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AAPCC ANNUAL DATA REPORT

2005 Annual Report of the American Association of Poison Control Centers' National Poisoning and Exposure Database

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Background. The American Association of Poison Control Centers (AAPCC; http://www.aapcc.org) maintains the national database of information logged by the country's 61 Poison Control Centers (PCCs). Case records in this database are from self-reported calls: they 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.), or request information/educational materials. Exposures do not necessarily represent a poisoning or overdose. The AAPCC is not able to completely verify the accuracy of every report made to member centers. Additional exposures may go unreported to PCCs, and data referenced from the AAPCC should not be construed to represent the complete incidence of national exposures to any substance(s). U.S. Poison Centers make possible the compilation and reporting of this report through their staffs' meticulous documentation of each case using standardized definitions and compatible computer systems. The 61 participating poison centers in 2005 are:

Regional Poison Control Center, Birmingham, AL
Alabama Poison Center, Tuscaloosa, AL
Arizona Poison and Drug Information Center, Tucson, AZ;
Banner Poison Control Center, Phoenix, AZ
Arkansas Poison and Drug Information Center, Little Rock, AK
California Poison Control System–Fresno/Madera Division, CA
California Poison Control System–Sacramento Division, CA
California Poison Control System–San Diego Division, CA
California Poison Control System–San Francisco Division, CA
Rocky Mountain Poison and Drug Center, Denver, CO
Connecticut Poison Control Center, Farmington, CT
National Capital Poison Center, Washington, DC
Florida Poison Information Center, Tampa, FL
Florida Poison Information Center, Jacksonville, FL;
Florida Poison Information Center, Miami, FL
Georgia Poison Center, Atlanta, GA
Illinois Poison Center, Chicago, IL
Indiana Poison Center, Indianapolis, IN
Iowa Statewide Poison Control Center, Sioux City, IA
Mid-America Poison Control Center, Kansas City, KA
Kentucky Regional Poison Center, Louisville, KY
Louisiana Drug and Poison Information Center, Monroe, LA
Northern New England Poison Center, Portland, ME
Maryland Poison Center, Baltimore, MD
Regional Center for Poison Control and Prevention Serving Massachusetts and Rhode Island, Boston, MA
Children's Hospital of Michigan Regional Poison Control Center, Detroit, MI
DeVos Children's Hospital Regional Poison Center, Grand Rapids, MI
Hennepin Regional Poison Center, Minneapolis, MN
Mississippi Regional Poison Control Center, Jackson, MS
Missouri Regional Poison Center, St Louis, MO
Nebraska Regional Poison Center, Omaha, NE
New Jersey Poison Information and Education System, Newark, NJ
New Mexico Poison and Drug Information Center, Albuquerque, NM
New York City Poison Control Center, New York, NY
Long Island Regional Poison and Drug Information Center, Mineola, NY
Ruth A. Lawrence Poison and Drug Information Center, Rochester, NY
Upstate (formerly Central) New York Poison Center, Syracuse, NY
Western New York Poison Center, Buffalo, NY
Carolinas Poison Center, Charlotte, NC
Cincinnati Drug and Poison Information Center, Cincinnati, OH
Central Ohio Poison Center, Columbus, OH
Greater Cleveland Poison Control Center, Cleveland, OH
Oklahoma Poison Control Center, Oklahoma City, OK
Oregon Poison Center, Portland, OR
Pittsburgh Poison Center, Pittsburgh, PA
The Poison Control Center, Philadelphia, PA;
Puerto Rico Poison Center, San Juan, PR
Palmetto Poison Center, Columbia, SC
Tennessee Poison Center, Nashville, TN
Central Texas Poison Center, Temple, TX
North Texas Poison Center, Dallas, TX
Southeast Texas Poison Center, Galveston, TX

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Texas Panhandle Poison Center, Amarillo, TX
West Texas Regional Poison Center, El Paso, TX
South Texas Poison Center, San Antonio, TX
Utah Poison Control Center, Salt Lake City, UT
Virginia Poison Center, Richmond, VA
Blue Ridge Poison Center, Charlottesville, VA
Washington Poison Center, Seattle, WA
West Virginia Poison Center, Charleston, WV
Wisconsin Poison Center, Milwaukee, WI

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INTRODUCTION

The American Association of Poison Control Centers (AAPCC) is a not-for-profit nongovernmental association representing the United States' 61 Poison Control Centers (PCCs) and their staffs. The AAPCC compiles the information reported by the regional PCCs into its national database. These data are used to identify hazards early, focus prevention education, guide clinical research, direct training, and detect chemical/bioterrorism incidents. AAPCC data have prompted product reformulations, repackaging, recalls, and bans; are used to support regulatory actions; and contribute to post-marketing surveillance on newly released drugs and products.

From its inception in 1983, the AAPCC's number of poisonings and exposures reported by the country's PCCs has grown dramatically, with increases in the number of participating poison centers, population served by those centers, and reported human exposures (Table 1A) (1–22).

Database Fluidity

Information in the AAPCC's database is dynamic, with follow-up calls and updated information allowing for changes in coding of some cases over time. The information reported in this article reflects only those cases classified as:

TABLE 1A
Growth of the AAPCC Toxic Exposure Surveillance System (TESS®) database

Year	No. of participating centers	Population served (in millions)	Human exposures reported	Exposures per thousand population
1983	16	43.1	251,012	5.8
1984	47	99.8	730,224	7.3
1985	56	113.6	900,513	7.9
1986	57	132.1	1,098,894	8.3
1987	63	137.5	1,166,940	8.5
1988	64	155.7	1,368,748	8.8
1989	70	182.4	1,581,540	8.7
1990	72	191.7	1,713,462	8.9
1991	73	200.7	1,837,939	9.2
1992	68	196.7	1,864,188	9.5
1993	64	181.3	1,751,476	9.7
1994	65	215.9	1,926,438	8.9
1995	67	218.5	2,023,089	9.3
1996	67	232.3	2,155,952	9.3
1997	66	250.1	2,192,088	8.8
1998	65	257.5	2,241,082	8.7
1999	64	260.9	2,201,156	8.4
2000	63	270.6	2,168,248	8.0
2001	64	281.3	2,267,979	8.1
2002	64	291.6	2,380,028	8.2
2003	64	294.7	2,395,582	8.1
2004	62	293.7	2,438,643	8.3
2005	61	296.4	2,424,180	8.2
Total			41,079,401	

Human exposures to substances as reported to U.S. Poison Control Centers (PCCs) and transmitted to the AAPCC national database 1983–2005. Each case record represents a closed case where a caller reported an actual or suspected exposure to a substance. Duplicate cases reported to more than one PCC are not counted.

