHgb >30. ECG: HR 97, QRS 124, QTc 480.

Clinical Course: In the ED, BP 69/40, apneic, and being manually ventilated. His BP increased to 114/60. His blood was chocolate brown. He had a PEA arrest while being intubated. ROSC was achieved in 20min. He was given IVF, O₂, norepinephrine, calcium chloride, epinephrine, etomidate, hydromorphone, midazolam, propofol, and sodium bicarbonate. He received methylene blue (2mg/kg) with improved color, BP 132/88, HR 87. Two hours after exposure, CO₂ 14, AG 27, AST 293, ALT 209, lactate 14.4mmol/L. The patient was cooled, given insulin for Glu >200, and vecuronium for shivering. His 6-hour MetHgb was 3.0, arterial HCO₃ 26, and lactate 5.8mmol/L, off vasopressors. He developed a transient alkalosis (VBG-pH 7.50 / pCO₂ 29 / HCO₃ 23). On Day 2, after rewarming, the continuous EEG showed episodes of epileptiform waves. Propofol was increased and levetiracetam was added. Head CT without contrast on Day 4 showed extensive diffuse cerebral edema with intracranial mass effect and downward pressure on the brainstem, but no hemorrhage. Pupils were 3mm and nonreactive. He had no cough, but flaccid extremities to noxious stimuli. He also had LLL pneumonia with MRSA that required antibiotics, and increased oxygen demands. Mannitol was given and vasopressors were again needed. An MRI on day 5 was consistent with global anoxic brain injury. Based on the prognosis, the family opted for institution of comfort measures, and he died on Day 6.

Autopsy Findings: Toxicology: Nitrate/nitrite positive on premortem hospital plasma (>1000 mcmol/L, qualitative by colorimetry). Cause of death: methemoglobinemia due to sodium nitrite ingestion. Manner of death: suicide.

Case 148. Acute diethylene glycol ingestion: probably responsible

Scenario/Substances: A 42 y/o male ingested diethylene glycol chafing fluid as a suicide gesture.

Past Medical History: Schizophrenia, bipolar, suicidal ideation with prior attempts.

Laboratory/Diagnostic Findings: K 4.3 / CO₂ 17 / AG 19, AST 99, ALT 97, ABG-pH 7.4.

Clinical Course: Patient presented to ED uncooperative and complained of abdominal pain. The patient's abdominal pain and nausea/vomiting persisted; an EGD showed mild ulcerations. He had increasingly abnormal labs reflecting AKI and worsening metabolic acidosis. Cr 4.97, BUN 40, HCO₃ 13 (17 after sodium bicarbonate infusion), K 4.1, Na 133, CK 107. NAC was started. pH 7.28, WBC 20.9. UA: WBC >40, protein >500, >100 RBC, Glu >500. Fomepizole was given, but dialysis not started. Cr rose to 9.5, BUN 76, and urine output declined. He was progressively confused. On Day 2, AST 327 ALT 331 bilirubin 0.4. Ethylene glycol and methanol levels were not detected. Non-contrast CT of abdomen was unremarkable. Day 3 Cr 12.1, K 4.3, Phos 6, CK 69, CO₂ 15. LFTs were in the 200s with normal vital signs. He was uncooperative; lorazepam and haloperidol were given. HD began the evening of Day 3 and was repeated Day 4. Cr 8.8, K 3.7, Pho 5.5, CO₂ 25, ALT 280, AST 343. Day 5, AST 395, ALT 453. Day 6 he developed cerebral ischemia. Day 7, he was severely altered and tore out the HD line from his neck, was bleeding profusely, and had PEA arrest. He was resuscitated after 10 min of CPR and readmitted to the ICU where he was non-responsive with posturing. He was intubated and sedated with propofol and dexmedetomidine, became hypertensive and tachycardic, and was placed on a nicardipine infusion. HD was restarted. Day 9, during a sedation vacation his pupils remained nonreactive bilaterally, and he had no cough or gag reflexes. The nicardipine infusion was discontinued. Based on the prognosis, comfort measures were instituted, and he died on Day 17.

Autopsy Findings: External exam: skin had a diffuse, light yellow hue with diffuse subcutaneous soft tissue edema. No toxicology testing was performed. Cause of death: complications of intentional self-inflicted acute lighter fluid ingestion. Manner of death: suicide.

Case 149. Acute cyanide, arsenic, and tetrahydrozoline ingestion: undoubtedly responsible

Scenario/Substances: A 43 y/o female reported dizziness, headache, lethargy, and nausea for ~10 days. She was seen at an outside hospital ED where she was evaluated and subsequently discharged with no clear cause of her symptoms. Three days later she re-presented to the same ED with similar symptoms including extreme fatigue, syncope, confusion, episodes of vomiting, and was admitted for 5 days with no clear etiology at discharge. The day after discharge, she presented to a second ED with her husband at her side, with reports of worsening dizziness, headache, slowed responsiveness, blurred vision, and diffuse "tingling". She worked as a secretary at her husband's dental office.

Past Medical History: Sinus infections and allergy-associated asthma. Azithromycin for sinusitis.

Laboratory/Diagnostic Findings: AST 25, ALT 12, ABG-pH 7.5, COHgb 1, MetHgb 1.5. Serum APAP, ethanol, and salicylate not detected.

Clinical Course: In the second ED she was conversant and had a normal physical exam other than somnolence. VS unremarkable, basic metabolic panel and complete blood count were WNL, and VBG showed alkalemia. At hour 1.5, the husband reported patient was complaining of arm pain. The nurse found the patient to be having tonic-clonic seizures with agonal breathing. Seizures resolved within minutes, but she developed hypotension despite receiving IV fluids. BP 80/15, HR 85, RR 20 increasing to 30s, nonhypoxic, T 36.6°C. K 3.1, CO₂ 12, Cr 0.78, AG 18, ABG-pH 7.091 / pCO₂ 32 / HCO₃ 11, lactate 14.9mmol/L. Vasopressors were started. Over the next hour, the patient developed worsening tachypnea and hypoxia despite supplemental oxygen, and her mental status was poor. She was intubated after multiple attempts. She became pulseless and CPR was initiated; ROSC was achieved, but she required escalating vasopres-

sor requirements with epinephrine, norepinephrine, and vasopressin to maintain BP. CT with angiography of the head and neck showed diffuse cerebral edema with no evidence of herniation. She received hypertonic saline and mannitol, then was admitted to the ICU. An intracranial pressure monitor showed severely elevated intracranial pressures. The patient's brother reported that the patient's husband had recently received a shipment of potassium cyanide to the dental practice. A cyanide blood sample was obtained, and the patient received IV hydroxocobalamin. Mild improvement in BP was noted after hydroxocobalamin along with down-titration of her vasopressors. Pupils were 3mm and sluggishly reactive, not moving extremities to painful stimuli, no clonus, no rigidity, and no hyperreflexia. On Day 1, she was without brainstem reflexes, continued to have severely elevated intracranial pressures, and an EEG showed lack of neurologic function. On Day 2 she was declared brain dead. The patient remained on life support for organ procurement. Support was withdrawn, and the patient died on Day 4.

Autopsy Findings: Marked cerebral edema and hypoxic-ischemic neuronal injury (secondary brainstem hemorrhages), ischemic liver injury, and early bronchopneumonia. Antemortem blood cyanide 1.7mcg/mL (early Day 1), 3.7mcg/mL (late Day 1), not detected on previous hospitalization. Blood arsenic 68mcg/L (early Day 1), 330mcg/L (previous hospitalization). Blood tetrahydrozoline 95ng/mL (early Day 1). Postmortem hepatic arsenic 0.61mcg/g. Cause of death: mixed cyanide, tetrahydrozoline, and arsenic poisoning. Manner of death: homicide.

Case 160. Acute ammonia inhalation, ocular, dermal: undoubtedly responsible

Scenario/Substances: A 64 y/o male was working on his farm when there was an anhydrous ammonia explosion. He sustained chemical burns to his back, flank and bilateral upper extremities and thighs, reported to be 30–39% body burns. Family brought him to the ED where he exhibited respiratory distress but was ambulatory and talking

Physical Exam: Respiratory distress with 20–29% body burns.

Laboratory/Diagnostic Findings: Cr 1.31.

Clinical Course: In the ED intubation was unsuccessful due to severe airway edema, and a cricothyroidotomy was performed. He was airlifted to a tertiary care center, and then flown to a regional burn center. In addition to skin involvement, the patient had bilateral alkali chemical burns of the eyes requiring steroids and antibiotics. He received multimodal analgesia and sedative infusions to manage pain. Glucose was elevated and he received insulin throughout his course. On Day 1 a tracheostomy was performed, and he required vasopressors for hypotension. On Day 3 he received biologic corneal bandages for his eyes, and cadaver skin grafts on Day 3 and 5 along with multiple surgeries to manage dermal burns. He received repeated albuterol via integrated device therapy (lung expansion, secretion clearance, and aerosol delivery) along with serial diagnostic and therapeutic bronchoscopy through his hospital course that showed diffuse inflammation with sloughing mucosa. He had intermittent fevers and leukocytosis with blood cultures positive for coagulase-negative staphylococcus and a back swab positive for candida albicans. He received multiple antibiotics and antifungals. On Day 9, an IVC filter was placed for DVT management as an evolving GI bleed limited the ability to treat with anticoagulation. On Day 11 his Cr increased to 2.13. On Day 20 he became increasingly ill with declining kidney function, hyperkalemia, hemodynamic instability, and evidence of sepsis. CRRT was initiated, his BP dropped rapidly, and he had a pulseless accelerated idioventricular rhythm; VBG-pH <6.7 / CO₂>100. After 6 rounds of ACLS the family agreed to discontinue resuscitation, and he died on Day 21.

Autopsy Findings: Not performed.

Case 182. Acute butane/ethanol inhalation: probably responsible

Scenario/Substances: A 10 y/o male was found alone in his bedroom, in PEA arrest and unresponsive. Three cans of body spray were found near him. EMS performed CPR and he was transferred to the ED.

Laboratory/Diagnostic Findings: Na 140 / K 4.2 / Cl 106 / CO₂ 10 / BUN 12 / Cr 0.89 / Glu 286 / AG 24, lactate 12.2 mmol/L, AST 668, ALT 575, bilirubin <0.2, INR 1.5, troponin I 2,279 ng/mL. CK 16,306, ABG-pH 6.96 / pCO₂ 61 / pO₂ 102 / HCO₃ 14. Serum APAP, ethanol, and salicylate not detected. UDS was negative.

Clinical Course: In the ED BP 112/70, HR 136, O₂ sat 98% intubated on FiO₂ 60%, T 36.3°C. He received three rounds of epinephrine. His pupils were noted to be fixed and dilated, and he did not have a cough or gag reflex. He was transferred to the ICU, put on an oscillator ventilator in prone position. He did not require sedation or have any spontaneous movements. He was started on levetiracetam. Other therapies given included epinephrine and vasopressin (presumably for hypotension), potassium, phosphorus, insulin, milrinone. Head CT showed cerebral edema. After brain death exams were performed, he was pronounced dead on Day 2.

Autopsy Findings: Not available.

Case 183. Acute hand sanitizer (methanol) ingestion: undoubtedly responsible

Scenario/Substances: A 19 y/o male ingested a hand sanitizer possibly contaminated with methanol.

Past Medical History: Alcohol use disorder.

Physical Exam: BP 90/50, HR 121

Laboratory/Diagnostic Findings: Na 143 / K 5.4 / Cl 99 / CO₂ 5 / BUN 17 / Cr 1.6 / Glu 192, serum Osm 357, OG 55, WBC 17.4 / Hgb 15.9 / Hct 48 / Plt 302, ABG-pH 6.94 / pCO₂ 15.9 / HCO₃ 3.3. Serum APAP, ethanol, and salicylate not detected. Methanol 105 mg/dL.

Clinical Course: On presentation, he was vomiting, had dyspnea, and then had two seizures that were treated with lorazepam and levetiracetam. He then became hypoxic and was intubated. Shortly after he had a PEA arrest and was revived after 10 min of CPR and epinephrine. After transfer to another hospital, he was given sodium bicarbonate, norepinephrine for hypotension, fomepizole, thiamine, and pyridoxine. Family reports no bottles of methanol in the home. He was treated with vasopressin, phenylephrine, norepinephrine, IV fluids, and propofol. He received HD. Day 2: AST 1411, ALT 301, Cr 2.84, Glu 454, and AG 27. Head CT showed cerebral edema and small subarachnoid hemorrhages due to severe hypoxic brain injury. Based on the prognosis, comfort measures were instituted, and he died on Day 2.

Autopsy Findings: Cause of death: methanol poisoning. Hand sanitizer bottles were not available for testing.

Case 201. Acute hydrogen sulfide inhalation: undoubtedly responsible

Scenario/Substances: A 23 y/o male was cleaning a tank containing remnants of pork/beef slaughter byproducts. He was lowered into the tank with no PPE or respirator and immediately became unresponsive with severe respiratory distress. He was in the tank for an unknown extended period until EMS with PPE could extract him. Air monitoring revealed hydrogen sulfide gas at 2–4 ppm during rescue of the patient.

Physical Exam: A rotten egg odor was noted on the patient. Asystolic and apneic when extricated from the tank.

Clinical Course: Upon arrival to the ED, the patient was in cardiac arrest. CPR was not successful, and he was pronounced dead the same day.

Autopsy Findings: Blood thiosulfate level: 4.0 mcg/mL. Cause of death: Chemical asphyxiation by hydrogen sulfide. Manner of death: Accident.

Case 223. Acute hydrogen sulfide, hydrochloric acid and lime sulfur inhalation: probably responsible

Scenario/Substances: A 52 y/o male was found in his car with a bottle of hydrochloric acid and a bottle of "lime salt" (later identified as lime sulfur). He had sealed the car shut. A suicide note was found at his side.

EMS found him lethargic, cyanotic with BP 122/74, HR 102, O₂ sat 70%, and he was transported to the ED.

Past Medical History: Depression, suicidal ideation, cardiac arrest in 2013, HIV positive.

Physical Exam: (HCF)

Laboratory/Diagnostic Findings: Na 141 / K 5.0 / Cl 105 / CO₂ 17 / BUN 31 / Cr 1.28 / Glu 132 / AG 19, lactate 3.6 mmol/L, AST 258, ALT 104, bilirubin 1.0, INR 1.6, troponin 4.15, WBC 24 / Hct 53 / Plt 283, ABG-pH 7.13 / pCO₂ 51 / pO₂ 500. Serum APAP, ethanol, and salicylate not detected. UDS was negative. CxR: RLL and LLL opacities. ECG: QRS 102, QTc 547.

Clinical Course: In the ED BP 122/74, HR 102. Poorly responsive with cyanotic and mottled extremities, and red conjunctivae. Hour 2 BP 165/107 and HR 110, he was intubated, placed on ventilator for airway protection and sedated with propofol. He received IV fluids. Labs: troponin 3.5, carboxyhemoglobin 1.5, MethHgb 0.2, CK 5,000. Hour 7 he became bradycardic and suffered a cardiac arrest. CPR was performed with ROSC. He went directly to the cardiac catheterization lab and was diagnosed with cardiomyopathy, patent foramen ovale and left ventricular thrombus. He was admitted to the ICU where he remained unresponsive on the ventilator, BP 127/88 and HR 92 on vasopressors. On Day 2, he opened his eyes spontaneously. An MRI revealed scattered acute bilateral cerebellar, temporal, and left parietal infarcts with restricted diffusion likely secondary to embolic disease. On Day 6, he was no longer opening his eyes, and he died on Day 7.

Autopsy Findings: Not performed.

Assessment: The cause of death was likely the inhalation of hydrogen sulfide gas generated from mixing hydrochloric acid and lime sulfur and sealing himself inside his car.

Case 238. Acute chlorine gas, inhalation and dermal: probably responsible

Scenario/Substances: A 66 y/o male mixed liquid chlorine and toilet bowl cleaner causing his entire toilet to explode. The estimated duration of exposure was 1 h.