- exposure calls (non-administrative, non-information calls; the caller was concerned about an exposure to a substance)
- having occurred in humans (no animal species)
- where the call status has been deemed closed (the PCC has determined no further information is available or no further follow-up/recommendations will be made). Most calls are closed within the first few hours; some calls about patients admitted to hospitals remain open for weeks or months depending on the particulars of a case.

Database Record Count – Exposures Reported in Humans

The cumulative AAPCC database now contains over 49 million case records of which 41.08 million represent human exposure cases. This report includes 2,424,180 human exposure cases reported to all 61 participating PCCs during 2005. While an additional 2,093 calls were classified as open at the time of preparation of this report, all prior Annual Data Reports have looked only at closed human exposure calls and for appropriate comparison this report does the same.

Trends in Reported Poisonings/Exposures

The data do not directly identify a trend in the overall incidence of poisonings in the United States because the percentage of actual exposures and poisonings reported to PCCs is unknown (Fig. 1).

Although this report focuses on the human exposure cases reported to Poison Control Centers in 2005, the database also contains data on animal exposures (Table 1B), human confirmed nonexposures (7,983), animal confirmed nonexposures (375), and information calls (1,400,904) (Table 1C).

An additional 4,688 duplicate reports (reported to more than 1 participating poison center) were excluded. This total of 3,825,084 exposure cases and information calls reported to PCCs in 2005 does not reflect the full extent of poison center effort, such as prevention and education.

In addition, 3,976,586 million follow-up calls were placed by PCCs in 2005 to provide further patient guidance, confirm compliance with recommendations, and gather final outcome data. Follow-ups were done in 44.9% of human exposure cases. One follow-up call was made in 22.2% of human exposure cases, and multiple follow-up calls (range 2–125) were placed in 21.8% of cases.

Information (Non-exposure) Calls to Poison Centers

Data from 1,400,904 information calls reported to PCCs in 2005 was transmitted to the AAPCC database, including 376,040 calls coded in optional reporting categories such as administrative, immediate referral, and prevention/safety/education (Table 1B). Information calls are not required to be recorded by PCCs and may be reported inconsistently. Overall, the volume of information calls handled by U.S. PCCs increased 9.5% from 2004 to 2005.

The most frequent information call was for drug identification, comprising of 848,082 calls to PCCs during the year. Of these, 129,825 (15.3%) could not be identified over the telephone. Of the drug identification calls, 78.2% were received from the public, 8.6% from health professionals, and 12.4% from law enforcement. Forty-nine percent of drug identification

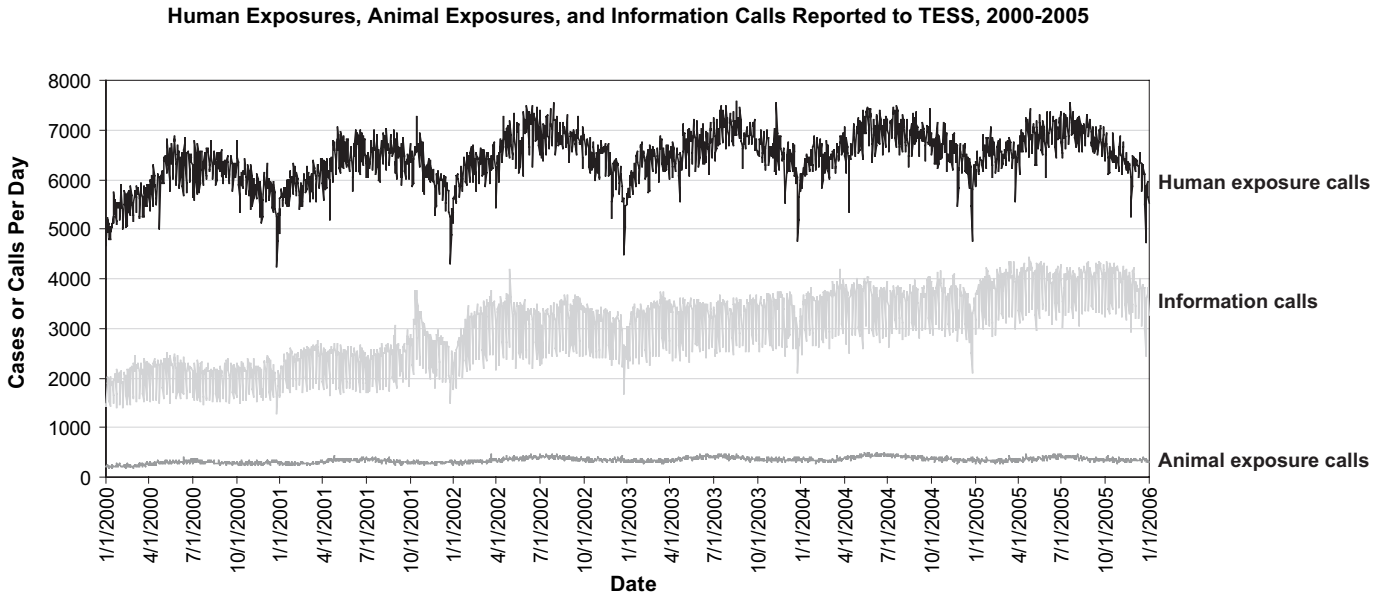

FIG. 1. Daily count of exposures in humans as reported calls made to U.S. Poison Control Centers and transmitted to the AAPCC from 2000–2005. Not all PCCs record that a call regarding an animal has occurred if the caller is immediately referred to the ASPCA hotline.

TABLE 1B
Non-human exposures by animal type

Animal	No. of cases	%
Dog	116,364	88.6
Cat	13,132	10.0
Bird	481	0.4
Rodent / lagomorph	429	0.3
Horse	369	0.3
Sheep / goat	93	0.1
Aquatic	35	0.0
Cow	33	0.0
Other	400	0.3
Total	131,336	1.0

Number of non-human exposures recorded by U.S. Poison Control Centers in 2005. Not all PCCs code calls made about animal exposures and may refer callers to the ASPCA Animal Poison Control Center Hotline.

requests involved drugs sometimes involved in abuse; however, these cases were categorized based on the abuse potential, generally without knowledge of whether abuse was actually intended.