Past Medical History: AF/atrial flutter.

Clinical Course: In the ED he was on oxygen, coughing and vomiting. Follow up BP 140/90, HR 140, RR 24, O₂ sat 95% on 90% high flow nasal cannula, afebrile. The patient was administered antibiotics, IV steroids, nebulized beta agonists, IVF, and ophthalmic tetracaine. He was found to be in AF with RVR and was given diltiazem. He developed respiratory distress, was subsequently intubated, and sedated with propofol and dexmedetomidine. The next morning his CxR showed a pneumonitis with improving infiltrates. On Day 3, the patient remained intubated with worsening infiltrates on CxR indicative of ARDS. He remained intubated, and AF/atrial flutter was treated with amiodarone. On Day 11, the patient was extubated, but required high flow nasal cannula O₂. He remained in AF/atrial flutter with GCS 10. Head CT revealed a stroke. Several days later he developed worsening respiratory distress, and hypoxia. He failed a trial of BiPAP and was re-intubated. He was given antibiotics for persistent pyrexia, sedated with propofol, anticoagulated with heparin, and started on norepinephrine. Labs revealed Cr 3.75, Mg 3.6, Na 157, K 4.5, Phos 7.8, BUN 173. He received HD. Based on the prognosis, comfort measures were instituted, and he died on Day 21.

Autopsy Findings: Not available.

Case 267. Acute hydrocarbon (fluorinated) inhalation: undoubtedly responsible

Scenario/Substances: A 39 y/o male inhaled 10 cans of duster to get high. He denied suicidal ideations. EMS arrived 7 h later, O₂ sat 80% RA. Oxygen was initiated via NRB. Enroute to the ED, he was tachycardic and combative; EMS administered lorazepam and adenosine, reporting moderate improvement.

Past Medical History: Polysubstance abuse, HTN, hyperlipidemia, DM, depression, ethanol abuse; denied suicidal ideation.

Laboratory/Diagnostic Findings: Na 138 / K 4.5 / Cl 102 / CO₂ 18 / BUN 15 / Cr 1.5 / Glu 223 / AG 18, Ca <5, Ca (ionized) 0.43, Mg 0.9, lactate 12.3mmol/L, troponin 2,436, AST 76, ALT 38, bilirubin 0.8, WBC 23.85 / Hgb 9 / Hct 33.1 / Plt 340. Serum APAP, ethanol, and salicylate not detected. UDS positive for cannabis. ABG-pH 7.34 / pCO₂ 22 / pO₂ 81 / HCO₃ 11.7 / BE -12.3. CxR: mild elevation of right hemidiaphragm with right basilar atelectasis. ECG: sinus tachycardia, HR 152 / QRS 76, no ST changes.

Clinical Course: In the ED he received 4mg of lorazepam to manage his agitation and was noted to be in severe respiratory distress. He was following commands and moving all extremities. He was combative, drooling with shortness of breath and wheezing. BP 158/116, HR 151, RR 30, O₂ sat 100% on NRB, T 36.7°C. He was admitted to the ICU, where he was agitated, tachypneic, diaphoretic, and in marked respiratory distress. A dexmedetomidine infusion was started, and calcium and magnesium replacements given. The patient remained in respiratory distress with a respiratory rate in the 50s. He was intubated and placed on a mechanical ventilator. Ceftriaxone was initiated, and later vancomycin and piperacillin/tazobactam were added after procalcitonin was noted to be high. The patient developed Torsades de Pointes; ROSC was achieved after 5 min of ACLS. Twenty-two min after the first episode, the patient developed Torsades de Pointes again, and ACLS was again initiated including epinephrine, calcium, lidocaine, amiodarone, and multiple defibrillations for VF. Based on the prognosis, the family opted for institution of comfort measures, and he was pronounced dead.

Autopsy Findings: Not performed.

Assessment: Treating physician judged the death was due to difluoroethane toxicity with severe hypoxia, refractory hypocalcemia, and hypomagnesemia.

Case 268. Acute hydrocarbon (fluorinated) inhalation: probably responsible

Scenario/Substances: A 39 y/o male huffed 8 cans of a keyboard cleaner containing difluoroethane between 11 PM and 3 AM. He experienced euphoria but also noticed some numbness, and mild chest and back pain. He went to sleep for 6 hours and resumed use in the morning, after which his symptoms became worse. EMS found Glu 341 and transported him to the ED.

Past Medical History: Insulin-dependent diabetes, anxiety, depression, past incident of arm cutting, and chronic inhalant abuse. He denied the use of nitrous oxide.

Laboratory/Diagnostic Findings Na 128 / K 4.8 / Cl 88 / CO₂ 19 / BUN 34 / Cr 2.2 / Glu 726 / AG 21, Ca 4.6 (Ca corrected 5.2), albumin 3.2, ALP 120, AST 104, ALT 33, bilirubin 0.7, CK 4,079, Mg 1.4, lactate 6.2mmol/L, C-reactive protein 11.9mg/dL (nl <1), troponin 3,265, WBC 20.3 (93% polys) / Hgb 14.3 / Plt 232, ABG-pH 7.38 / pCO₂ 26.9 / pO₂ 91.4 / HCO₃ 15.7 on RA. Serum APAP and salicylate not detected, UDS negative. UA: pH 6.0, Glu >1000, blood moderate, leukocyte esterase moderate, WBC 10–20.

Clinical Course: In the ED BP 98/71, HR 110, RR 24, T 37°C. He complained of numbness to his whole face and both hands/arms, severe back pain (8/10), chest pain (6/10), difficulty opening his eyes, and shortness of breath. He was alert and oriented, red conjunctiva, pupils 5mm and sluggish, and an intention tremor in both hands. He received 1 liter of IVF and a dose of vitamin B₁₂. Hour 2 he developed VF. Labs were still pending except the ABG and CBC. CPR was initiated with epinephrine, magnesium, calcium, and bicarbonate boluses. He was intubated with bloody, frothy secretions suctioned from the ETT initially, and then frank blood. After 27min of unsuccessful ACLS, the patient was mottled and cyanotic, and the effort was terminated. He died 2.5 hours after presentation to the ED.

Autopsy Findings: Not available.

Assessment: Severe hypocalcemia has been reported after extensive difluoroethane abuse. The purported mechanism is metabolism of fluoroethane to fluoroacetate, which is then processed in the Krebs cycle to

fluorocitrate; citrate then accumulates in the tissues and complexes with circulating calcium. This accounts for symptoms of widespread paresthesia and muscle weakness ("difficulty keeping eyes open"). Severe back pain can possibly be attributed to fluorosis in the axial skeleton. Chest pain is theorized to be ischemic myocardial pain, supported by highly elevated troponin I. Sudden arrhythmia could be multifactorial in origin, including myocardial ischemia, myocardial sensitization from difluoroethane, and hypocalcemia.

Case 283. Acute botulism: undoubtedly responsible

Scenario/Substances: A 74 y/o male developed difficulty swallowing and weakness for which he presented to the ED.

Physical Exam: BP 112/65, HR 84, RR 24 O₂ sat 99%, T 37.0°C.

Laboratory/Diagnostic Findings: Na 136 / K 4 / Cl 102/ CO₂ 23/ BUN 22 / Cr 0.7 / Glucose 146 / AG 11, lactate 2.2mmol/L, AST 139, ALT 120, bilirubin 1.3, WBC 10 / Hgb 13.7 / Plt 173. Serum APAP, ethanol, and salicylate not detected.

Clinical Course: In the ED, he was initially treated as a stroke alert, but the work up was negative. He was admitted to the Neuro ICU. In the Neuro ICU, additional history revealed nausea, vomiting and dysphagia for a few days. He had fixed dilated pupils and absent bowel sounds. Mg 1.7. No history of eating shellfish. No tick bites. Lumbar puncture was unremarkable. A clinical diagnosis of botulism was entertained. He received heptavalent antitoxin from the Centers for Disease Control and Prevention approximately 10h later. The State Department of Health was notified. On Day 2, he was intubated and placed on a ventilator. West Nile virus and enterovirus tests were negative. On Day 7, a stool culture was positive for Botulinum toxin A by PCR. A tracheostomy was performed, and he was placed on tube feeding on Day 14. He remained unresponsive on ventilator for weeks. He developed a fever and was treated with antibiotics and vasopressors. The source of the botulinum toxin was not found. He died on Day 44.

Autopsy Findings: Not performed.

Case 284. Acute water, hydroxyzine, sertraline, acetaminophen, ibuprofen ingestion: probably responsible

Scenario/Substances: An 11 y/o female walked into her mom's room appearing confused and hallucinating with dilated pupils. She told her mother that she had a headache and took some medication out of the mom's APAP bottle. Mom had mixed medications stored in the bottle, including APAP, ibuprofen, bupropion, sertraline, and hydroxyzine. Mother attempted to "flush out" the medications by having her drink 1 gallon of water and milk. When she did not improve 5h later, grandmother came over to take them to the hospital. On exiting the home, the child had a seizure and EMS was called. Upon EMS arrival the child was postictal; she was transported to the ED.

Physical Exam: BP 120/89, HR 114, RR 20, T 36.3°C, O₂ sat 99%, postictal, combative.

Laboratory/Diagnostic Findings: Na 118 / K 4.7 / Cl 88 / CO₂ 12 / AG 20 / Glu 161 / BUN 9 / Cr 0.45, VBG-pH 7.23, pCO₂ 40, pO₂ 104, HCO₃ 17. EKG: HR 128, QRS 104, QT 318, QTc 464. UDS was negative.

Clinical Course: Upon arrival in the ED the patient started having status seizures, vomited, and became hypoxic. Her seizures were refractory to benzodiazepines, and she was subsequently intubated and sedated. Her BP decreased to 50/20 post intubation and norepinephrine was started with good improvement. Hyponatremia was corrected with hypertonic saline to 137 within 2h after initial blood draw. In the PICU she was noted to have fixed and dilated pupils with no brainstem reflexes. By the end of Day 1 she was transferred to a tertiary care center for an external ventricular drain placement for elevated intracranial pressure. She was placed on targeted temperature management. She developed diabetes insipidus and massive cerebral edema with borderline herniation. On Day 2 she remained unresponsive without sedation while on vasopressor support. A hydroxybupropion level came back negative. On Day 3 a nuclear medicine flow study was conducted showing no cerebral blood flow and she was

declared brain dead. Based on the prognosis, the family opted for institution of comfort measures, and she died on Day 3.

Autopsy Findings: Cause of death: undetermined. Manner of death: undetermined.

Case 286. Sodium bicarbonate ingestion: probably responsible

Scenario/Substances: A 57 y/o male, scheduled for a urine drug test at a courthouse, was found locked in a courthouse bathroom with diarrhea, black stool, and a witnessed seizure. His mother believed the patient had been ingesting baking soda in water to pass his urine drug screen. A bag of white powder was found on his possession. The patient was unable to confirm ingestion due to the severity of his illness.

Past Medical History: Substance use disorder (methamphetamine psychosis)

Laboratory/Diagnostic Findings: Na >180 / K 2.7 / CO₂ >50, ABG-pH 7.57. UDS positive for methamphetamine.

Clinical Course: The patient presented to the ED after the seizure, was intubated and initiated on propofol and midazolam. He was started on D5W-lactated Ringers at a modest rate to correct the sodium concentration given the unknown chronicity of hypernatremia. Later that day, he was no longer having seizures; Na 176 / K 3.2 / CO₂ 47, pH 7.42. Head CT: unremarkable. Day 2 ABG-pH 7.42 / pCO₂ 74 / pO₂ 91 / HCO₃ 49 / BE 24. Sodium correction continued with D5W- lactated Ringers. Day 3 Na values were 178, 176, 180, and 170 with no change in clinical status. The patient was started on norepinephrine infusion for BP support. Day 4, the patient was noted to have pupils that were fixed. Head CT showed diffuse edema. Sedation was discontinued and the patient remained unresponsive. Na 162 / HCO₃ 34 / K 3.7 / Cr 1.1 / BUN 29; the patient was still producing urine. He had an episode of tachycardia and hypertension suggesting herniation. After that event, BP 92/56, HR 72, was noted to be "hypothermic", and he died on Day 4.

Autopsy Findings: Diffuse cerebral edema resulting in herniation. No evidence of significant trauma. Femoral postmortem methamphetamine 60ng/mL. Cause of death: sodium bicarbonate toxicity. Manner of death: accident.

Case 287. Acute Morchella sextelata ingestion: probably responsible

Scenario/Substances: A 65 y/o female patient had lunch at a local sushi restaurant where she ate a "special roll" that contained salmon and morel mushrooms. Patient reported that the food was "peppery". Family reported that the patient started feeling ill during the car ride home within an hour after eating, with profuse vomiting and diarrhea, but no hot/cold dysesthesias. At home she had multiple presyncopal events. Her husband called EMS, and she was transported to the ED.

Past Medical History: HTN, progressive Parkinson's disease with palliative care. Medications: Parkinson's medications, no anticoagulants.

Clinical Course: In the ED, the patient was found unresponsive and pulseless with PEA in the waiting room, and CPR was initiated. ROSC was achieved after 10min of CPR and epinephrine. She was intubated and started on norepinephrine. She had a large bloody stool and was given 6 units of packed RBCs and 4 units of FFP. Bloodwork post arrest showed Na 143 / K 2 / Cl 122 / CO₂ 8 / BUN 14 / Cr 0.69 / Glu 410, lactate 4.5mmol/L, AST 49, ALT 20, bilirubin <0.2, INR 1.3, troponin 15.7, WBC 29.4 / Hgb 23.4 / Hct 70.4 / Plt 163, ABG-pH 6.95. She was started on pantoprazole, octreotide, antihistamines, and broad spectrum antibiotics. Abdominal CT showed diffuse mucosal edema and "GIT full of liquid". She was admitted to the ICU and over the next 2 days developed persistent acidosis and elevated lactate, AST >7,000, ALT 5,400, and INR 2.3. On Day 2, NAC was started and silibinin was ordered. She was started on penicillin G. On Day 5, silibinin 20mg/kg/day was started and she was treated for hypovolemic septic shock. Rectal bleeding persisted. Hct remained elevated, and therapeutic phlebotomy was performed. Plt dropped to 20 at one point, and platelets were infused. The patient also

developed progressively worsening AKI (100cc urine /day, Cr 4.81, and hyperkalemia), CRRT started, and subsequently HD. Arsenic was negative. The patient had significant improvement in pH, LFTs and hemoconcentration. As liver function improved, bilirubin rose to 3.4. On Day 4 she was extubated and was able to speak but was intermittently confused and unable to pass a swallow study. Based on the prognosis, the family opted for institution of comfort measures, and she died on Day 11.

Autopsy Findings: Cause of death: complications of severe gastritis due to probable foodborne toxin. Manner of death: accidental.

Epidemiology: Per media stories, 41 other people became ill after eating the mushroom "special roll" at the same restaurant that day. The salmon was acquired from Norway. The morel mushrooms were sourced from a producer in China, 'cultured' from an 'FDA-approved source', shipped to a distributor in California and sent to multiple states. No illnesses were reported in other states. The other customers reporting illness after eating the "special roll" that day reported similar onset of symptoms beginning 30min to 1 hour after eating it. The state health department and the CDC investigated this outbreak. There were multiple other sick patients who ingested the same type of sushi roll as the patient, including one other fatality. None of the testing of the food specimens returned any positive results. Testing on the mushrooms were negative for pesticides, heavy metals, bacterial toxins, and pathogens. Safety inspection of the restaurant found areas of cross contamination, as well as insufficient heating of rice and incorrect defrosting protocols of other ingredients. DNA sequencing was performed on the morel mushroom samples, and identified the species as *Morchella sextelata*, a type of true morel. The toxins in morel mushrooms that may cause illness are not fully understood. Proper morel mushroom preparation techniques, including cooking, can help reduce toxicity and risk of illness. On Date-0, the morels reportedly were marinated in a sauce immediately after the sauce had been boiled, and on (Date-9), the morels were uncooked and marinated in a sauce that had not been boiled. Consumption of morels on both dates was associated with developing illness. However, consumption of morels was more strongly associated with developing illness and severe outcomes on Date-9.