Drug information calls (176,782 calls) comprised 12.6% of all information calls. Of these, 19.2% were questions about drug-drug interactions, 15.7% were questions about therapeutic use and indications, and 10.6% were questions about adverse effects. Environmental inquiries comprised 2.4% of all information calls. Of these environmental inquiries, 20.2% related to cleanup of mercury thermometers and 13.0% involved pesticides.

Poison information comprised 7.0% of information calls, with 12.3% of these information calls involving food poisoning or food preparation practices and 9.4% involving plant toxicity.

CHARACTERIZATION OF PARTICIPATING POISON CONTROL CENTERS 2005

All 61 participating centers submitted data to the AAPCC for all of 2005. Fifty-six centers (92%) were fully certified by the AAPCC at the end of 2005.

The annual human exposure case volume by center ranged from 11,478 to 113,740 (mean 40,852) for centers. The entire population of the 50 states, the District of Columbia and Puerto Rico (296.4 million people (23)) was served by PCCs in 2005.

The average number of human poison exposure consultations handled per day by all U.S. poison centers was 6,642. Higher volumes were observed in the warmer months, with a mean of 6,965 consultations per day in June compared with 6,015 per day in December. On average, ignoring time of day and seasonal fluctuations, U.S. PCCs received one call concerning a suspected or actual human poisoning/exposure every 13 seconds.

Due to variations in poison center penetrance (number of calls made to a PCC per 1,000 population served), it is difficult to extrapolate the number of actual poisonings occurring annually in the United States using AAPCC data alone. Using U.S. census data, the number of human exposure cases reported to any poison center per 1,000 population was calculated by caller state. The minimum penetrance of calls from a state per 1,000 population was 3.4. The maximum number of calls from a state per 1,000 population was 24.3. Mean penetrance across states, the District of Columbia and Puerto Rico was 8.7 and the median was 8.3. If all centers had reached the penetrance level of 24.3 reported exposures in humans per 1,000 population as reported for 1 state, 7.2 million exposures in humans would have been reported to PCCs in 2005. Using the average penetrance of 8.7 calls per 1,000 population, 2.6 million calls would have been reported.

Management of Calls – Specialized Poison Emergency Providers

Calls received at U.S. PCCs are managed by healthcare professionals who have received additional training in managing poisoning emergencies. Poison Center operation as well as clinical education and instruction are directed by Managing Directors (most are PharmDs and RNs with American Board of Applied Toxicology (ABAT) board certification). Medical direction is provided by Medical Directors who are board certified medical toxicologists (MD or DO). At some poison centers, the Managing and Medical Director positions are held by the same person.

Specialists in Poison Information (SPIs) are primarily PharmDs, RNs and RPhs. They work under the supervision of a Certified Specialist in Poison Information (CSPI). SPIs must log a minimum of 2,000 calls at a poison control center to become eligible to take the certifying exam for specialists in poison information.

Poison Information Providers (PIPs) are allied healthcare professionals-in-training. They handle information-type and non-medical (non-hospital) calls and work under the supervision of at least one Certified Specialist in Poison Information (CSPI). Non-medical calls are those which do not require management recommendations to another allied healthcare professional.

U.S. PCCs employ the full-time equivalent of 75 PIPs and 635 SPIs (of whom more than 75% are CSPIs) (24).

REVIEW OF 2005 HUMAN EXPOSURE DATA

No changes to the data collection format were implemented in 2005. Prior revisions had occurred in 1984, 1985, 1993, 2000, 2001, and 2002. Data reported after January 1, 2000, allow an unlimited number of substances for each case, a factor that should be considered when comparing substance data with prior years.

TABLE 1C
Distribution of information calls

Information call type	No. of calls	% of info. calls
Drug identification		
Public inquiry: drug sometimes involved in abuse	339,334	24.22
Public inquiry: drug not known to be abused	212,256	15.15
Public inquiry: unknown abuse potential	12,623	0.90
Public inquiry: unable to identify	99,365	7.09
HCP inquiry: drug sometimes involved in abuse	18,547	1.32
HCP inquiry: drug not known to be abused	34,980	2.50
HCP inquiry: unknown abuse potential	2,332	0.17
HCP inquiry: unable to identify	17,048	1.22
Law enf. inquiry: drug sometimes involved in abuse	56,353	4.02
Law enf. inquiry: drug not known to be abused	33,596	2.40
Law enf. inquiry: unknown abuse potential	2,125	0.15
Law enf. inquiry: unable to identify	13,412	0.96
Other drug ID	6,111	0.44
Subtotal	848,082	60.54
Drug information		
Adverse effects (no known exposure)	18,824	1.34
Brand/generic name clarifications	4,985	0.36
Calculations	438	0.03
Compatibility of parenteral medications	281	0.02
Compounding	1,130	0.08
Contraindications	2,149	0.15
Dietary supplement, herbal, and homeopathic	1,779	0.13
Dosage	15,838	1.13
Dosage form/formulation	4,466	0.32
Drug use during breast-feeding	7,547	0.54
Drug-drug interactions	33,866	2.42
Drug-food interactions	2,070	0.15
Foreign drug	2,489	0.18
Generic substitution	920	0.07
Indications/therapeutic use	27,805	1.98
Medication administration	4,200	0.30
Medication availability	1,440	0.10
Medication disposal	979	0.07
Pharmacokinetics	4,087	0.29
Pharmacology	2,747	0.20
Regulatory	2,728	0.19
Stability/storage	3,753	0.27
Therapeutic drug monitoring	1,038	0.07
Other drug info	31,223	2.23
Subtotal	176,782	12.62
Environmental information	34,259	2.45
Medical information	32,497	2.32
Occupational information	1,819	0.13
Poison information	97,382	6.95
Prevention/safety/education	47,602	3.40
Teratogenicity information	5,720	0.41
Other information	39,752	2.84
Substance abuse	13,094	0.93
Administrative	37,097	2.65
Caller referred	66,818	4.77
Total	1,400,904	100.00

Distribution of information calls as reported to the AAPCC by 60 of 61 U.S. Poison Control Centers in 2005.