Case 291. Acute paraquat ingestion: probably responsible

Scenario/Substances: A 50 y/o male reportedly drank a sip of a blue liquid in a Gatorade bottle, later identified to be concentrated paraquat. He attempted to induce emesis but was unsuccessful. He presented to the ED the following day with progressive dyspnea, chest pain, nausea, vomiting, and bowel incontinence.

Laboratory/Diagnostic Findings: Na 147 / K 3.1 / BUN 13 / Cr 1.4 / Glu 286, lactate 18.2mmol/L, AST 118, ALT 89, ABG-pH <7.0 / pCO₂ 24 / HCO₃ 5.9. Serum APAP and salicylate not detected, ethanol 60mg/dL. ECG: HR 99, QRS 98, QTc 544.

Clinical Course: In the ED BP 153/83, HR 106, RR 26, O₂ sat 96% on 2L. Diaphoretic and lethargic. The patient was given sodium bicarbonate and fomepizole, and dialysis was initiated. Further history revealed the exposure to paraquat. The patient became increasingly hypoxemic and cyanotic and was intubated to support oxygenation. He was started on high-dose steroids and cyclophosphamide. Despite ongoing renal replacement and supportive care, the patient had persistent metabolic and respiratory acidosis on Day 2 with pH 7.06 and pCO₂ 254. He developed shock requiring support with norepinephrine, vasopressin, epinephrine, and a single dose of methylene blue, and then progressive multi-system organ failure with rising transaminases (AST 760, ALT 251) and Cr 3.2. The patient died on Day 3.

Autopsy Findings: Not performed.

Case 292. Acute zinc phosphide ingestion: probably responsible

Scenario/Substances: A 51 y/o woman ingested an unknown amount of rat poison (zinc phosphide 80%) at 1500h and was brought to the ED 30min later with abdominal pain.

Physical Exam: BP 111/76, HR 116, O₂ sat 97% RA, T 37.1°C.

Laboratory Data/Diagnostic Testing: Na 142 / K 3.6 / Cl 106 / CO₂ 14 / Cr 1.4 / AG 22, lactate 13.7mmol/L, 16.5mmol/L, PT 12.3 / INR 1.15, AST 55, WBC 13.0. APAP, salicylates, and ethanol not detected. UDS negative.

Clinical Course: In the ED, her HR increased to the 130s with BP decreasing to 84/45. She received 3 liters of IVF, was started on norepinephrine and was emergently intubated. She was admitted to the ICU, but was too unstable to move from the ED. She coded and became asystolic at about 8.75h after ingestion, and resuscitation was performed for approximately 1 hour before ROSC. Hypotension was maximized on 5 pressors while she remained intubated. Based on the prognosis, the family opted for institution of comfort measures, she went into asystole, and died approximately 10h after ingestion.

Autopsy Findings: Not performed.

Case 293. Acute diquat ingestion: undoubtedly responsible

Scenario/Substances: A 51 y/o male drank 1 swallow of an unknown green weed killer, identified by family as a pre-emergent "burn-down" type herbicide that had been transferred to a different bottle and placed in the refrigerator.

Past Medical History: Type 2DM, HTN.

Laboratory/Diagnostic Findings: Na 143 / K 3.3 / Cl 106 / CO₂ 23.0 / BUN 24 / Cr 0.3 / Glu 170 / AG 14, serum osmolality 307, AST 14 (peak 868), ALT 25, (peak 404), bilirubin 3.0. WBC 9.1 / Hgb 15.0 / Hct 46.6 / Plt 230, INR 1.05. Serum APAP, ethanol, and salicylate not detected. UDS positive for cocaine and cannabinoids. CxR: unremarkable. ECG: HR WNL QRS 94, QTc 442.

Clinical Course: He presented to the ED with diaphoresis, abdominal pain, nausea and vomiting; lung sounds were clear. BP 130/80, HR 80, RR 20, O₂ sat 95% RA. He received ondansetron, IVF, and supplemental oxygen. Overnight, he developed dyspnea and diarrhea. Day 2, he had bloody diarrhea and blood-tinged mucus. Labs indicated AKI (BUN 50/Cr 4.7), with metabolic acidosis, CO₂ 17, and AG 24; however, his serum ketones were normal, and his lactate was only mildly elevated (2.8mmol/L). Day 3, renal function continued to worsen, with BUN 63/Cr 5.5. He was started on a sodium bicarbonate infusion and HD was initiated. Overnight, hematuria was noted, along with increased abdominal pain, anxiety, and confusion; abdominal and renal ultrasound showed no abnormalities. Day 4, he had a suspected aspiration event that required intubation with poor oxygenation afterwards, sats 60–75%. He received propofol, fentanyl, and midazolam for sedation. CxR showed pneumomediastinum and bilateral chest-tubes were placed with no blood return. He was started on vasopressors for hypotension. He developed a fever and bronchoscopy showed large amounts of aspirate with multiple thick mucus plugs throughout his lungs. EGD showed no perforation, but mucosal sloughing from mouth to gastro-esophageal junction and an inflamed stomach. Day 5, MAP was in the upper 30s on maximal doses of 4 vasopressors. IV NAC was started for LFT elevations. He went into PEA arrest and died on Day 5.

Autopsy Findings: Cause of death: ingestion of a liquid weed killer. Manner of death: accidental.

Case 296. Acute diquat and glyphosate ingestion: probably responsible

Scenario/Substances: A 66 y/o male presented to the ED ~2hours after ingesting ~18oz of an herbicide concentrate containing glyphosate and diquat.

Past Medical History: HTN, premature atrial contractions, dyslipidemia, cirrhosis.

Physical Exam: Nausea and vomiting. SBP 150s–170s, HR 90s, T 35.2°C.

Laboratory/Diagnostic Findings: Na 137 / K 4.0 / Cl 101 / BUN 13 / Cr 0.91 / Glu 198 / AG 15, lactate 4.9mmol/L, AST 36 (peak 771), ALT 37 (peak 440), ALP 284, Hgb 14.9 / Plt 196. VBG-pH 7.39 / pCO₂ 38. Serum APAP, salicylate, ethanol, ethylene glycol, and methanol not detected. ECG: QRS 80, QTc 508.

Clinical Course: The patient presented to the ED with nausea and vomiting. He was intubated for airway protection. An EGD showed grade 1 esophageal injury. Following the procedure, the patient was extubated, but reintubated for recurrence of respiratory distress. Over the next few hours, the patient developed severe metabolic acidosis with an increasing lactate, requiring rapid titration of multiple vasopressors including norepinephrine, epinephrine, vasopressin, phenylephrine, angiotensin II, methylene blue, and a sodium bicarbonate infusion. Overnight, the patient had an episode of PEA arrest and ROSC was achieved following aggressive supportive measures. The patient developed hyperthermia requiring a cooling blanket. The lactate continued to rise, peaking at 28.3mmol/L on the morning of Day 2. His creatinine rose (peak 2.44), K 5.5, Phos 5.0, prompting initiation of CRRT and a trial of ILE. Based on the prognosis, comfort measures were instituted, and he died on Day 2.

Autopsy Findings: Not available.

Case 298. Acute malathion ingestion: undoubtedly responsible

Scenario/Substances: A 75 y/o male intentionally ingested 8oz of malathion, witnessed by his wife. Initial symptoms included hypersalivation and bradycardia. EMS administered 2 doses of atropine enroute to the ED.

Past Medical History: DM, hyperlipidemia. Home medications: metformin, glipizide, atorvastatin, aspirin.

Laboratory/Diagnostic Findings: Na 137 / K 4.7 / Cl 106 / CO₂ 17 / BUN 12 / Cr 0.7 / Glu 260 / AG 14, Ca 7.8, lactate 3.67mmol/L, AST 33, ALT 19, WBC 12.7 / Hgb 13.5 / Hct 38.4. Serum APAP and salicylate not detected. CxR: unremarkable.

Clinical Course: In the ED he had excessive secretions, was intubated due to poor mental status, and sedated with propofol. HR 110, BP 185/127 after intubation, PEEP 5, was afebrile. The hospital did not have pralidoxime, so transfer to a tertiary care center was planned. Before transfer, the patient became hypotensive (SBP 70s, HR 97), he received 2L IVF and norepinephrine was started. The patient was receiving atropine based on secretions, approximately every 20min. Lactate rose to 6.6mmol/L; QRS 143, QTc 488. Air transfer arrived at Hour 7.5 where norepinephrine increased. Secretions decreased, so atropine was stopped. Lactate 7mmol/L, troponin 200, and creatinine doubled. Pralidoxime was started by central line ~Hour 7. By Hour 12, vasopressor requirement had stabilized on norepinephrine and vasopressin; lactate 9.4mmol/L, pH 7.27, HCO₃ 9, Cr 1.61. Hour 17.5: HR 118, norepinephrine reduced with stable vasopressin. No secretions, diaphoresis or diarrhea. ECG: sinus tachycardia, QRS 134 (known BBB), and QTc 503. Lactate 6.6mmol/L. ABG-pH 7.28 / pCO₂ 23 / pO₂ 133 / HCO₃ 11, Cr 1.53 on a pralidoxime infusion. The family reported no metformin missing from bottles at home; repeat salicylate level not detected. Hour 24h HR decreased from 120s to 70s, and he became hypotensive. He received 2mg and then 4mg of atropine with HR to 93; no secretions, diarrhea, or significant gastric output. Norepinephrine dose was increased, epinephrine added, and additional sodium bicarbonate, IVF, and antibiotics were given. Bedside ECHO showed decreased systolic function. By 28h, he was in refractory shock on maximum doses of 4 vasopressors. There was no change after receiving ILE. Secretions developed, and he received multiple boluses of atropine with no change in hemodynamics. Based on the prognosis, the family opted for institution of comfort measures, and he died shortly thereafter.

Autopsy Findings: Not available.

Case 299. Acute amygdalin and acid cleaner ingestion: probably responsible

Scenario/Substances: A 6 y/o male ingested an unknown amount of a supplement containing amygdalin and an oxidizer type cleaning powder.

Past Medical History: Nonverbal autism, pica. No daily medications.

Laboratory/Diagnostic Findings: Na 152 (peak 165) / K 3.1 / Cl 104 (peak 136) / CO₂ 7 / BUN 15 / Cr 0.79 / Glu 281 / AG 41, lactate 16mmol/L, AST 237, ALT 135, bilirubin 0.2, troponin 1,258, CPK 803, WBC

17.8 / Hgb 12.3 / Hct 39 / Plt 337, VBG-pH 6.583 / pCO₂ 44.8 / pO₂ 81.9 / HCO₃ 7. Serum APAP, ethanol, and salicylate not detected. CxR: hazy opacities throughout the lungs. CT chest abdomen and pelvis: diffuse ground glass opacities in left lung, hypoperfusion of small bowel and adrenal glands, and periportal and perihepatic edema. Day 3 MRI head: severe diffuse cerebral and cerebellar anoxic brain injury with downward herniation of the cerebral tonsils; petechial hemorrhage in the right basal ganglia. ECG: sinus HR 112, QRS 78, QTc 422.

Clinical Course: The patient arrived with ventilatory assistance via BVM; unresponsive, pupils fixed and dilated. Naloxone was given without response. He became bradycardic to the low 50s, and CPR was initiated; he received atropine and epinephrine x 2, as well as hydroxocobalamin and sodium thiosulfate. Sustained ROSC was achieved after 25 min. He was intubated and received epinephrine infusion with dexmedetomidine and midazolam for sedation. He received activated charcoal, repeat doses of hydroxocobalamin and sodium thiosulfate, ampicillin/sulbactam for presumed aspiration, and levetiracetam for possible seizure activity. On Day 2, he developed high urine output and hypernatremia, and was started on vasopressin. He also developed reduced cardiac ejection fraction (48%) with an apical thrombus noted on ECHO. He developed myoclonus, suggestive of anoxic brain damage. Continuous EEG showed diffuse encephalopathy. Brain death examination was conducted x 2. Based on the prognosis, comfort measures were instituted, and he died on Day 4.

Autopsy Findings: ME determined the cause of death to be cyanide toxicity.

Case 303. Acute fentanyl (non-prescription) and tramadol ingestion: probably responsible

Scenario/Substances: A 15 m/o male was interacting with a straw that was previously exposed to fentanyl (per the father). According to the patient's mother, both parents were receiving treatment for OUD with methadone; however, the father may have still been using fentanyl. EMS found the child in cardiopulmonary arrest, initiated CPR with the initial rhythm asystole, then PEA. They gave 2 doses of naloxone, ROSC was achieved after 10 min, and he was transported to the ED. He was believed to have been unresponsive for ~21 min.

Past Medical History: Neonatal abstinence syndrome.

Laboratory/Diagnostic Findings: Na 144 / K 2.8 / Cl 111 / CO₂ 22 / BUN 16 / Cr 0.21 / Glu 279, Ca 7.7, AST 777, ALT 479, bilirubin 0.4, lactate 4.1 mmol/L, WBC 24.2, Hgb 12.3, Plt 586, VBG-pH 6.81 / pCO₂ >95. UDS positive for tramadol and fentanyl. Urine naloxone 3,553 ng/mL, urine fentanyl 5 ng/mL, urine norfentanyl 42 ng/mL. Serum APAP, ethanol, and salicylate not detected. ECG: HR 71, PR 98, QRS 88, QTc 442. Head CT: brain grossly normal.

Clinical Course: BP 94/53, HR 82, RR 14, T 36.6°C, ETT CO₂ 36, O₂ sat 97% on BVM. He was sedated and paralyzed, pupils 2–3 mm PERRLA, mucous membranes moist, intermittent expiratory wheeze, cool extremities, capillary refill >3 seconds, and mottled skin. He was placed on mechanical ventilation, an epinephrine infusion, and targeted-temperature management protocol. His hemodynamics improved without improvement in mental status. According to the patient's mother, both parents were receiving treatment for OUD with methadone; however, the father may have still been using fentanyl. The patient remained comatose and did not react to pain. EEG monitoring did not show seizure activity. He had intermittent episodes of hyperglycemia requiring a brief insulin infusion. Vasopressors were discontinued and rewarming began on Day 3. MRI findings on Day 4 indicated profound hypoxic injury. Clinical exam and EEG findings were consistent with severe neurologic injury. Based on the prognosis, the family opted for institution of comfort measures, and he died on Day 5.

Autopsy Findings: Not available.

Case 377. Acute acetaminophen, isopropanol, ibuprofen and Piper nigrum ingestion: undoubtedly responsible

Scenario/Substances: A 23 y/o female was found lethargic and vomiting by a friend. When symptoms did not improve, EMS was called. A 100 tab

bottle of extra strength APAP was found along with a bottle of rubbing alcohol. The patient was 17.5 weeks pregnant with an unwanted pregnancy and had reportedly been eating large quantities of peppercorns in an effort to terminate the pregnancy. There was also suspicion that she may have taken ibuprofen. When EMS arrived, she had altered mental status, and en route to the ED she became unresponsive to pain. Naloxone was not given.

Past Medical History: Mania and depression.

Physical Exam: BP 147/65, HR 90, RR 24, O₂ sat 100%, T 36.8°C. Altered mental status with lethargy, no verbal response, regular rhythm and heart rate.

Laboratory/Diagnostic Findings: Na 140 / K 4.1 / Cl 103 / CO₂ <5 / BUN 5 / Cr 0.99 / Glu 65, Ca 10.3, AST 670, ALT 603, bilirubin 1.3, INR 1.6, Phos 6.2, ammonia 48, lactate >15.0 mmol/L, troponin 7,479, WBC 19.9, VBG-pH 6.85 / pCO₂ 20 / pO₂ 73 / HCO₃ 3.5 / O₂ sat 84% / BE -29.5. Salicylate, ethanol, methanol, and ethylene glycol not detected. APAP 458 mcg/mL. UDS positive for THC.

Clinical Course: Upon arrival to the ED, she was lethargic, altered, and profoundly acidotic. Head CT head was unremarkable. She was intubated and sedated with midazolam, given a dose of fomepizole, and ceftriaxone for possible aspiration. No fetal heart tones were detected, but ultrasound revealed a 17.5-week pregnancy. She was admitted to the ICU and treatment with NAC was initiated as well as aggressive doses of sodium bicarbonate. She underwent HD, during which she became hypotensive and was started on norepinephrine and vasopressin. Acidosis improved after sodium bicarbonate and dialysis but LFTs continued to increase, and the decision was made to transfer to a tertiary care center. Upon arrival to the tertiary facility, sedation was paused, and she was moving all extremities but still required vasopressin and norepinephrine to maintain her MAP. She was taken to surgery for dilation and evacuation. CRRT was started due to slow elimination of APAP and increasing ammonia (114 to 180). Treatment continued with NAC and vitamin K was given. Her condition declined and there was concern for septic shock and cytokine storm leading to decreased cardiac output. She developed progressive shock requiring norepinephrine, phenylephrine, vasopressin, angiotensin II, and epinephrine, and broad-spectrum antibiotics. The patient developed seizure activity, was given lorazepam and levetiracetam, and sedation was switched from dexmedetomidine to propofol. As a result of hypotension, CRRT could not be continued. There was significant elevation of troponin to 22,900, worsening of coagulopathy with a peak INR of 6.1, continued acidosis with a lactate of 10.9 mmol/L, and increasing transaminases with an AST peak of 2,611, and ALT of 17,774. APAP decreased to 235, 162, 157, 75, and 55 mcg/mL at unspecified times. Based on the prognosis, the family opted for institution of comfort measures, and she died on Day 3.

Autopsy Findings: Not Performed.

Case 894. Acute salicylate and methamphetamine ingestion: contributory

Scenario/Substances: A 40 y/o female, 40 weeks pregnant, had a seizure at home and possible syncope. She was found by her significant other to be using methamphetamine and had empty bottles of aspirin. She was hypertensive during EMS transport and admitted for eclampsia with seizures and an emergent C-section.

Past Medical History: Methamphetamine use disorder

Physical Exam: Hyperthermia, hypertensive, confused, seizure

Laboratory/Diagnostic Findings: Na 149 / K 7.5 / Cl 112 / CO₂ 20 / BUN 13 / Cr 1.84 / Glu 125, lactate 4.1 mmol/L, AST 521, ALT 719, bilirubin 0.4, WBC 16 / Hgb 9.2 / Hct 30.7 / Plt 206, INR 2.3, ABG-pH 7.09 / pCO₂ 70 / pO₂ 301 / HCO₃ 21. Serum APAP not detected, salicylate 66.4 mg/dL. UDS positive for methamphetamine. Urine pH 6.

Clinical Course: The patient was given 2 amps of sodium bicarbonate IV bolus and started on an isotonic sodium bicarbonate infusion. She was externally cooled with ice packs for a T of 38.9°C. She was intubated for C-section and had a PEA cardiac arrest in the operating room. HR 170, RR 36 over the ventilator, K 7.4, and repeat salicylate 48 mg/dL. She was transferred to a tertiary care center on continuous IV epinephrine, norepi-

nephrine, phenylephrine, and vasopressin. She developed 1st degree heart block that progressed to 2nd degree block with 3:1 AV conduction. Salicylate decreased to 50mg/dL; CO₂ 21, and ABG-pH 7.04. She developed a ventricular escape rhythm followed by VT and VF after which she was treated by placement of a pacer. Multiple cardiac arrests were treated with ACLS. Her K increased to 9 despite receiving insulin and dextrose. She died after an additional 35 mins ACLS code. Salicylate and hyperkalemic arrest in the setting of seizures contributed to her death.

Autopsy Findings: Not performed.

Case 915. Acute fentanyl parenteral and ethanol ingestion: undoubtedly responsible

Scenario/Substances: A 41 y/o male was found pulseless and apneic with drug paraphernalia after injecting fentanyl. EMS performed CPR, administered naloxone intranasally and intravenously, epinephrine, and atropine with ROSC. He had another cardiac arrest while en route to ED with ROSC obtained.

Past Medical History: Polysubstance use disorder.

Laboratory/Diagnostic Findings: Na 138 / K 3.1 / Cl 102 / CO₂ 12 / BUN 16 / Cr 1.5 / Glu 134 / AG 24, lactate 11.9mmol/L, AST 2,106, ALT 2,836, bilirubin 0.4. INR unremarkable, ABG-pH 7.38 / pCO₂ 16 / pO₂ 315 / HCO₃ 10. Serum APAP and salicylate not detected. Ethanol 142mg/dL, serum Osm 298, OG 9. UDS was positive for fentanyl. ECG: ST elevation, QRS 108, QTc 465.

Clinical Course: In the ED, the patient was intubated, placed on ventilator, and sedated with propofol. He was unresponsive on ventilator. Head CT showed anoxic brain injury. Abdomen/pelvis CT was unremarkable. Cardiac catheterization revealed no coronary artery disease and an ejection fraction of 20%. During the procedure, he developed AF and received amiodarone. He was admitted to the ICU where he remained unresponsive. Sodium bicarbonate was given. A repeat ECG showed resolution of ST elevation. On Day 2 he continued to be unresponsive and developed hypotension for which he received vasopressors. He died on Day 3.

Autopsy Findings: Toxicology on premortem blood: fentanyl 3.1 ng/mL; norfentanyl 0.43 ng/mL; 4-ANPP 0.46 ng/mL. Cause of death: Complications of acute and chronic substance use (fentanyl). Manner of death: Accident.

Case 980. Acute salicylate ingestion: undoubtedly responsible

Scenario/Substances: A 43 y/o male with marital difficulties ingested 740mg/kg of aspirin. He vomited a couple of hours later and then reported decreased hearing in both ears.

Past Medical History: Psychological disorder. Home medications: metoprolol, clonazepam, gabapentin, omeprazole, venlafaxine.

Laboratory/Diagnostic Findings: Na 141 / K 4.3 / Cl 99 / CO₂ 21 / BUN 15 / Cr 1.67 / Glu 121, AST 35, ALT 44, WBC 16 / Hgb 19 / Plt 326, ABG-pH 7.41 / pCO₂ 15. Serum APAP and ethanol not detected, salicylate 77.2mg/dL. UDS was negative, CxR: unremarkable. ECG: unremarkable.

Clinical Course: In the ED, BP 174/108, HR 150, RR 20, O₂ sat 97% RA, T 37°C, alert and oriented, diaphoretic, pupils equal, no clonus or hyperreflexia. He tolerated administration of activated charcoal. A sodium bicarbonate infusion was started with potassium supplementation. Hour 2 salicylate was 74.9mg/dL, CO₂ 17, HR 140s. He had vomited so received metoclopramide. Unable to place HD catheter or transfer patient due to lack of beds at the tertiary care center. Hour 5, HR 160, RR 30s. Hour 6 ASA 101mg/dL, and patient continued to vomit. Hour 11, because the helicopter could not fly in dangerous weather, EMS was to transport by ground, but the patient died prior to transport.

Autopsy Findings: Not available.

Case 1589. Acute colchicine ingestion: undoubtedly responsible

Scenario/Substances: A 78 y/o male intentionally took 200 tablets of 0.6mg colchicine in a suicide attempt. He had stockpiled the colchicine previously prescribed for pericarditis.

Past Medical History: AF (post ablation), hypothyroidism, pericarditis (resolved), rosacea keratitis, borderline personality disorder. Home medications: levothyroxine, rosuvastatin, doxycycline.

Laboratory/Diagnostic Findings: Na 139 / K 4.3 / Cl 110 / CO₂ 22 / AG 7 / Glu 88 / BUN 22 / Cr 1.08, Ca 9.4, AST 31, ALT 25, bilirubin 0.5, lipase 10, PT 11.9, INR 1.0, aPTT 30.3, WBC 6.4 / Hgb 14.5 / Hct 43.4 / Plt 243, CK 137. APAP, salicylate, and ethanol not detected. UDS was negative. CxR: Mild diffuse interstitial and alveolar airspace opacities, no pleural effusion or pneumothorax, nonenlarged cardiomeastinal silhouette, aortic calcifications. ECG: HR 57, QRS 110, QTc 428, left axis deviation.

Clinical Course: On arrival at the ED patient was having nausea and vomiting. BP 167/89, HR 57, RR 16, O₂ sat 98% RA, T 36.6°C. Alert, no acute distress, cooperative, flat affect. He received 0.9% NaCl bolus and infusion, heparin, and ondansetron. The patient's heart rate began intermittently dipping to 40, and O₂ sat began to drop, requiring oxygen via nasal cannula. Nausea and vomiting prevented activated charcoal administration. His WBC count increased to 11.5, 21.1 by the next morning, and 42.8 by the evening of Day 2. VBG-pH 7.25 / pCO₂ 52 / pO₂ 53. His serum bicarbonate infusion was reduced. Troponin rose from 1,622 to 3,243 ng/L, and then 9,389. Serum lactate rose to 12.1 mmol/L and his INR rose from 1.1 to 3.0. He developed paroxysmal AF with rapid ventricular rate. As his metabolic acidosis worsened, GI fluid losses continued, and he became increasingly hypotensive. A repeat CxR showed a trace right pleural effusion and increased diffuse bilateral interstitial opacities. On Day 3, his pH dropped to 7.01, he developed progressive shock, respiratory failure, and bradycardia culminating in PEA cardiac arrest. Per his advanced directive, CPR was not initiated, and he died on Day 3.

Autopsy Findings: Toxicology: plasma colchicine 170 ng/mL @ 3h after ingestion and 44 ng/mL at 20.5h. Cause of death: colchicine overdose. Manner of death: suicide.

Case 1618. Acute sumatriptan parenteral: undoubtedly responsible

Scenario/Substances: An 82 y/o male hospital inpatient was inadvertently given sumatriptan 6mg IV instead of SQ. One minute later, he developed respiratory distress and PEA.

Physical Exam: (HCF) BP 120/106, HR 46.

Laboratory/Diagnostic Findings: Na 136 / K 4.5 / Cl 95 / CO₂ 24 / BUN 52 / Cr 2.45 / Glu 200 / AG 17, lactate 10.6 mmol/L, Ca 10.8, AST 117, ALT 48, WBC 18.1 / Hgb 7.3 / Hct 22.9 / Plt 350.

Clinical Course: The patient received epinephrine, sodium bicarbonate, and dopamine. Based on the prognosis, the family opted for institution of comfort measures, he lost pulses, and died 2h following the sumatriptan dose.

Autopsy Findings: Not performed.

Case 1686. Acute-on-chronic cenobamate ingestion: probably responsible

Scenario/Substances: A 25 y/o male was found down in his bedroom, exhibiting seizure-like activity. His sister found an empty cenobamate bottle next to the patient along with several marijuana edibles. He was taken to ED and described as lethargic prior to ED presentation.

Past Medical History: ADHD, GERD, IBS, and epilepsy. Home medications: clobazam, cenobamate, and omeprazole.

Physical Exam: (HCF) BP 113/65, HR 70, RR 13, O₂ sat 100% RA, T 36.8 °C Lethargic with dilated pupils.

Laboratory/Diagnostic Findings: Na 143 / K 3.9 / Cl 106 / CO₂ 24.8 / BUN 13 / Cr 1.2 / Glu 124 / AG 12, AST 611, ALT 657, bilirubin 2.4, ammonia 69 mcmmol/L, WBC 12.1. Serum APAP, ethanol, and salicylate not detected. UDS positive for benzodiazepines and THC. Head CT without contrast unremarkable. Hepatitis panel unremarkable.

Clinical Course: The patient was lethargic but remained hemodynamically stable. NAC was started due to elevation of LFTs. On Day 2 he developed worsening hepatotoxicity with rising AST and ALT (5944 and 6292 respectively), increased bilirubin (direct 7.62, total 11.1), lactic aci-

dosis (lactate 5.7 mmol/L), and INR 4.42. He developed worsening oliguric AKI and was started on HD. On Day 3 the patient had a repeat seizure with suspected aspiration and required endotracheal intubation. A repeat head CT without contrast was performed revealing cerebral edema for which he received mannitol. Ammonia at this time was reported 293.0 $\mu\text{mol/L}$. He was transferred to tertiary care. A repeat head CT without contrast showed no cerebral edema. Continuous EEG failed to show epileptiform activity but was suggestive of diffuse severe encephalopathy. The patient developed hypotension requiring multiple vasopressors, and CRRT was started. The patient was judged to be too unstable for a liver transplant. He developed worsening hepatic failure and persistent hypoglycemia. Based on the prognosis, the family opted for institution of comfort measures, and he died on Day 7.

Autopsy Findings: Toxicology: Clobazam 470 ng/mL, cenobamate (hospital blood) 48 mcg/mL. ME notes that quantified levels for intoxication causing death are not well understood. Cause of death: acute liver failure due to probable cenobamate intoxication.

Case 1707. Acute tianeptine and gabapentin ingestion: probably responsible

Scenario/Substances: A 20 y/o female presented to the ED in cardiac arrest after reportedly ingesting an entire bottle of tianeptine.

Physical Exam: BP 141/73, HR 95, RR 20, T 33.8°C.

Laboratory/Diagnostic Findings: K 7.9, pH 7.1, pCO_2 39. Serum APAP and ethanol not detected, salicylate 8 mg/dL. ECG: "normal intervals".

Clinical Course: After arriving in the ED in cardiac arrest, the patient was successfully resuscitated, and intubation, and mechanical ventilation were begun. The patient received oxygen, vasopressor support, and sodium bicarbonate and HD for acidosis. Salicylate was detectable, but not thought to be related to the toxicity. The patient remained unstable, losing pulses multiple times before no longer being able to be resuscitated, and consequently died.

Autopsy Findings: Toxicology testing: peripheral blood (qualitative): naloxone, caffeine; urine (qualitative): benzodiazepines, cannabinoids; peripheral blood (quantitative): alprazolam 27 ng/mL, citalopram/escitalopram 90 ng/mL; topiramate 6,900 ng/mL, gabapentin 32 mcg/mL [therapeutic trough 2–20 mcg/mL], tianeptine 1,900 ng/mL [post-mortem concentrations of 538, 2,000, 3,000, 4,401, and 8,400 ng/mL have been reported].

Case 1726. Acute-on-chronic bupropion ingestion: undoubtedly responsible

Scenario/Substances: A 29 y/o woman took 60 bupropion XL 300 mg tablets, and was transported by EMS to the ED.

Past Medical History: **Past Medical History:** unspecified depressive disorder, anxiety, panic attacks, PTSD. Home medications: bupropion XL, hyoscyamine, etonogestrel-ethinyl estradiol.

Physical Exam: BP 122/62, HR 133, O_2 sat 93% RA, T 36.9°C. Slurring words with CNS depression. Seizure on arrival.

Laboratory/Diagnostic Findings: Na 146 / K 3.7 / Cl 102 / CO_2 6 / BUN 14 / Cr 1.25 / Glu 140 / AG 42, lactate 18 mmol/L, AST 20, ALT 22, ABG-pH 6.92 / pCO_2 26.6 / pO_2 101 / HCO_3 35.5. Serum APAP, ethanol, and salicylate not detected. ECG: HR 139, QRS 98, QTc 572.

Clinical Course: She was given IM lorazepam for her initial seizure and was postictal. She was given potassium, magnesium, and IVF. She had another seizure 30 min later and was given additional lorazepam. She was unable to protect her airway, and was intubated with etomidate and succinylcholine, and sedated with propofol and fentanyl. She was admitted to the ICU where a continuous EEG showed severe background slowing with intermittent generalized electrographic seizures associated with full body myoclonus. She developed persistent tachycardia and hypotension despite IV fluids and was started on norepinephrine. She also received IV sodium bicarbonate therapy. Her lactate and acidemia did improve. She had another seizure and ILE was started. She

went into cardiac arrest; CPR was initiated, and she died within 24 h of overdose.