Exposure Site

Of the 2,424,180 human exposures reported in 2005, 92.7% occurred at a residence (Table 2). Exposures occurred in the workplace in 2.1% of cases, schools (1.4%), health care facilities (0.3%), and restaurants or food services (0.3%). Poison center peak call volumes were from 4 to 11 p.m., although call frequency remained consistently high between 8 a.m. and midnight, with 89.7% of calls logged during this 16-hour period.

Age and Gender Distribution

The age and gender distribution of human poison exposure victims is outlined in Table 3. Children younger than three years were involved in 38.1% of cases, and 50.9% occurred in children younger than six years. A male predominance is found among recorded cases involving children younger than 13 years, but this gender distribution is reversed in teenagers and adults, with women comprising the majority of reported poison exposure victims.

Exposures in Pregnancy

Of all poison exposures captured, 8,636 occurred in pregnant women. Of those with known pregnancy duration, exposures reported in patients reported as being pregnant, 32% occurred in the first trimester, 33% in the second trimester, and 26% in the third trimester. In 8.2% of cases (199,127 cases), multiple patients were implicated in the poison exposure episode (i.e., cases were coded as being related to another case, as in siblings sharing a household product, or multiple patients inhaling vapors at a hazardous material spill).

TABLE 2
Site of call and site of exposure, human exposure cases

	Site of caller (%)	Site of exposure (%)
Residence		
Own	75.12	89.65
Other	2.34	3.08
Health care facility	14.60	0.27
Workplace	1.50	2.08
School	0.59	1.40
Public area	0.37	1.14
Restaurant/food service	0.03	0.33
Other	5.15	0.94
Unknown	0.32	1.09

Percentages of caller site and exposure site in calls regarding exposures in humans as made to U.S. Poison Control Centers in 2005.

Fatalities (Tables 4 and 21)

Fatalities differed from the total exposure data set in several ways. Table 4 presents the age and sex distribution for the 1,261 reported fatalities. Although children younger than six years were involved in the majority of poisoning reports, they comprised just 1.9% (24) of the recorded and verified fatalities. Fifty-six percent of poisoning fatalities occurred in 20- to 49-year-old individuals. Table 21 is a log of each of the 1,261 fatalities reported to PCCs.

A single substance was implicated in 91.3% of reported human exposures, and 8.7% of patients were exposed to two or more drugs or products (Table 5). In contrast, 640 (50.8%) of fatal case reports noted exposure to two or more drugs or products.

Chronicity

The overwhelming majority of human exposures were acute (91.5%), compared to just 51.0% of reported poisoning-related fatalities (643 of 1,261). Chronic exposures comprised 1.9% of all poison exposure reports, and acute-on-chronic exposures comprised 5.8% (chronic exposures were defined as continuous or repeated exposures occurring over a period exceeding eight hours).

Reason for Exposure

Specialists in Poison Information (ISPIs) coded the reasons for exposure reported by callers to PCCs according to the following definitions:

- Unintentional general: All unintentional exposures not otherwise defined as follows.
- Environmental: Any passive, nonoccupational 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 substance. Only exposures to medications or products used as medications are included. Drug interactions resulting from unintentional administration of drugs or foods which are known to interact are also included.
- Unintentional misuse: Unintentional improper or incorrect use of a nonpharmaceutical substance. Unintentional misuse differs from intentional misuse in that the exposure was unplanned or not foreseen by the patient.

TABLE 3
Age and gender distribution of human exposure cases

	Male		Female		Unknown Gender		Total		Cumulative total	
Age (y)	No.	% of age group total	No.	% of age group total	No.	% of age group total	No.	% of total exposures	No.	Col %
<1	67,084	52.0%	61,568	47.7%	444	0.3%	129,096	5.3%	129,096	5.3%
1	203,968	52.0%	187,774	47.9%	528	0.1%	392,270	16.2%	521,366	21.5%
2	211,357	52.6%	190,178	47.3%	607	0.2%	402,142	16.6%	923,508	38.1%
3	96,927	55.6%	77,172	44.2%	328	0.2%	174,427	7.2%	1,097,935	45.3%
4	46,702	56.3%	35,988	43.4%	217	0.3%	82,907	3.4%	1,180,842	48.7%
5	27,418	56.8%	20,698	42.9%	158	0.3%	48,274	2.0%	1,229,116	50.7%
Unknown child < = 5	2,301	50.3%	1,854	40.5%	424	9.3%	4,579	0.2%	1,233,695	50.9%
6–12	86,958	57.3%	63,671	42.0%	1,119	0.7%	151,748	6.3%	1,385,443	57.2%
13–19	77,287	45.1%	93,362	54.5%	743	0.4%	171,392	7.1%	1,556,835	64.2%
Unknown child	2,534	37.2%	2,266	33.2%	2,017	29.6%	6,817	0.3%	1,563,652	64.5%
Total children (<20 y)	822,536	52.6%	734,531	47.0%	6,585	0.4%	1,563,652	64.5%	1,563,652	64.5%
20–29	88,662	45.4%	106,503	54.5%	269	0.1%	195,434	8.1%	1,759,086	72.6%
30–39	70,787	42.9%	94,245	57.1%	144	0.1%	165,176	6.8%	1,924,262	79.4%
40–49	60,715	41.5%	85,345	58.4%	99	0.1%	146,159	6.0%	2,070,421	85.4%
50–59	38,765	39.0%	60,610	61.0%	55	0.1%	99,430	4.1%	2,169,851	89.5%
60–69	20,571	36.7%	35,496	63.3%	17	0.0%	56,084	2.3%	2,225,935	91.8%
70–79	13,665	35.0%	25,411	65.0%	10	0.0%	39,086	1.6%	2,265,021	93.4%
80–89	7,642	33.1%	15,422	66.8%	13	0.1%	23,077	1.0%	2,288,098	94.4%
90+	1,084	26.9%	2,941	72.9%	8	0.2%	4,033	0.2%	2,292,131	94.6%
Unknown adult	46,536	39.1%	68,127	57.2%	4,339	3.6%	119,002	4.9%	2,411,133	99.5%
Total adults	348,427	41.1%	494,100	58.3%	4,954	0.6%	847,481	35.0%	847,481	—
Unknown age	4,384	33.6%	5,518	42.3%	3,145	24.1%	13,047	0.5%	2,424,180	100.0%
Total	1,175,347	48.5%	1,234,149	50.9%	14,684	0.6%	2,424,180	100.0%	2,424,180	100.0%

Age and gender distribution of human exposure cases reported to U.S. Poison Control Centers in 2005.