Autopsy Findings: External examination only. Toxicology (antemortem blood): bupropion 665 ng/mL, hydroxybupropion 1,974 ng/mL. Erythrohydrobupropion and threohydrobupropion metabolites were positive. Cause of death: bupropion ingestion. Manner of death: suicide.

Case 1731. Acute bupropion, gabapentin, alprazolam, and oxycodone ingestion: undoubtedly responsible

Scenario/Substances: A 32 y/o female, 14 weeks pregnant, was found outside unresponsive. Suspected ingestion included up to 300 tablets of gabapentin, 17 150 mg bupropion XL tablets, and possibly alprazolam. She was in asystole for about 40 min.

Past Medical History: High-risk pregnancy, details unknown. Home medications: gabapentin, bupropion XL, possibly alprazolam (not confirmed).

Clinical Course: In the ED, core T 26.7°C, heart rhythm showed fine VF. ACLS included defibrillations x 6, epinephrine x 9. Obstetrics determined the fetus to be nonviable. ROSC was obtained and VV ECMO initiated without an oxygenator to aid in rewarming. Active rewarming was initiated with warm fluids, warming blanket, foley irrigation, and placement of an esophageal warmer. She was transferred to the ICU and had a repeat PEA arrest with ROSC. Based on the prognosis, the family opted for institution of comfort measures, and she died later that day.

Autopsy Findings: Antemortem toxicology testing: serum hydroxybupropion 1100 mcg/L 1.5 h after admission, blood oxycodone 2.4 mcg/L, blood alprazolam 15 mcg/L, blood gabapentin 6,600 mcg/L, ketamine 1400 mcg/L, norketamine 480 mcg/L (received 100 mg ketamine IV from medical team 1 hour prior). Postmortem toxicology: subclavian blood bupropion 840 mcg/L, hydroxybupropion 2700 mcg/L. Final diagnosis: 1) hypothermia due to environmental cold exposure, 2) bronchopneumonia, 3) blunt force injuries (abrasion of chest, contusions of left elbow), 4) 14 week intrauterine pregnancy.

Case 1748. Acute-on-chronic bupropion and ethanol ingestion: undoubtedly responsible

Scenario/Substances: A 40 y/o female was found with a bottle of bupropion XL 300 mg tabs (66 tabs missing) and a bottle of bourbon. EMS was called. She had a self-terminating tonic-clonic seizure lasting about 20 seconds en route to the ED.

Physical Exam: BP 148/85, HR 152, RR 24, O_2 sat 94%, T 36.7°C. Agitated, alert but disoriented, hyperactive, tachycardic, no seizure-like activity. Right periorbital and lower face bruising from cosmetic procedure.

Laboratory/Diagnostic Findings: Na 143 / K 3.5 / Cl 102 / CO_2 17.0 / BUN 8.5 / Cr 0.85 / Glu 124 / AG 24, Ca 9.8, Mg 2.40, AST 15, ALT 9, bilirubin 0.23, WBC 8.8 / RBC 4.61 / Hgb 14.9 / Hct 45.0 / Plt 306. ABG-pH 7.42 / pCO_2 41.7 / pO_2 650.5 / HCO_3 27.1. Serum APAP and salicylate not detected. Ethanol 17.4 mg/dL. UDS positive for THC. ECG: HR 143, QRS 109, QT 343, QTc 426.

Clinical Course: Upon arrival to the ED, the patient was agitated, disoriented, and required physical restraints due to combativeness and punching at staff. Multiple doses of lorazepam were given, mental status declined, and she became minimally responsive (GCS 8) and was subsequently intubated and sedated with propofol and fentanyl for airway protection. Tachycardia improved after intubation, but QRS was 125 and QTc 460. Sodium bicarbonate bolus and infusion were started as well as IV fluids and she was admitted to ICU. In the ICU she was sedated for intermittent myoclonic jerking and tachycardia. Head CT was unremarkable. She became hypotensive so norepinephrine was started. The QRS narrowed and sodium bicarbonate infusion was stopped, and norepinephrine was tapered. She developed a T 40.1°C and WBC increased to 18.2 approximately 24 h after admission, and piperacillin/tazobactam was given. The patient was moving and breathing over the ventilator. Sedation was discontinued but over the course of the day spontaneous

movements ceased and the patient had loss of reflexes including cough on deep suction or response to pain, though some twitching movements persisted. A second head CT was unremarkable. An EEG showed generalized delta and theta slowing. She developed ventricular tachycardia followed by fibrillation and loss of pulses. CPR was administered in addition to multiple doses of epinephrine and atropine, and the norepinephrine infusion was maximized. She received multiple defibrillations in addition to magnesium sulfate boluses with episodes of ROSC with return of loss of pulses and PEA. After an hour of resuscitative efforts, the patient died on Day 3.

Autopsy Findings: Bupropion (hospital blood): 1,881 ng/mL.

Case 1811. Acute diphenhydramine ingestion: undoubtedly responsible

Scenario/Substances: A 13 y/o male consumed 100 diphenhydramine 25 mg tabs in response to a social media challenge. His family found him cyanotic and seizing and called EMS who found him comatose and seizing. Naloxone had no effect and 10 mg IM lorazepam stopped the seizure, but he then had cardiac arrest. EMS performed CPR and PALS, defibrillated him, and transported him still in cardiac arrest to the ED.

Past Medical History: Marijuana abuse, no medications.

Laboratory/Diagnostic Findings: Na 142 / K 3 / Cl 107 / CO₂ 15 / BUN 10 / Cr 1.3 / Glu 297 / AG 20, lactate >10 mmol/L, AST >750, ALT 250, CPK 868, ABG-pH 7.1 / pCO₂ 64 / pO₂ 48 / HCO₃ 20. Serum APAP, ethanol, and salicylate not detected. Immunoassay UDS was positive for THC and benzodiazepines; LC/MS/MS positive for cannabinoids and diphenhydramine. ECG: HR 150, QRS 126, QTc 434. Head CT: diffuse severe cerebral edema, loss of gray-white differentiation, swelling, central herniation, tonsillar herniation.

Clinical Course: He arrived in cardiac arrest with CPR in progress. ROSC was achieved multiple times but did not last long enough to obtain vital signs. Two hours after presentation, BP 39/19, HR 153, RR 14 on ventilator, GCS 3. Arrest rhythms included bradycardia and asystole, treated with epinephrine and atropine, and multiple VT arrests treated with amiodarone. After ROSC and endotracheal intubation, the patient was transferred to a tertiary care center. En route to the tertiary hospital, he had another seizure then cardiac arrest, and he was diverted to the closest ED where ACLS and CPR were continued as he again sustained multiple cardiac arrests, some lasting a few min, one lasting 90 min while a helicopter crew stood by waiting to take him to the tertiary care center when stabilized. Besides asystole, VT, and VF, he also had Torsades de Pointes which was treated with magnesium. After several hours at the second hospital where he was defibrillated twice more, he was flown to a pediatric tertiary care center and admitted to the PICU. In the PICU, he appeared clinically brain dead, and this never improved; EEG remained consistent with brain death, and he never required sedation. LFTs improved within hours. Antibiotics were given for two days, but no infection was found, then discontinued. On Day 2 nicardipine was used briefly to control blood pressure. Based on the prognosis, the family opted for institution of comfort measures, and he died on Day 6.

Autopsy Findings: External examination demonstrated many findings consistent with seizures, prolonged CPR, and a week of intensive care. Antemortem diphenhydramine 9,951 ng/mL from peripheral blood obtained at the second hospital.

Case 1847. Acute-on-chronic hydroxychloroquine ingestion: undoubtedly responsible

Scenario/Substances: A 16 y/o female ingested 120 tablets of hydroxychloroquine, (strength unknown). Vital signs were "within normal limits" and EMS transported her to the ED arriving ~1 h after ingestion.

Past Medical History: Lupus, unclear if hydroxychloroquine was her medication.

Laboratory/Diagnostic Findings: Serum APAP and salicylate not detected.

Clinical Course: One hour after ED arrival she developed persistent VT. After CPR for 1.25 hours and 8 rounds of ACLS medications, the patient was stable enough to transport to a tertiary care center. Na 150 / K 1.8, Glu 300, lactate 19 mmol/L. The patient was admitted to the PICU, and CPR was continued for 1 hour while placing the patient on ECMO. After starting ECMO, ABG-pH 7.3 / pCO₂ 45 / pO₂ 170 / HCO₃ 12, Hgb 9.1 / Hct 27. Potassium boluses were administered along with ILE and methylene blue prior to ECMO, high dose diazepam, and 3 vasopressors. The patient was placed on CRRT and Molecular Adsorbent Recirculating System to enhance clearance of the hydroxychloroquine. IVF, epinephrine, norepinephrine, and vasopressin were required to maintain ECMO support. The patient received IV sodium bicarbonate infusion along with several bolus doses to correct the acidosis. After 24 hours of intensive supportive care, the family opted for institution of comfort measures, and she died on Day 2.

Autopsy Findings: Not available.

Case 1853. Acute levamisole ingestion: probably responsible

Scenario/Substances: A 64 y/o male thought he was drinking water from the refrigerator, but mistakenly ingested an anthelmintic drench veterinary medication. He quickly reported not feeling well with nausea, dry heaving, and visual changes. He was taken to the fire station where he became bradycardic and unresponsive. He received atropine prior to cardiac arrest. Epinephrine and ketamine failed in the field. EMS initiated CPR and transported him to the ED.

Laboratory/Diagnostic Findings: Na 141 / K 2.8 / Cl 99 / BUN 19 / Cr 1.4 / Glu 315, Ca (ionized) 1.6, Hct 45

Clinical Course: In the ED he was ill appearing, pulses with compression, BP 81/17, pupils 5 mm and reactive. Patient was cool to touch with gray appearance, T 36.7°C. He was intubated in the ED with active CPR ongoing. He received calcium and sodium bicarbonate. O₂ sat did not get above 80%. He developed VT and VF, was cardioverted twice, and multiple rounds of epinephrine were administered without success, and the patient died.

Autopsy Findings: Postmortem toxicological analysis was positive for therapeutic amounts of prescription medications and medications administered during resuscitative efforts (diphenhydramine 66 ng/mL, ketamine 700 ng/mL, bupropion 295 ng/mL, trazodone 161 ng/mL), and a markedly elevated level of levamisole (19 mcg/mL). Cause of death: levamisole toxicity. Manner of death: accident.

Case 1855. Chronic methotrexate ingestion: undoubtedly responsible

Scenario/Substances: A 49 y/o female accidentally took methotrexate 10 mg daily for 30 days for psoriasis with the last dose being the day prior to arrival. She realized the mistake and was brought by her mother to the ED the following day.

Past Medical History: Psoriasis.

Physical Exam: BP 89/55, HR 103, RR 19, O₂ sat 93% on 2L NC. Alert and oriented but has open ulcers in mouth and on legs (developed ~2 weeks prior).

Laboratory/Diagnostic Findings: Na 130 / K 5.9 / Cl 97 / CO₂ 24 / BUN 50 / Cr 1.31, lactate 3.3 mmol/L, AST 163, ALT 89, bilirubin 9.0, ALP 181, albumin 2.9, WBC 0.8 / Hgb 13.7 / Hct 40.6 / Plt 225 / absolute neutrophil count 0.3. Methotrexate 0.05 mmol/L.

Clinical Course: Upon arrival to the ED, she was started on IVF. Sodium bicarbonate infusion, leucovorin, and glucarpidase were administered. She was admitted to the ICU. The methotrexate level the following day was undetectable, and leucovorin and bicarbonate were stopped. Over the next 25 days of hospitalization she remained in the ICU, developed an infection with fever and was treated with antibiotics, antifungals, and antivirals. She developed pancytopenia, received platelet transfusions, and developed renal failure requiring CRRT, hypotension requiring vasopressors, and hypoxia requiring intubation and sedation. On Day 18 her WBC rose to 101.9 and on Day 20 was 96.9. She died on Day 25 from

acute hypoxemic respiratory failure due to acute lung injury and right-sided heart failure.

Autopsy Findings: Not performed.

Case 2022. Acute-on-chronic metoprolol ingestion: undoubtedly responsible

Scenario/Substances: A 66 y/o male ingested 3 handfuls of his own 100mg metoprolol tabs in a suicide attempt and presented to the ED 2h later.

Past Medical History: HTN, DM, chronic pain. Home medications: aspirin, atorvastatin, losartan, metformin, metoprolol, morphine, oxcarbazepine, rivaroxaban, tamsulosin.

Physical Exam: BP 101/80, HR 60, RR 17, O₂ sat 99% on 5L O₂ (on home oxygen at baseline). Confused, diaphoretic.

Laboratory/Diagnostic Findings: AST 23, ALT 17, lactate 3.1 mmol/L, pH 7.4 / pCO₂ 52 / HCO₃ 32. Serum APAP, salicylate, and ethanol not detected. ECG: HR 63, QRS 90, QTc 413.

Clinical Course: The patient rapidly declined in the ED with worsening mental status and hypotension. He was intubated and sedated with propofol and fentanyl. Activated charcoal was given via NG tube. He received IV fluids, glucagon, calcium, insulin, D50W, ILE, and norepinephrine. A transvenous pacer was placed and epinephrine added. Lactate increased to 11.1 and pH decreased to 7.26. Sodium bicarbonate and electrolyte supplementation were given. He developed worsening metabolic derangements and organ failure with Na 128, K 7.8, HCO₃ 11, AST 206, ALT 105, and Mg 1.7. Ejection fraction was 20% on TTE. Sedation was turned off and he had no gag, corneal or cough reflex, and no response to pain. He had severely reduced urine output. Based on the prognosis, the family opted for institution of comfort measures, and he died on Day 1.

Autopsy Findings: Toxicology: metoprolol 7,200ng/mL (hospital blood 2h after ingestion). Cause of death: metoprolol overdose. Manner of death: suicide.

Case 2107. Acute-on-chronic flecainide ingestion: contributory

Scenario/Substances: An 87 y/o male accidentally self-administered 10 tablets of flecainide 100mg. EMS transported him with evident bradycardia and a widened QRS complex.

Past Medical History: AF, DM, hyperlipidemia. Home medications: flecainide, metoprolol, atorvastatin, coumadin.

Physical Exam: BP 147/96, HR 63, RR 17

Laboratory/Diagnostic Findings: ABG-pH 7.54. ECG: HR 55, QRS 168, QTc 601.

Clinical Course: On arrival to the ED, his baseline QRS of 148 in 2019 with LBBB, was now 168. He continued to show worsened QRS widening and QTc prolongation despite activated charcoal administration, sodium bicarbonate boluses and infusion, potassium supplementation, and magnesium. Lidocaine was started as well. The patient was transferred to a tertiary care center. He developed altered mental status, desaturation, hypertensive episodes, and seizure-like activity. He was sedated with propofol and weaned from propofol with dexmedetomidine. Given his persistent QTc prolongation, overdrive pacing with isoproterenol was recommended, started, but then discontinued later that day. On Day 4, he became agitated and febrile, and was started on antibiotics due to leukocytosis. On Day 5, he demonstrated rapid AF, leading to VT, and he underwent synchronized cardioversion x 5. Subsequently, he had cardiac arrest, could not be resuscitated, and died on Day 5.

Contributory Statement: The patient had a documented accidental exposure to flecainide, clinical evidence of flecainide toxicity with baseline comorbidities of AF and QRS prolongation that recurred or worsened during the course of intoxication.

Autopsy Findings: Not performed.

Case 2162. Acute diphenhydramine ingestion and sodium bicarbonate parenteral: undoubtedly responsible

Scenario/Substances: A 51 y/o female presented after intentional ingestion of 5000mg of diphenhydramine in a self-harm attempt.

Past Medical History: Major depressive disorder, bipolar disorder, hypertension. Home medications: alprazolam, duloxetine, lisinopril.