TABLE 4
Distribution of age and gender for 1,261 fatalities

Age (y)	Male	Female	Unknown	Total (%)	Cumulative total (%)
<1	1	2	1	4 (0.3%)	4 (0.3%)
1	4	2	0	6 (0.5%)	10 (0.8%)
2	1	1	0	2 (0.2%)	12 (1.0%)
3	2	4	0	6 (0.5%)	18 (1.4%)
4	1	1	0	2 (0.2%)	20 (1.6%)
5	4	0	0	4 (0.3%)	24 (1.9%)
Unknown child (<6)	0	0	0	0 (0.0%)	24 (1.9%)
6–12	8	4	0	12 (1.0%)	36 (2.9%)
13–19	47	30	0	77 (6.1%)	113 (9.0%)
Unknown child (<19)	0	1	0	1 (0.1%)	114 (9.0%)
20–29	106	83	0	189 (15.0%)	303 (24.0%)
30–39	112	113	0	225 (17.8%)	528 (41.9%)
40–49	146	146	0	292 (23.2%)	820 (65.0%)
50–59	98	90	0	188 (14.9%)	1,008 (79.9%)
60–69	48	42	0	90 (7.1%)	1,098 (87.1%)
70–79	21	15	0	36 (2.9%)	1,134 (89.9%)
80–89	23	37	0	60 (4.8%)	1,194 (94.7%)
90+	4	15	0	19 (1.5%)	1,213 (96.2%)
Unknown adult	22	9	2	33 (2.6%)	1,246 (98.8%)
Unknown age	10	4	1	15 (1.2%)	1,261 (100.0%)
Total	658	599	4	1,261 (100.0%)	1,261 (100.0%)

Age and gender distribution of human exposure cases reported to result in death; as reported to U.S. Poison Control Centers in 2005.

TABLE 5
Number of substances involved in human exposure cases

No. of substances	No of cases	% of cases
1	2,212,235	91.3
2	141,092	5.8
3	41,407	1.7
4	15,907	0.7
5	6,691	0.3
6	3,163	0.1
7	1,654	0.1
8	839	0.0
> = 9	1,192	0.0
Total	2,424,180	100.0

Number of substances involved in human exposure cases.

- Bite/sting: All animal bites and stings, with or without envenomation, are included.
- 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 or euphoric effect.
- Intentional abuse: An exposure resulting from the intentional improper or incorrect use of a substance where the victim was likely attempting to achieve a euphoric or psychotropic effect. All recreational use of substances for any effect is included.
- 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: This category is used to capture patients who are victims of another person's intent to harm them.
- Withdrawal: Effect related to decline in blood concentration of a pharmaceutical or other substance after discontinuing therapeutic use or abuse of that substance.
- Adverse reaction: An adverse event occurring with normal, prescribed, labeled, or recommended use of

TABLE 6A
Reason for human exposure cases

Reason	No.	% Human exposures
Unintentional		
General	1,474,940	60.8%
Therapeutic error	241,033	9.9%
Misuse	102,029	4.2%
Bite/sting	82,119	3.4%
Environmental	59,726	2.5%
Occupational	35,548	1.5%
Food poisoning	32,657	1.3%
Unknown	3,486	0.1%
Subtotal unintentional	2,031,538	83.8%
Intentional		
Suspected suicide	197,316	8.1%
Misuse	46,254	1.9%
Abuse	45,999	1.9%
Unknown	15,388	0.6%
Subtotal intentional	304,957	12.6%
Other		
Malicious	9,110	0.4%
Contamination/ tampering	4,973	0.2%
Withdrawal	1,170	0.0%
Subtotal other	15,253	0.6%
Unknown	11,059	0.5%
Adverse reaction		0.0%
Drug	43,313	1.8%
Food	5,261	0.2%
Other	12,799	0.5%
Subtotal adverse reaction	61,373	2.5%
Total	2,424,180	100.0%

Reason for exposure as reported in cases involving humans. Specialists in Poison Information (SPIs) rely on the history as presented by a caller before making a coding determination.

the product, as opposed to overdose, misuse, or abuse. Included are cases with an unwanted effect because of an allergic, hypersensitive, or idiosyncratic response to the active ingredients, inactive ingredients, or excipients. Concomitant use of a contraindicated medication or food is excluded and coded instead as a therapeutic error.

The vast majority (83.8%) of poison exposures were unintentional; suicidal intent was present in 8.1% of cases (Table 6A). Therapeutic errors accounted for 9.9% of exposures (241,033 cases), with unintentional nonpharmaceutical product misuse comprising another 4.2% of exposures. The types of therapeutic errors observed in each age group are delineated in Table 6B. Thirty-two percent of therapeutic errors involved double-dosing. Dispensing cup errors were seen in 5,466 cases, 10-fold dosing errors in 1,369 cases, iatrogenic or dispensing errors in 5,022 cases, and errors resulting from exposure to multiple products with common ingredients in 7,081 cases.

Unintentional poisonings outnumbered intentional poisonings in all age groups (Table 7). In contrast, of the 1,261 human poisoning fatalities reported, 89.6% of adolescent deaths and 76.6% of adult deaths (older than 19 years) were intentional (Table 8).

Route of Exposure

Ingestion was the route of exposure in 76.7% of cases (Table 9), followed in frequency by dermal, inhalation, and ocular routes. For the 1,261 fatalities, ingestion, inhalation, and parenteral were the predominant exposure routes.

Clinical Effects

The AAPCC database allows for the coding of up to 131 clinical effects (signs, symptoms, or laboratory abnormalities) per case. Clinical effects were coded in 882,083 (36.4%) of cases (18.9% had 1 effect, 9.6% had 2 effects, 4.9% had 3 effects, 1.8% had 4 effects, 0.6% had 5 effects, and 0.6% had >5 effects coded). Of 1,641,600 total clinical effects coded, 80.2% were deemed related to the exposure(s), 8.9% were considered not related, and 10.9% were coded as unknown if related.