Physical Exam: Agitated, paranoid, and dry. Pupils 6mm non-reactive. BP 154/110, HR 121, RR 22, O₂ sat 100% RA, T 37.2°C

Laboratory/Diagnostic Findings: Na 138 / K 3.8 / Cl 102 / CO₂ 21 / BUN 14 / Cr 0.77 / Glu 204 / AG 15 / lactate 2.1 mmol/L, AST 30, ALT 34, bilirubin 0.2, WBC 5.4 / Hgb 14.7 / Hct 44.4 / Plt 246; after bicarbonate dosing, ABG-pH >7.74 / pCO₂ 93 / pO₂ 62 / HCO₃ 162 / BE 121. ECG: HR 117, QRS 172, QTc 544. CxR: interstitial markings suggestive of mild pulmonary edema; heart size mildly enlarged.

Clinical Course: She decompensated and was intubated with etomidate and rocuronium for airway protection. ECG showed significant QRS/QTc prolongation at 172/544 msec and a QRS of 180 after intubation. She was given ~27 amps of sodium bicarbonate IV with little change in the QRS duration. A bolus of lactated Ringers, sodium bicarbonate infusion, and midazolam infusion for sedation were initiated. Polymorphic pulseless VT developed ~1 hour after intubation, ACLS commenced including additional sodium bicarbonate, epinephrine, and magnesium with ROSC after 10min; norepinephrine was started. She arrested a second time and ACLS resumed with epinephrine, sodium bicarbonate, and lidocaine administered. ROSC was obtained again. ABG-pH 7.85; bicarbonate administration was discontinued. She received an estimated 60 amps of sodium bicarb during her 2 hours of resuscitation. ILE was started about 1 hour after initial arrest, along with another 100mg of lidocaine. The patient arrested for a third time and died ~2 hours after initial presentation.

Autopsy Findings: Not available.

Case 2166. Acute potassium ingestion: undoubtedly responsible

Scenario/Substances: A 57 y/o female ingested up to 90 tablets 20 mEq potassium chloride and called EMS 75min later. She received calcium chloride and sodium bicarbonate IV in the field, and was transported to the ED.

Past Medical History: Anxiety, CAD with stent, CHF, paroxysmal SVT, hyperlipidemia, hypothyroidism, CVA, chronic benzodiazepine dependence. Home medications: zolpidem, sertraline, pregabalin, potassium chloride, metoprolol, losartan, levothyroxine, furosemide, diazepam, clopidogrel, aspirin, atorvastatin.

Laboratory/Diagnostic Findings: Na 142 / K 8.6 / Cl 115 / CO₂ 23.9 / BUN 11 / Cr 0.59 / Glu 89, Ca 10.3, Mg 2.1, WBC 11.3 / Hgb 11.4 / Hct 39.5 / Plt 369. Serum APAP and salicylate not detected. CxR: unremarkable. ECG: HR 95, QRS 170, QTc 590, RBBB new from 1 month prior.

Clinical Course: In the ED she was alert with vomiting and mildly altered mental status. BP 150/80, HR 83, R22, O₂ sat 99% RA, T 37°C. Normal eyes, pulmonary, abdominal, and neurological exam. GCS 15. She received albuterol, insulin (10 units), D10W, and additional sodium bicarbonate. About 1.5 hours after the ingestion, she had a 4 second run of VT followed by a second episode about 2.5 hours after the ingestion. She was given additional IV calcium and sodium bicarbonate, and HD was started (1 hour total), but she continued to go in and out of VT, Torsades de Pointes, and asystole. CPR was performed and she was intubated; lidocaine and amiodarone were given, and cardioversion was performed. She died about 6 hours after the ingestion with her last K of 2.4.

Autopsy Findings: Postmortem vitreous humor K >9.0. Cause of death: complications of potassium chloride toxicity. Manner of death: accidental.

Case 2181. Acute insulin parenteral and unknown drug ingestion: undoubtedly responsible

Scenario/Substances: A 46 y/o male was found unresponsive and apneic at home and given naloxone with no response. There was report of seizure-like activity. He was given D10W for a glucose of 53.

Past Medical History: Ulcerative colitis, polysubstance use.

Physical Exam: BP 145/100, HR 74, RR 21, O₂ sat 99% on BVM, T 32°C. Initially ill appearing, unresponsive, decorticate posturing, GCS 3.

Laboratory/Diagnostic Findings: POC Glu 114, Na 138 / K 3.5 / Cl 98 / CO₂ 28 / BUN 20 / Cr 0.6 / Glu 191, lactate 2.8 mmol/L, AST 43, ALT 20, CK 677, VBG-pH 7.2 / pCO₂ 70 / pO₂ 29 / HCO₃ 29. Serum APAP, ethanol, and salicylate not detected. UDS was positive for amphetamines, cocaine, and fentanyl. ECG: HR 104, QRS 114, QTc 520.

Clinical Course: He was intubated for airway protection with neuromuscular blockers. Head CT showed diffuse brain edema with no acute hemorrhage. He developed severe, persistent, hypoglycemia about 4 h after initial hospital arrival. He was given dextrose, hydrocortisone, octreotide, glucagon, and potassium. It was later discovered that the patient had used his father's insulin for insulin overdosing in the past. His C-peptide was below normal limits at 0.1 ng/mL and his insulin elevated at 63 microU/mL. The patient's blood glucose eventually stabilized with supportive management. He required multiple agents for sedation during his hospitalization and vasopressors for hypotension that later developed. He developed fever and positive CxR findings. Despite attempts to optimize therapies for his cerebral edema, including mannitol, hypertonic saline, and a craniotomy, the patient did not improve clinically. Based on the prognosis, the family opted for institution of comfort measures, and he died on Day 13.

Autopsy Findings: Not performed.

Case 2195. Acute metformin ingestion: undoubtedly responsible

Scenario/Substances: A 63 y/o male ingested 163 of his mother's metformin (unknown strength) with suicidal intent about 21.5 hours prior to ED arrival.

Laboratory/Diagnostic Findings: Na 140 / K 3.6 / Cl 95 / CO₂ 4 / Cr 2.82 / AG 41 / lactate 30.8 mmol/L, VBG-pH 6.8, HCO₃ 8. Serum APAP and salicylate not detected. ECG: QRS 96, QTc 606.

Clinical Course: In the ED he complained of abdominal pain, nausea, and vomiting. He was agitated and combative, with BP 107/57, HR 83, RR 22, O₂ sat 100% RA, T 36.3°C. Midazolam was given for agitation. Hypotension developed; 3 L of IVF were infused along with a norepinephrine infusion. Two amps of sodium bicarbonate were administered, and an infusion of sodium bicarbonate was started for the acidosis. Overnight his BP dropped further so norepinephrine was increased, and vasopressin added. He was intubated for depressed mental status. HD was performed and the patient was switched to CRRT later that day. There was some improvement in Cr (1.7) and lactate (28.5 mmol/L). The patient developed a Glu in the 50s, dextrose was administered, and a D10W infusion was started. The patient continued to be minimally responsive off sedation. Repeat ABG-pH was 6.7 and he became oliguric. Plt 94 with continued acidosis, lactate 24.8 mmol/L and a CO₂ of 5. Based on the prognosis, comfort measures were instituted, and he died later that day.

Autopsy Findings: Antemortem peripheral blood metformin level obtained 22 hours after ingestion was 85 mg/L. Cause of death: lactic acidosis due to acute metformin toxicity. Manner of death: suicide.

Case 2308. Acute cocaine exposure: contributory

Scenario/Substances: A 9 y/o female had been experiencing diarrhea, vomiting, and body aches so was kept home from school that day. She was found down in supine position, incontinent of urine and feces. EMS

started CPR with ROSC. Concern for exposure to cocaine was expressed by a relative.

Laboratory/Diagnostic Findings: ALT and AST in the 300s. Serum APAP was not detected. Hour 12 urine benzoyllecgonine 27 ng/mL. Head CT: global ischemic brain injury. CT of chest, abdomen, and pelvis: large areas of airspace consolidation and ground glass opacities throughout both lungs, and possible ileus.

Clinical Course: In the ED she was intubated. The morning of Day 2, she developed an irregular rhythm and became asystolic. Resuscitative measures were initiated, but she died 48 min later. The preexisting contributing illness was bacterial pneumonia.

Autopsy Findings: Evidence of acute bilateral bronchopneumonia with features most consistent with bacterial infection. Postmortem blood: benzoyllecgonine 0.035 mg/L, cocaethylene and cocaine not detected. Postmortem urine demonstrated 0.055 mg/L benzoyllecgonine. Cause of death: acute bilateral bronchopneumonia in the setting of cocaine exposure. Manner of death: undetermined.

Case 2312. Acute caffeine, citalopram and clenbuterol ingestion: undoubtedly responsible

Scenario/Substances: An 18 y/o male ingested 300 caffeine 200 mg and 100 clenbuterol 40 mcg tablets in a self-harm attempt. He was found by EMS in a vehicle, slumped over and diaphoretic.

Past Medical History: Anxiety, asthma, depression (unknown if there were previous self-harm attempts or if patient was on any psychotropic meds).

Physical Exam: BP 100/52, HR 87, RR 17, O₂ sat 98% RA. Skin was noted to be diaphoretic, but otherwise no notable findings were reported. Intermittently sleepy but reasonably alert.

Laboratory/Diagnostic Findings: Na 139 / K 2.7 / Cl 107 / CO₂ 20 / BUN 10 / Cr 0.91 / Glu 148 / AG 12, AST 35, ALT 72, bilirubin 1.0, WBC 13.8 / Hgb 14.9 / Hct 45.0 / Plt 384. Serum APAP, ethanol, and salicylate not detected. ECG: HR 99, QRS 85, QTc 414.

Clinical Course: In the ED, the patient was noted to be hypokalemic, and IV supplementation was ordered. He was transferred by air to a tertiary care center with a PICU. The patient arrived at the second healthcare facility agitated and vomiting. Pupils were dilated and non-reactive. Shortly after arrival he developed dysrhythmias including wide complex tachycardia with cardiac arrest. CPR was initiated and the patient was intubated. Electrolytes were supplemented, and ROSC was transiently achieved. The PICU team unsuccessfully attempted femoral artery cannulation for ECMO. The patient continued to have episodes of VT and VF that were treated with cardioversion, epinephrine, calcium, and bicarbonate. The patient's cardiac rhythm then transitioned to asystole. He was declared dead approximately 6 h after his arrival at the first HCF.

Autopsy Findings: Toxicology results using hospital blood included caffeine 100 mcg/mL, citalopram 143 ng/mL, and fentanyl 7 ng/mL. Cause of death: cardiac dysrhythmia due to acute caffeine toxicity and probable clenbuterol toxicity.

Case 2398. Hallucinogenic amphetamine [3,4-methylenedioxymphetamine (MDA)]: undoubtedly responsible

Scenario/Substances: A 39 y/o male was found at home acting as if he was intoxicated. Pupils were dilated, his eyes were rapidly moving, and he was laughing excessively. The family laid the patient down to sleep on the couch but then found him unresponsive with shallow respirations and twitching or seizure-like activity. They began chest compressions, and called EMS who found the patient with a pulse but required ventilatory support with a supraglottic airway. He was given naloxone and midazolam, and was transported to the ED.

Past Medical History: Esophagitis, dysphagia, GERD, tennis elbow, alcohol use disorder, polysubstance use disorder, cholecystectomy, ERCP with plastic stent placement, EGD.

Physical Exam: (HCF) BP 85/42, HR 172, RR 20, O₂ sat 98%, T 41.1°C. In acute distress. Well-developed, ill-appearing, diaphoretic, pupils dilated bilaterally, and minimally reactive, tachycardic with regular rhythm, GCS 6, no sensory deficit, no motor weakness.

Laboratory/Diagnostic Findings: Na 148 / K 6.2 / Cl 113 / CO₂ 19 / BUN / Cr 2.35 / Glu 161 / AG 16, lactate 6.3 mmol/L, CK 1398, AST 861, ALT 219, bilirubin 0.5, WBC 11.2 / Hgb 17.1 / Plt 148, ABG-pH 7.16 / pCO₂ 55 / pO₂ 188 / BE -10. Serum APAP, ethanol, and salicylate not detected. UDS was positive for amphetamines and cannabinoids. CxR: unremarkable.

Clinical Course: Upon presentation to the ED, rapid sequence intubation was initiated. Cooling measures were initiated including removal of clothing, ice pack placement in the groin and axillae, and use of a cooling blanket. The patient's ECG showed a wide-complex regular tachycardia. Cardioversion was attempted with no change in rhythm. The patient was given aggressive IVF hydration. The patient's head CT showed no intracranial lesions. The patient was given a total of 10 mg intravenous lorazepam and started on a midazolam infusion. Patient's ventilator rate was increased to 24. Sodium bicarbonate bolus and infusion were administered. A norepinephrine infusion was also started due to persistent hypotension. The patient had rhabdomyolysis with AKI (Cr 2.35). He was given insulin and dextrose, and IV calcium gluconate. Hypotension improved with fluids and vasopressors, and he was successfully weaned off vasopressors. Repeated cardioversion attempts were made with no change in rhythm. He was admitted to the MICU and sedated on fentanyl and midazolam infusion with subsequent fentanyl discontinuation. Patient EEG showed low amplitude throughout consistent with global hypoxia and no evidence of epileptiform discharges. Vitamin K, fresh frozen plasma, and cryoprecipitate were administered for suspected DIC. His clinical course continued to deteriorate with multiple system organ failure including DIC, high anion gap metabolic acidosis with high lactate, acute renal and liver failure, and acute respiratory failure. NAC was given for hepatotoxicity, empiric antibiotic coverage for potential ischemic bowel or bowel perforation, blood products for DIC, and fluid hydration for rhabdomyolysis. A repeat head CT demonstrated multiple large infarcts spanning the bilateral cerebral hemispheres. He remained intubated but sedation was weaned off; he did not respond to painful stimuli and there was no gag reflex. Based on the patient's poor prognosis, the family opted for institution of comfort measures with plans for organ procurement. The patient died on Day 6.

Autopsy Findings: Postmortem toxicology: 3,4-methylenedioxymphetamine in blood was 2,100 ng/ml. Cause of death: 3,4-methylenedioxymphetamine (MDA) toxicity. Manner of death: accident.

Case 2449. Acute methamphetamine ingestion: undoubtedly responsible

Scenario/Substances: A 46 y/o male with agitation, odd and violent behavior, and hallucinations presented to an urgent care. EMS was called, and he was transported to the ED.

Physical Exam: O₂ sat 100% on oxygen, T 42.5°C. Well-developed, well-nourished male unresponsive in cardiac arrest, pupils 8 mm.

Laboratory/Diagnostic Findings: Na 146 / K 5.3 / Cl 99 / CO₂ 14 / BUN 27 / Cr 2.5 / Glu 167 / AG 38, AST 33, ALT 60, bilirubin 0.8, troponin 0.230, BNP 17, WBC 16.6 / Hgb 16.1 / Hct 49.8 / Plt 362. Serum APAP, ethanol, and salicylate not detected. UDS was positive for amphetamines.

Clinical Course: While in the ambulance bay, he had a sudden onset of shaking, became rigid with his "eyes partially rolled back in his head", and went into cardiac arrest. CPR was started and he was brought to a resuscitation room where his initial rhythm was PEA followed by asystole. He was given naloxone, atropine, epinephrine, amiodarone, and sodium bicarbonate. He was intubated and placed on a cooling blanket. Despite these interventions, resuscitation was unsuccessful, and he was pronounced dead in the ED.

Autopsy Findings: Antemortem blood analysis: methamphetamine 7,660 ng/ml, amphetamine 171 ng/ml. Cause of death: acute methamphetamine intoxication.