Case Management Site

The majority of cases reported to PCCs were managed in a non–health care facility (75.5%), usually at the site of exposure, the patient's own residence (Table 10). This includes the 2.0% of cases that were referred to a health care facility but refused to go. Treatment in a health care facility was rendered in 22.8% of cases.

The percentage of patients treated in a health care facility varied considerably with age. Only 10.5% of children younger than six years and only 13.5% of children between six and 12 years were managed in a health care facility, compared with 48.5% of teenagers (13–19 years) and 37.1% of adults (age>19 years).

Of cases managed in a health care facility, 51.4% were treated and released without admission, 14.5% were admitted for critical care, and 8.0% were admitted for noncritical care.

Where treatment was provided in a health care facility, 37.2% of the patients were referred by the PCC, and 62.8% were already in or en route to the health care facility when the poison center was contacted.

TABLE 6B
Scenarios for therapeutic errors

	No. of cases	<6y (Row %)	6–12 y (Row %)	13–19 y (Row %)	>19 y (Row %)	Unknown (Row %)
Inadvertently took/given medication twice	77,882	25.0	12.5	5.6	56.5	0.4
Other incorrect dose	34,892	38.2	12.4	7.3	41.8	0.3
Wrong medication taken/given	31,634	17.9	12.6	6.6	62.5	0.4
Inadvertently took/given someone else's medication	23,715	21.8	19.2	7.3	51.5	0.2
Medication doses given/taken too close together	19,977	25.2	10.7	7.0	56.9	0.3
Other/unknown therapeutic error	14,368	24.4	11.1	7.4	56.2	0.9
Confused units of measure	10,277	59.5	15.7	5.8	18.9	0.2
Incorrect dosing route	10,238	12.7	5.3	3.5	77.6	0.9
More than one product containing same ingredient	7,081	33.5	15.1	12.2	38.9	0.3
Incorrect formulation or concentration given	6,783	54.1	17.4	4.3	23.9	0.4
Dispensing cup error	5,466	62.3	17.1	5.1	15.4	0.1
Health professional/iatrogenic error	5,022	32.1	10.1	6.1	50.3	1.4
Incorrect formulation or concentration dispensed	1,830	44.5	16.0	6.1	32.8	0.5
10-Fold dosing error	1,369	66.0	5.0	2.5	25.9	0.6
Drug interaction	1,241	10.5	7.4	7.3	74.1	0.6
Exposure through breast milk	191	92.7	0.0	0.5	6.3	0.5

399,030 human exposure cases reported to U.S. Poison Control Centers in 2005 included scenario coding. There are 56 'standard scenarios' covering scenarios ranging from incorrect dosing to use of child-resistant containers to iatrogenic 'therapeutic misadventures.' Table 6B shows the number of cases where various therapeutic error scenarios were coded. More than one scenario can be coded in order to describe a case.

TABLE 7
Distribution of reason for exposure by age

	<6 y		6–12 y		13–19 y		>19 y		Unknown		Total	
Reason	No.	Row %	No.	Row %	No.	Row %	No.	Row %	No.	Row %	No.	Col %
Unintentional	1,225,561	60.3	137,294	6.8	82,964	4.1	572,069	28.2	13,650	0.7	2,031,538	83.8
Intentional	1,144	0.4	8,827	2.9	79,420	26.0	211,210	69.3	4,356	1.4	304,957	12.6
Other	1,183	7.8	1,668	10.9	2,420	15.9	9,637	63.2	345	2.3	15,253	0.6
Adverse reaction	5,151	8.4	3,264	5.3	4,994	8.1	47,171	76.9	793	1.3	61,373	2.5
Unknown	656	5.9	695	6.3	1,594	14.4	7,394	66.9	720	6.5	11,059	0.5
Total	1,233,695	50.9	151,748	6.3	171,392	7.1	847,469	35.0	19,862	0.8	2,424,180	100.0

Table 11 displays the medical outcome of the human poison exposure cases distributed by age, showing a greater rate of severe outcomes in the older age groups. Table 12 compares medical outcome and reason for exposure and shows a greater frequency of serious outcomes in intentional exposures. Table 13 demonstrates an increasing duration of the clinical effects observed with more severe outcomes.

Medical outcome categories were as follows:

- 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 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

TABLE 8
Distribution of reason for exposure and age for 1,261 fatalities

Reason	<6 y	6–12 y	13–19 y	>19 y	Unknown age	Total
Unintentional						
General	10	1	0	3	0	14
Environmental	5	6	3	37	0	51
Occupational	0	0	0	9	1	10
Therapeutic error	0	1	1	59	0	61
Misuse	1	0	0	20	0	21
Bite/sting	0	0	0	7	0	7
Food poisoning	0	0	0	2	0	2
Unknown	0	0	0	6	0	6
Subtotal unintentional	16	8	4	143	1	172
Intentional						
Suicide	0	0	30	583	10	623
Misuse	0	0	5	33	0	38
Abuse	0	0	28	161	2	191
Unknown	1	0	6	91	2	100
Subtotal intentional	1	0	69	868	14	952
Other						
Contamination/tampering	0	0	0	0	0	0
Malicious	2	3	0	3	0	8
Withdrawal	0	0	0	1	0	1
Subtotal other	2	3	0	4	0	9
Adverse reaction	3	0	1	24	0	28
Unknown reason	2	1	3	93	1	100
Total	24	12	77	1,132	16	1,261

Distribution of coded reason for exposure by age group for the 1,261 fatalities reported to the AAPCC in 2005.

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 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. Only those deaths that were probably or undoubtedly related to the exposure are coded here.
- 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.

Tables 14 and 15 outline the use of decontamination procedures, specific antidotes, and measures to enhance elimination in the treatment for patients reported in this database. These

TABLE 9
Distribution of route of exposure for human exposure cases and 1,261 fatalities

	In all exposure cases		In fatal exposure cases	
Route	No.	%	No.	%
Ingestion	1,955,021	76.7	1,020	69.9
Dermal	194,954	7.7	14	1.0
Inhalation	150,831	5.9	145	9.9
Ocular	133,270	5.2	1	0.1
Bites and stings	82,151	3.2	7	0.5
Parenteral	13,667	0.5	70	4.8
Unknown	8,821	0.3	162	11.1
Otic	2,714	0.1	0	0.0
Other	2,536	0.1	4	0.3
Aspiration	1,672	0.1	36	2.5
Rectal	918	0.0	0	0.0
Vaginal	839	0.0	1	0.1
Total	2,547,394	100.0	1,460	100.0

Multiple routes of exposure were observed in many poison exposure victims. Percentage is calculated on the total number of exposure routes (2,547,394 for all patients; 1,460 for fatal cases), rather than the total number of human exposures (2,424,180) or fatalities (1,261).

TABLE 10
Management site of human exposure sites

Site	No.	%
Managed on site, nonhealth care facility	1,781,063	73.5%
Managed in health care facility		
Treated and released	284,619	11.7%
Admitted to critical care	80,082	3.3%
Admitted to noncritical care	44,109	1.8%
Admitted to psychiatry	43,703	1.8%
Lost to follow-up; left against medical advice	100,779	4.2%
Subtotal (managed in HCF)	553,292	22.8%
Other	28,671	1.2%
Refused referral	47,352	2.0%
Unknown	13,802	0.6%
Total	2,424,180	100.0%

must be interpreted as minimum frequencies because of the limitations of telephone data gathering.

Table 16 demonstrates the continuing decline in the use of ipecac-induced emesis in the treatment of poisoning. Ipecac was administered in only 3,027 (0.12%) human poison exposures in 2005. A 35.6% decrease in ipecac syrup use in 2005 compared with 2004 was observed, likely as a result of ipecac use guidelines issued in late 2003. At that time, a joint Guidelines Consensus Panel formed by the American Association of Poison Control Centers, American College of Medical Toxicology, and American Academy of Clinical Toxicology issued a guideline which concluded that the circumstances in which ipecac syrup is the appropriate or desired method of gastric decontamination are rare (25). In a separate report, the American Academy of Pediatrics concluded not only that ipecac should no longer be used routinely as a home treatment strategy, but also recommended disposal of ipecac currently in homes (26).

Table 17A presents the most common substance categories involved in human exposures, listed by frequency of exposure. Tables 17B and 17C present similar data for children and adults, respectively, and show the considerable differences between pediatric and adult poison exposures.

Table 18 lists the substance categories associated with reported deaths; analgesics and sedative/hypnotics/antipsychotics lead this list. Although analgesics are the most frequently involved substance category for both deaths and nonlethal human exposures, there is otherwise little correlation between the frequency of exposures to a substance and the number of deaths. Note that Table 18 accounts for all substances to which a patient has reportedly been exposed (i.e., a patient exposed to an analgesic may have also been exposed to another category of product).

Table 19 shows little variation over the past two decades in the percentage of cases reported to the AAPCC's national database that are fatal poisonings, and in the percentage of reported fatalities as a result of suicide. A breakdown of plant exposures is provided for those most commonly implicated (Table 20).

Fatalities (Table 21 and Appendix B)

U.S. PCCs recorded 1,589 calls where the medical outcome was death and there appeared to be a correlation between the reported substance(s) to which a patient was exposed and the fatality. Three-hundred twenty-eight cases were eventually determined to to be either unrelated to a poison exposure or coded incorrectly as a death (including 16 fatalities reported to one poison center which were unable to be verified). A case log summary of these 1,261 fatal human exposures is presented in Table 21. Each fatality case is abstracted by the reporting poison center and verified for accuracy as much as possible. After extensive review by both local/regional PCC staff and AAPCC reviewers, exposures determined to be either "probably" or "undoubtedly" responsible for the fatality were counted and included in Table 21.

Narrative abstracts of selected interesting or unusual cases (including most incidents with multiple fatalities), and pediatric cases in which the patient is less than six years of age (excluding carbon monoxide cases) are included in Appendix B.

TABLE 11
Medical outcome of human exposure cases by patient age

	<6 y		6–12 y		13–19 y		>19 y		Unknown		Total	
Outcome	No.	% <6 y	No.	% 6–12 y	No.	% 13–19 y	No.	% >19 y	No.	% Unknown Age	No.	% Total
No effect	309,199	25.1	24,886	16.4	26,993	15.7	98,672	11.6%	3,365	16.9	463,115	19.1
Minor effect	103,370	8.4	24,780	16.3	43,538	25.4	190,227	22.4%	2,436	12.3	364,351	15.0
Moderate effect	9,821	0.8	3,991	2.6	18,218	10.6	85,011	10.0%	581	2.9	117,622	4.9
Major effect	759	0.1	224	0.1	1,994	1.2	13,505	1.6%	63	0.3	16,545	0.7
Death	24	0.0	12	0.0	77	0.0	1,134	0.1%	14	0.1	1,261	0.1
No follow-up, nontoxic	255,339	20.7	23,096	15.2	9,477	5.5	54,402	6.4%	1,572	7.9	343,886	14.2
No follow-up, minimal toxicity	516,724	41.9	66,945	44.1	49,462	28.9	295,056	34.8%	5,798	29.2	933,985	38.5
No follow-up, potentially toxic	20,545	1.7	4,119	2.7	17,170	10.0	73,587	8.7%	5,543	27.9	120,964	5.0
Unrelated effect	17,914	1.5	3,695	2.4	4,463	2.6	35,890	4.2%	490	2.5	62,452	2.6
Total	1,233,695	100.0	151,748	100.0	171,392	100.0	847,483	100.0%	19,862	100.0	2,424,180	100.0

TABLE 12
Distribution of medical outcome by reason for exposure in human exposure cases