Abbreviations & Normal Ranges

~:	approximately	1198
abd:	abdomen	1199
ABG-pH/pCO ₂ /pO ₂ /HCO ₃ /BE		1200
ABG:	arterial blood gases	1201
pH:	hydrogen ion concentration [7.38-7.42 mmHg]	1202
pCO ₂ :	partial pressure of carbon dioxide [38-42 mmHg]	1203
pO ₂ :	partial pressure of oxygen [90-100 mmHg]	1204
HCO ₃ :	bicarbonate [22 - 28 mEq/L]	1205
BE:	base excess [±2 mEq/L or mmol/L]	1206
ACLS:	advanced cardiac life support, protocol for the provision of cardiac resuscitation	1207
ADHD:	attention deficit hyperactivity disorder	1208
AF:	atrial fibrillation	1209
AG:	anion gap Na - (Cl + HCO ₃) [12 ± 4 mEq/L or mmol/L]	1210
AICD:	automatic implanted cardioverter/defibrillator	1211
AKI:	acute kidney injury	1212
ALP:	alkaline phosphatase [13-100] U/L	1213
ALT:	Alanine aminotransferase [7-41] U/L (SGPT)	1214
AMA:	against medical advice	1215
Ammonia:	[15-47] mcmol/L	1216
amp:	[25-80] mcg/dL	1217
amphetamines	ampoule	1218
(hallucinogenic):	one or more of the products (6-APB, bath salts, plant food, Bliss, Ivory Wave, Purple Wave, Vanilla Sky, et al) or chemicals (3,4-methylenedioxypyrovalerone [MDPV], 6-(2-aminopropyl)benzofuran [6-APB], butylone, desoxypipradrol [2-DPMP], ethylone, flephedrone, naphyrone, mephedrone, methylenedioxy-pyrovalerone, methylone, methcathinone, et al)	1219
AMS:	altered mental status	1220
APAP:	acetaminophen (acetyl-para-aminophenol), therapeutic [10-20] mcg/mL	1221
APLS:	advanced pediatric life support, protocol for the provision of cardiac resuscitation	1222
aPTT:	activated partial thromboplastin time [30-40] sec	1223
ARDS:	acute respiratory distress syndrome	1224
AST:	Aspartate aminotransferase [12-38] U/L = (SGOT)	1225
AV block:	atrio-ventricular block	1226
BAL:	British anti-Lewisite	1227
BBB:	bundle branch block	1228
BE:	base excess [±2 mEq/L or mmol/L]	1229
bicarbonate:	[22-28] mmol/L	1230
bili (direct):	direct bilirubin [0.1, 0.4] mg/dL	1231
bili (indirect):	indirect bilirubin [0.2, 0.9] mg/dL	1232

1251	bilirubin:	total [0.3-1.3] mg/dL	DNI:	do not intubate	1310
1252	BiPAP:	bilevel positive airway pressure, pressure support with 2 levels of continuous	DNR:	do not resuscitate	1311
1253		positive airway pressure	Dx:	diagnosis	1312
1254		positive airway pressure	ECG:	electrocardiogram (EKG), leads=I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6	1313
1255	BLQ:	below the limit of quantitation	ECHO:	echocardiogram	1315
1256	BMI:	body mass index [18.5-29.4] kg/m ²	ECMO:	extracorporeal membrane oxygenation. VV=venous to venous	1316
1257	BNPT:	prohormone with a 76 amino acid	ED:	emergency department, in these abstracts refers to the initial health care facility	1317
1258		N-terminal inactive protein that is cleaved from the molecule to release brain natriuretic peptide. CHF is likely if BNPT > 125pg/mL (<75 y/o), > 450pg/mL (>75 y/o)	EDDP:	principal methadone metabolite, 2-ethylidene-1,5-dimethyl-3, 3-diphenylpyrrolidine	1318
1259					1319
1260					1320
1261	body packing:	insertion of drugs into body orifices to evade law enforcement	EEG:	electroencephalogram	1321
1262			EGD:	esophagogastroduodenoscopy	1322
1263	body stuffing:	the ingestion of drugs to evade law enforcement	ELISA:	enzyme-linked immunosorbent assay	1323
1264			EMS:	emergency medical services, paramedics, the first responders	1324
1265	BP:	Blood Pressure, systolic/diastolic, (Torr)	EOMI:	extraocular movements intact.	1325
1266	BPH:	benign prostatic hypertrophy	ER:	extended-release medication	1326
1267	BUN:	see Urea nitrogen	ERCP:	endoscopic retrograde cholangiopancreatography	1327
1268	BVM:	bag-valve mask			1328
1269	C:	degrees Centigrade	ETT:	endotracheal tube	1329
1270	Ca (ionized):	ionized calcium, [4.5-5.6] mg/dL	Fe:	serum iron [60-170] mcg/dL	1330
1271	Ca:	calcium [8.7-10.2] mg/dL	FFP:	fresh frozen plasma	1331
1272	CABG:	coronary artery bypass graft	FiO ₂ :	fraction of inspired oxygen (%)	1332
1273	CAD:	coronary artery disease	g:	grams	1333
1274	CHF:	congestive heart failure	g/dL:	grams per deciliter	1334
1275	CIWA:	Clinical Institute Withdrawal Assessment for Alcohol	GCS:	Glasgow Coma Score, ranges from 3 to 15	1335
1276			GERD:	gastroesophageal reflux disease	1336
1277	CK:	creatinine kinase (CPK), total: [39-238] U/L females, [51-294] U/L males	GI:	gastrointestinal	1337
1278			Glu:	glucose, fasting [75-110] mg/dL	1338
1279	CKMB:	MB fraction of CK [0.0-5.5mcg/L: 0.0-5.5ng/mL] Fraction of total CK activity [0-0.04=0-4.0%]	h:	hours	1339
1280			HBO:	hyperbaric oxygen treatment/therapy	1340
1281	Cl:	chloride [102-109] mEq/L	HCF:	health care facility	1341
1282	CMV:	cytomegalovirus	HCG:	human chorionic gonadotropin test for pregnancy	1342
1283	CNS:	central nervous system			1343
1284	COHb:	carboxyhemoglobin (RR < 3%)	HCO ₃ :	bicarbonate [22 - 28 mEq/L]	1344
1285	COPD:	chronic obstructive pulmonary disease	HCP:	health care provider	1345
1286	CPAP:	continuous positive airway pressure	Hct:	hematocrit [35.4-44.4] females, [38.8-46.4]% males	1346
1287	CPR:	cardiopulmonary resuscitation			1347
1288	Cr:	creatinine [0.5-0.9] mg/dL females, [0.6-1.2] males,	HD:	hemodialysis	1348
1289			Hgb:	hemoglobin [12.0-15.8] g/dL females, [13.3-16.2] g/dL males	1349
1290	CRRT:	continuous renal replacement therapy			1350
1291	CSF:	cerebrospinal fluid	HIE:	hyperinsulinemia-euglycemia therapy	1351
1292	CT:	computed tomography (CAT scan)	HIV:	human immunodeficiency virus	1352
1293	CVA:	cerebrovascular accident	Hour:	when capitalized, Hour=hours since admission or since exposure as specified in the narrative	1353
1294	CVP:	central venous pressure			1354
1295	CVVH:	continuous venovenous hemodiafiltration	HR:	HR, beats per min	1355
1296	CxR:	chest radiograph, chest xray	HTN:	hypertension	1356
1297	c/w:	consistent with	IABP:	intra-aortic balloon pump	1357
1298	d-dimer:	protein released from blood clot break down, [0-0.50] mg/L	ICP:	intracranial pressure	1358
1299			ICU:	intensive care unit	1359
1300	D10W:	10% dextrose in water	IDDM:	insulin dependent diabetes mellitus	1360
1301	D50W:	50% dextrose in water	IgE:	immunoglobulin E	1361
1302	D5NS:	5% dextrose in normal saline	ILE:	intravenous lipid emulsion (20%)	1362
1303	D5W:	5% dextrose in water	IM:	intramuscular	1363
1304	Day:	when capitalized, Day=hospital day, i.e., days since admission to the initial hospital admission for this exposure	INR:	international normalized ratio (PT to control) [0.8-1-2]	1364
1305			IO:	intraosseous	1365
1306	DIC:	disseminated intravascular coagulation			1366
1307	DM:	diabetes mellitus			1367
1308					1368
1309					

1133	IU/L:	international units per Liter	NG:	nasogastric	1192
1134	IV:	intravenous	ng/mL:	nanograms per milliliter	1193
1135	IVF:	intravenous fluid(s)	NOS:	not otherwise specified	1194
1136	K:	potassium [3.5-5] mEq/L	not detected:	analyte below the level of quantitation/	1195
1137	kg:	kilogram		negative	1196
1138	L:	Liter	NPO:	nil per os/nothing by mouth	1197
1139	lactate:	lactic acid [0.5-1.6] mmol/L arterial/[0.5-2.2]	NRB:	non rebreathing mask for O ₂ delivery	1198
1140		mmol/L venous; [4.5-14.4] mg/dL arterial/	NS:	normal saline	1199
1141		[4.5-19.8] mg/dL venous	NSR:	normal sinus rhythm	1200
1142	LBBB:	left bundle branch block on ECG	NSTEMI:	non-ST segment elevation myocardial	1201
1143	LFT:	liver function tests		infarction	1202
1144	LV:	left ventricle	O ₂ sat:	oxygen percent saturation [94-100]% at	1203
1145	LVEF:	left ventricular ejection fraction		sea level	1204
1146	m/o:	months old	OG:	serum osmol gap=measured serum osmolal-	1205
1147	MAP:	mean arterial pressure		ity – calculated serum osmolality [0±10	1206
1148	MARS:	molecular adsorbent recirculating system		mOsmol/kg]	1207
1149	mcg/dL:	micrograms per deciliter	OR:	operating room	1208
1150	mcg/L:	micrograms per Liter	Osm:	osmole	1209
1151	mcg/min:	micrograms per minute	OTC:	over the counter	1210
1152	mcg/mL:	micrograms per milliliter	ODD:	opioid use disorder	1211
1153	mcmol/L:	micromoles per liter	PALS:	pediatric advanced life support	1212
1154	MDA:	3,4-methylenedioxymphetamine	PC:	poison center (= PCC/or Poison	1213
1155	MDMA:	methylenedioxymphetamine		Control Center)	1214
1156		(ecstasy/molly)	PCC:	prothrombin complex concentrate	1215
1157	ME:	medical examiner	PCP:	primary care provider	1216
1158	MetHgb:	methemoglobin (RR < 1%)	PEA:	pulseless electrical activity	1217
1159	Mg:	magnesium [1.5-2.3] mg/dL	PEEP:	positive end expiratory pressure	1218
1160	mg:	milligrams	PERRLA:	pupils/equal/round and reactive to light and	1219
1161	mg/dL:	milligrams per deciliter		accommodation	1220
1162	mg/kg:	milligrams per kilogram	Phos:	phosphate (phosphorous) [2.5-4.5] mg/dL	1221
1163	mg/L:	milligrams per Liter	PICU:	pediatric intensive care unit	1222
1164	min:	minutes	Plt:	platelet count [150-400] x10 ⁹ /L	1223
1165	mL:	milliliter	PO:	per os ("by mouth" in Latin)	1224
1166	mmol:	millimoles	POC:	point of care	1225
1167	mmol/L:	millimoles per Liter (previously mEq/L)	PPE:	personal protective equipment	1226
1168	mmol/L:	millimoles per Liter	ppm:	parts per million	1227
1169	mosm/kg:	milliosmoles per kilogram	PR:	P-R interval [120-200] msec on the ECG	1228
1170	mosm/L:	milliosmoles per Liter	PRN:	as needed	1229
1171	MRI:	Magnetic Resonance Imaging	PT:	prothrombin time/INR is preferred/but PT	1230
1172	MRSA:	Methicillin-resistant		may be used if INR is not available	1231
1173		Staphylococcus aureus	PTA:	Prior to admission	1232
1174	ms:	milliseconds	PTSD:	post-traumatic stress disorder	1233
1175	MSDS:	material safety data sheet	PTT:	partial thromboplastin time [26.3-39.4] sec	1234
1176	myoglobin:	measure of muscle injury [5-70] mcg/mL	PVC:	premature ventricular contraction	1235
1177	Na:	sodium [136-146] mEq/L	QRS:	ECG QRS complex duration [60-100] msec	1236
1178	NAC:	n-acetyl cysteine	QT:	Q to T interval on the ECG waveform/	1237
1179				varies with HR	1238
1180	Narrative Headers:		QTc:	QT interval corrected for HR/usually	1239
1181	• Scenario/Substances:	concise narrative of EMS & pre-HCF		QTcB=QT/RR ^{1/2} (Bazett correction) 1-15 y-o	1240
1182	events			[<440] msec/adult male [<430] msec/adult	1241
1183	• Past Medical History:	available relevant past medical		female [<450] msec	1242
1184	history		RA:	on room air	1243
1185	• Physical Exam:	initial physical exam if available	RBBB:	right bundle branch block on ECG	1244
1186	• Laboratory/Diagnostic Findings:	initial results/give units	RBC:	red blood cell(s)	1245
1187	except for units given in abbreviations		RLL:	right lower lobe	1246
1188	• Clinical Course:	concise narrative of HCF and beyond	ROSC:	return of spontaneous circulation	1247
1189	with outcomes		RPC:	regional poison center	1248
1190	• Autopsy Findings:	= medical examiner and/or autopsy	RR:	respiratory rate/ breaths per minute	1249
1191	results		s/p:	status post	1250

1251	salicylate:	aspirin/acetylsalicylic acid/therapeutic
1252		[15-30] mg/dL
1253	SBP:	systolic blood pressure
1254	sec:	seconds
1255	SL:	sublingual
1256	SVT:	supraventricular tachycardia
1257	T (oral):	Temperature (oral) [36.4/37.2]°C or
1258	T (rectal):	Temperature (rectal) [36.4/37.2]°C or
1259	T (tympanic):	Temperature (tympanic) [36.4/37.2]°C
1260	TBSA:	total body surface area
1261	THC:	tetrahydrocannabinol
1262	THC Homolog:	one or more of the products (Blaze/
1263		Dawn/herbal incense/K2/Red X/spice/
1264		et al) or chemicals (cannabicyclohexa-
1265		no/CP-47/497/JWH-018/JWH-073/
1266		JWH-200/et al)
1267	TPN:	total parenteral nutrition
1268	Tprot:	total protein
1269	troponin:	troponin I/normal range [0-0.08] ng/
1270		mL/Cut-off for MI > 0.04ng/mL
1271	TTE:	transthoracic echocardiogram
1272	U:	units
1273	U/dL:	units per deciliter
1274	U/L:	units per liter
1275	U/mL:	units per milliliter
1276	UA:	urinalysis
1277	UDS:	urine drug screen
1278	Urea nitrogen (BUN):	[6-17] mg/dL
1279	VBG:	venous blood gases
1280	pH:	hydrogen ion concentration
1281		[7.31-7.41 mmHg]
1282	pCO ₂ :	partial pressure of carbon dioxide
1283		[41-51 mmHg]
1284	pO ₂ :	partial pressure of oxygen
1285		[30-40 mmHg]
1286	HCO ₃ :	bicarbonate [22-28 mEq/L]
1287	BE:	base excess [±2mEq/L or mmol/L]
1288	VF:	ventricular fibrillation
1289	VSD:	ventricular septal defect
1290	VT:	ventricular tachycardia
1291	WBC:	white blood cell (leukocyte) count
1292		[3.54-9.06] 10 ³ /mm ³
1293	WBI:	whole bowel irrigation
1294	WNL:	within normal limits
1295	y/o:	year old

1297 **Disclaimer**—all laboratories are different and provide their own normal
1298 ranges. Units and normal ranges are provided here for general guidance
1299 only. These values were taken from Harrison's^a, Goldfrank's^b or Dart^c
1300 ^aTable S10-1 Selected Examples of Laboratory Critical Values, *Harrison's*
1301 *Principles of Internal Medicine* 21e. McGraw-Hill Professional, 2022.
1302 Available from: <https://accesspharmacy.mhmedical.com/> Aug 11, 2024.
1303 ^b*Goldfrank's Toxicologic Emergencies*, 11th Edition, McGraw-Hill Education,
1304 2019. Available from <https://accesspharmacy.mhmedical.com/> Aug 11,
1305 2024.
1306 ^c*Dart RC, ed. Medical Toxicology, 3rd Edition*, Lippincott, Williams & Wilkins,
1307 2004.
1308 **Typical laboratory panels**
1309 ABG-pH/pCO₂/pO₂/HCO₃/BE
Basic metabolic panel: Na/K/Cl/CO₂/BUN/Cr/Glu/AG
Complete blood count: WBC/Hgb/Hct/platelets

APPENDIX D

PoisonHelp.org

Methods: Raw data from PoisonHelp.org was extracted into Microsoft Excel 365 in sequential contact format. Data regarding annual contacts, age distribution of person involved in online contact, and substances involved in contact, were displayed by year. On review of each year, it was evident that some sequential contacts appeared to be repeat entries due to similarities of nearly every data field over short time periods (i.e., minutes) between contacts. The reason for these repeats is unknown but could be due to the pressing of the submission button multiple times. To account for these apparent repeat values, criteria were put in place to identify and exclude this data from final analysis. The criteria included adjacent sequential contacts or those separated by only a single contact, line items with identical age category, state, the first three characters of the verbatim substance input, browser version and originating operating system.
Results: Table D-1 shows ages of contacts reported to PoisonHelp.org Virtual Poison Center during the past 3 years of operation.

Table D-1. Age Distribution of PoisonHelp.org Contacts

Year	2021	2022	2023
Age ≤5	3,799	2,614	3,340
6-12	946	884	977
Teen 13-19	2,490	2,058	2,134
Adult 20-69	10,143	8,687	10,263
Adult 70+	1,068	1,093	1,214
Unknown Age	1	0	0
Total Counts	18,447	15,336	17,928

Table D-2 lists the 15 most frequent substances involved in contacts when the substance was known (n = 17,343) reported to PoisonHelp.org in 2023. The generic code "Unknown substances unlikely to be a drug" was the fourth most frequent substance (n=585) which is a change from last year, when it was the most frequent substance. Another significant change was the inclusion of the GLP-1 agonists in the top 15 at number 7.

Table D-2. Substance Frequency of the 15 Most Common Substances

Substance Generic Code	Contact Counts	Percentage of Contacts
Systemic Antibiotic Preparations (Oral, Intravenous, Intramuscular)	723	4.17%
Benzodiazepines	687	3.96%
Sertraline	604	3.48%
Atypical Antipsychotics	489	2.82%
Ibuprofen	432	2.49%
Other Types of Miscellaneous Prescription or Over the Counter Drug	414	2.39%
Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists	394	2.27%
Amphetamines and Related Compounds	364	2.10%
Cetirizine	301	1.74%
Escitalopram	271	1.56%
Miscellaneous Unknown Drugs	266	1.53%
Antacids: Proton Pump Inhibitors	265	1.53%
Acetaminophen Alone, Adult	264	1.52%
Corticosteroids	252	1.42%
Beta Blocker, Alone	240	1.32%

Total number of entries and excluded entries for the past three years of contacts are expressed in Table D-3 below:

Table D-3. PoisonHelp.org Contacts per Year

Year	2021	2022	2023	3 Year Totals
Original Counts	21,691	18,649	21,675	62,015
Excluded Repeat Entries	3,244	3,313	3,747	10,304
Final Counts	18,447	15,336	17,928	51,711
Information Contacts*	0	6,283	8,646	14,929
Final Count minus information counts*	18,447	9,053	9,282	36,782

*Only from 2022 onward were contacts stratified between exposure and information. Information contacts are those in which the user indicated there was no exposure to the queried substance.

The total number of contacts for the initial seven years of PoisonHelp.org operation are presented in Figure D-1 below:

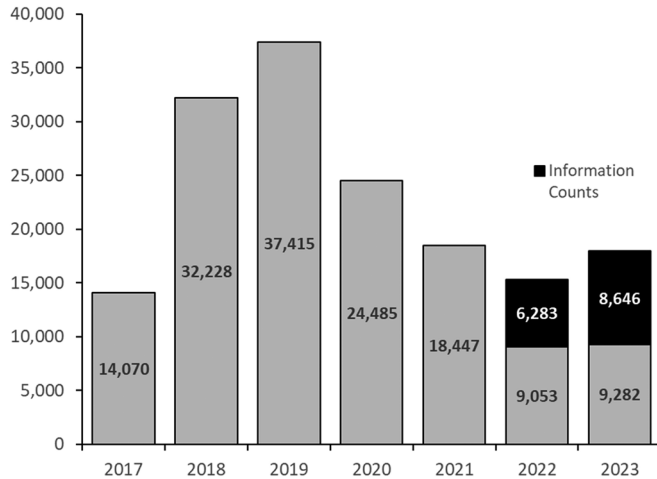


Figure D-1. Contacts per Year for PoisonHelp.org

APPENDIX E

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As in previous years, the initial review of reported fatalities and development of the abstracts and case data for NPDS was the responsibility of the staff at the 55 participating PCs. Many individuals at each center participated in the fatality case preparation. These toxicology professionals and their centers are:

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1254	William Eggleston, PharmD	Connor Walsh, PharmD, DABAT, Parkland Health, Dallas, TX	1313
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1256	Nicholas Nacca, MD	Denese Britt, MS, BSN, CSPI, Tennessee Poison Center, Nashville, TN	1315
1257	Sarah Mahonski, MD	Diane Calello†, MD, FAAP, FACMT, New Jersey Poison Information and Education System, Newark, NJ [Peds]	1316
1258	Michael Keenan, MD	Diane E. Hindman†*, PharmD MD FAAP FACMT, Phoenix Children's and University of Arizona College of Medicine Phoenix, AZ, the Arizona Poison and Drug Information Center Tucson, AZ, and HonorHealth Phoenix, AZ	1317
1259	David Toomey, MD	Elizabeth Grossart, MD, U.S. Army Medical Center of Excellence and Brooke Army Medical Center Dept of Emergency Medicine, Joint Base San Antonio, TX	1318
1260	Conor Young, MD	Elizabeth J Scharman, PharmD, DABAT, BCPS, FAACT, West Virginia Poison Center, Charleston, WV	1319
1261	Matthew Kolbeck, MD	Elizabeth Silver, PharmD, DABAT, Kansas Poison Center, Kansas City, KS	1320
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1264	Utah Poison Control Center	Greg Makar, MD, Banner Good Samaritan Medical Center, Phoenix, AZ	1323
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1273	Catherine Dong, MD	Justin Loden, PharmD, CSPI, DABAT, Tennessee Poison Center, Vanderbilt University Medical Center, Nashville, TN	1332
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1295	America's Poison Centers* Fatality Review Team		1354
1296	The Lead and Peer review of the 2022 fatalities was carried out by the 50 individuals listed here including 5 who reviewed the pediatric cases [Peds]. The authors and the America's Poison Centers* wish to express our appreciation for their volunteerism, dedication, hard work and good will in completing this task in a limited time frame.		1355
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 1140 [†] These reviewers served as associate managers during final review wrap up.
 1141 * These reviewers further volunteered to read the top ranked 200 ab-
 1142 stracts and judged to publish or not publish each.

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 1170 Lee Livermore, BAA
 1171 Tammy Noble, RN, BSN, CSPI
 1172 Scott Schaeffer, RPh, DABAT
 1173 Julie Weber, RPh, CSPI

America's Poison Centers[®] Surveillance Team

1175 NPDS surveillance anomalies are analyzed daily by a team of 9 medical
 1176 and clinical toxicologists working across the country in a distributed sys-
 1177 tem. These dedicated professionals interface with the Health Studies
 1178 Branch, National Center for Environmental Health, Centers for Disease
 1179 Control and Prevention (HSB/NCEH/CDC) and the PCs on a regular basis
 1180 to identify anomalies of public health significance and improve NPDS
 1181 surveillance systems:
 1182 Alvin C. Bronstein, MD, FACEP, FACMT - Director
 1183 Alfred Aleguas, PharmD, DABAT
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 1190 Henry A. Spiller, MS, DABAT, FAACT

Regional Poison Center Fatality Awards

Each year, America's Poison Centers[®] and the Fatality Review team recog-
 nizes several regional PCs for their extra effort in their preparation of
 fatality reports and prompt responses to reviewer queries. The awards
 are presented each year at the North American Congress of Clinical
 Toxicology Annual meeting.

First Center to Complete all Cases (1/2/2024)
 West Virginia Poison Center (Charleston)
 Largest Number with Autopsy Reports (33 of 63 cases; 52%)
 North Carolina Poison Control (Charlotte)
 Highest Percentage with Autopsy Reports (91% of 35 cases)
 Cincinnati Drug and Poison Information Center (Cincinnati)
 Largest Number of Indirect cases (n= 1,048; 79% of all Indirect cases)
 Banner Poison & Drug Information Center (Phoenix)
 Highest Overall Quality of Reports (5.85 out of possible 12 for 19 cases)
 Arizona Poison & Drug Information Center (Tucson)
 Greatest improvement in Overall Quality of Reports (4.12 increase from
 last year)
 Connecticut Poison Control Center (Farmington)
 Most Narratives Published in the 2023 Annual report (6 of the 61 pub-
 lished narratives)
 North Carolina Poison Control (Charlotte)
 Most Responsive Regional Poison Center (126-day 100% responses to 10
 initial case queries)
 Missouri Poison Center (St. Louis)
 Honorable Mention (with 96% response rate)
 Connecticut Poison Control Center (Farmington)
 Teaching Award for outstanding contributions to case quality through
 Reviewer teaching
 Steven M Marcus, MD, Professor Emeritus, NJ Medical School, Rutgers
 University
 Honorable Mention
 Christine Murphy
 Susan Smolinske

APPENDIX F

Data definitions

Reason for Exposure

NPDS classifies all encounters as either an Exposure case (concern about
 an exposure to a substance) or an Information request (no exposed hu-
 man or animal). A contact may provide information about one or more
 exposed person or animal.

SPIs record the reasons for exposure as reported by callers according
 to the following definitions:

Unintentional general: All unintentional exposures not otherwise defined be-
 low. This includes most unintentional exposures in children ≤5 years of age.

Environmental: Any passive, non-occupational exposure that results from
 contamination of air, water, or soil. Environmental exposures are usually
 caused by manmade contaminants.

Occupational: An exposure that occurs as a direct result of the person being
 on the job or in the workplace.

Therapeutic error: An unintentional deviation from a proper therapeutic
 regimen that results in the wrong dose, incorrect route of administration,
 administration to the wrong person, or administration of the wrong sub-
 stance. Only exposures to medications or products used as medications
 are included. Drug interactions resulting from unintentional administra-
 tion of drugs or foods which are known to interact are also included.

Unintentional misuse: Unintentional, improper or incorrect use of a non-
 pharmaceutical substance. Unintentional misuse differs from intentional
 misuse in that the exposure was unplanned or not foreseen by the patient.

Bite/sting: Includes all bites and stings, with or without envenomation.

Food poisoning: Suspected or confirmed food poisoning; ingestion of food contaminated with microorganisms is included.

Unintentional unknown: An exposure determined to be unintentional, but the exact reason is unknown.

Suspected suicidal: An exposure resulting from the inappropriate use of a substance for reasons that are suspected to be self-destructive or manipulative.

Intentional misuse: An exposure resulting from the intentional improper or incorrect use of a substance for reasons other than the pursuit of a psychotropic effect.

Intentional abuse: An exposure resulting from the intentional improper or incorrect use where the patient was likely attempting to gain a high, euphoric effect or some other psychotropic effect, including recreational use of a substance for any effect.

Intentional unknown: An exposure that is determined to be intentional but the specific motive is unknown.

Contaminant/tampering: The patient is an unintentional victim of a substance that has been adulterated (either maliciously or unintentionally) by the introduction of an undesirable substance.

Malicious: Patients who are victims of another person's intent to harm them.

Withdrawal: Inquiry about or experiencing of symptoms from a decline in blood concentration of a pharmaceutical or other substance after discontinuing therapeutic use or abuse of that substance, or withdrawal triggered by administration of another drug.

Adverse Reaction Drug: Unwanted effects due to an allergic, hypersensitivity, or idiosyncratic response to the active ingredient(s), inactive ingredient(s) or excipient of a drug, chemical, or other drug substance when the exposure involves the normal, prescribed, labeled or recommended use of the substance.

Adverse Reaction Food: Unwanted effects due to an allergic, hypersensitivity, or idiosyncratic response to a food substance.

Adverse Reaction Other: Unwanted effects due to an allergic, hypersensitivity, or idiosyncratic response to a substance other than drug or food.

Unknown Reason: Reason for the exposure cannot be determined or no other category is appropriate.

Medical Outcome

No effect: The patient did not develop any signs or symptoms as a result of the exposure.

Minor effect: The patient developed some signs or symptoms as a result of the exposure, but they were minimally bothersome and generally resolved rapidly with no residual disability or disfigurement. A minor effect is often limited to the skin or mucus membranes (e.g., self-limited gastrointestinal symptoms, drowsiness, skin irritation, first degree dermal burn, sinus tachycardia without hypotension, and transient cough).

Moderate effect: The patient exhibited signs or symptoms as a result of the exposure (including complications of the exposure) that were more pronounced, more prolonged, or more systemic in nature than minor symptoms. Usually, some form of treatment is indicated. Symptoms were not life-threatening, and the patient had no residual disability or disfigurement (e.g., corneal abrasion, acid-base disturbance, high fever, disorientation, hypotension that is rapidly responsive to treatment, and isolated brief seizures that respond readily to treatment).

Major effect: The patient exhibited signs or symptoms as a result of the exposure (including complications of the exposure) that were life-threatening or resulted in significant residual disability or disfigurement (e.g.,

repeated seizures or status epilepticus, respiratory compromise requiring intubation, ventricular tachycardia with hypotension, cardiac or respiratory arrest, esophageal stricture, and disseminated intravascular coagulation).

Death: The patient died as a result of the exposure or as a direct complication of the exposure.

Not followed, judged as nontoxic exposure: No follow-up calls were made to determine the outcome of the exposure because the substance implicated was nontoxic, the amount implicated was insignificant, or the route of exposure was unlikely to result in a clinical effect.

Not followed, minimal clinical effects possible: No follow-up calls were made to determine the patient's outcome because the exposure was likely to result in only minimal toxicity of a trivial nature. (The patient was expected to experience no more than a minor effect.)

Unable to follow, judged as a potentially toxic exposure: The patient was lost to follow-up, refused follow-up, or was not followed, but the exposure was significant and may have resulted in a moderate, major, or fatal outcome.

Unrelated effect: The exposure was probably not responsible for the effect.

Confirmed nonexposure: This outcome option was coded to designate cases where there was reliable and objective evidence that an exposure initially believed to have occurred actually never occurred (e.g., all missing pills are later located). All cases coded as confirmed nonexposure are excluded from this report.

Death, indirect report: Death, indirect report are deaths that the poison center acquired from medical examiner or media, but did not manage nor answer any questions about the death.

Relative Contribution to Fatality (RCF)

The Case Review Team (CRT) includes the Author and Reviewer from the RPC, the America's Poison Centers® Lead Reviewer, Peer Reviewer and Manager.

The definitions used for the Relative Contribution to Fatality (RCF) classification were as follows:

- Undoubtedly responsible** - In the opinion of the CRT, the Clinical Case Evidence establishes beyond a reasonable doubt that the substances actually caused the death.
- Probably responsible** - In the opinion of the CRT, the Clinical Case Evidence suggests that the substances caused the death, but some reasonable doubt remained.
- Contributory** - In the opinion of the CRT, the Clinical Case Evidence establishes that the substances contributed to the death, but did not solely cause the death. That is, the substances alone would not have caused the death, but combined with other factors, were partially responsible for the death.
- Probably not responsible** - In the opinion of the CRT, the Clinical Case Evidence establishes to a reasonable probability, but not conclusively, that the substances associated with the death did not cause the death.
- Clearly not responsible** - In the opinion of the CRT, the Clinical Case Evidence establishes beyond a reasonable doubt that the substances did not cause this death.
- Unknown** - In the opinion of the CRT, the Clinical Case Evidence is insufficient to impute or refute a causative relationship for the substances in this death.