	Unintentional		Intentional		Other		Adverse reaction		Unknown		Total	
Outcome	No.	Col%	No.	Col%	No.	Col%	No.	Col%	No.	Col%	No.	Col%
No effect	405,092	19.9	54,278	17.8	1,607	10.5	1,239	2.0	899	8.1	463,115	19.1
Minor effect	261,971	12.9	82,814	27.2	3,239	21.2	14,603	23.8	1,724	15.6	364,351	15.0
Moderate effect	49,692	2.4	57,247	18.8	1,194	7.8	7,687	12.5	1,802	16.3	117,622	4.9
Major effect	2,852	0.1	12,139	4.0	123	0.8	747	1.2	684	6.2	16,545	0.7
Death	172	0.0	952	0.3	9	0.1	28	0.0	100	0.9	1,261	0.1
No follow-up, nontoxic	337,141	16.6	4,452	1.5	899	5.9	1,148	1.9	246	2.2	343,886	14.2
No follow-up, minimal toxicity	871,253	42.9	33,205	10.9	5,309	34.8	22,655	36.9	1,563	14.1	933,985	38.5
No follow-up, potentially toxic	57,508	2.8	54,359	17.8	1,861	12.2	4,379	7.1	2,857	25.8	120,964	5.0
Unrelated effect	45,857	2.3	5,511	1.8	1,012	6.6	8,887	14.5	1,184	10.7	62,451	2.6
Total	2,031,538	100.0	304,957	100.0	15,253	100.0	61,373	100.0	11,059	100.0	2,424,180	100.0

TABLE 13
Duration of clinical effects by medical outcome

	Minor effect	Moderate effect	Major effect
Duration of effect	Col%	Col %	Col %
< = 2 hours	38.3	6.0	1.9
> 2 hours, < = 8 hours	25.5	21.3	6.1
> 8 hours, < = 24 hours	17.2	31.3	26.4
> 24 hours, < = 3 days	5.2	17.8	32.1
> 3 days, < = 1 week	1.6	6.4	16.2
> 1 week, < = 1 month	0.5	1.7	5.3
>1 month	0.2	0.4	1.0
Anticipated permanent	0.2	0.3	2.5
Unknown	11.3	14.7	8.5

TABLE 14
Decontamination and therapeutic interventions

Therapy	No. of patients	%
Decontamination only	1,168,877	48.2
Observation only	324,696	13.4
No therapy provided	237,975	9.8
Decontamination and other therapy	153,641	6.3
Other therapy only (no decontamination)	156,835	6.5
Unknown if therapy was provided/ patient refused	382,156	15.8
Total	2,424,180	100.0

Table 21 also reports the highest blood concentrations for responsible agents when that information is known. In addition, Table 21 identifies those cases reported indirectly to the poison center (81, or 6.4% of 1,261 cases), and those cases in which a prehospital cardiac and/or respiratory arrest occurred (626, or 49.6% of cases).

Deaths are categorized in Table 21 according to the agent deemed most responsible for the death, by agreement of the medical director of the reporting center and at least two additional toxicologist reviewers. A single agent was reported as the probable cause in 621 (49.6%) deaths. Additional agents implicated (up to a maximum of 3 total agents) are listed below the primary agent. Cases in which more than three agents were involved are also identified, but agents beyond the first three are not listed in Table 21.

Characteristics of 1,261 Fatalities

The age distribution of reported fatalities is similar to that in past years, with the overwhelming majority of fatal cases occurring in adults age > 19 years (91%).

Pediatric Fatalities – Age Less than 6 Years

There were 24 fatalities reported in children younger than six years, similar to numbers reported over the last decade (Table 19). These pediatric cases represented 1.9% of total reported fatalities, similar to percentages reported over most of the last six years. The percentage of pediatric fatalities related to total pediatric calls was 0.003%. By comparison, 1.2% of all adult exposures reported recorded death as the medical outcome. Of the reported deaths in children younger than six years of age, 16 were known to be unintentional (Table 8). Two deaths in children younger than six years of age were coded as resulting from malicious intent. Of the 14 medication-associated deaths, one was from a nonprescription medication and 13 were associated with prescription medications (often not the child's prescription). Of the prescription medications, five contained opioids, including three from methadone. While this number is less than the nine reported last year, it still represents a worrisome increase in opioid-related deaths in this age range compared to earlier years. There were three fatalities related to household products, a decrease from previous years.

Pediatric Fatalities – Ages 6–12 Years

In the age range 6 to 12 years, there were 12 reported fatalities, of which 9 were from carbon monoxide exposures.

Adolescent Fatalities – Ages 13–19 Years

In the age range 13 to 19 years, there were 77 reported fatalities, slightly higher than the mean of 71 deaths in this age group reported annually since 1999, but lower than the 90 reported in 2004. Looking at the reasons for the adolescent fatalities, 39.0% were presumed suicides, and 36.4% were caused by intentional abuse. These numbers are similar to those in most recent years except for 2003 when abuse was the most common reason. As in past years, only a small number (4/77 (5.2%)) of adolescent fatalities were coded as being unintentional; two cases were due to carbon monoxide.

All Fatalities – All Ages

The most common classes of substances involved across all fatalities were analgesics, sedative/hypnotics/antipsychotics, antidepressants and stimulants/street drugs (Table 18). This relative order is similar to that seen in recent years.

TABLE 15
Therapy provided in human exposure cases (frequency, divided by patient age groups)

Therapy	<6 y	6–12 y	13–19 y	>19 y	Unknown	Total
Decontamination						
Dilution/irrigation	672,437	71,836	47,992	282,751	4,872	1,079,888
Activated charcoal, single dose	26,026	2,049	23,486	67,323	212	119,096
Cathartic	5,932	634	8,034	23,942	82	38,624
Gastric lavage	633	82	2,339	9,175	26	12,255
Other emetic	3,711	436	884	3,680	65	8,776
Ipecac syrup	1,999	164	209	649	6	3,027
Whole bowel irrigation	211	31	508	2,054	5	2,809
Measures to enhance elimination						
Activated charcoal, multidose	312	63	895	2,895	5	4,170
Hemodialysis	7	10	101	1,610	2	1,730
Other extracorporeal procedure	2	0	3	30	0	35
Hemoperfusion	1	0	2	27	0	30
Other interventions						
Food/snack given	123,394	10,191	5,858	28,823	313	168,579
Other procedure	46,713	10,442	15,719	92,764	973	166,611
Intravenous fluids	4,576	1,294	14,998	64,918	136	85,922
Fresh air	8,367	5,522	6,515	61,888	2,504	84,796
Oxygen	1,384	673	2,663	25,409	195	30,324
Antihistamines	3,229	2,149	2,188	13,346	130	21,042
Antibiotics	2,382	1,258	1,594	13,396	97	18,727
Intubation	431	110	1,352	13,440	42	15,375
Mechanical ventilation	353	83	1,164	11,655	32	13,287
Antiemetic administration	318	195	2,570	5,661	17	8,761
Sedation	241	71	869	6,844	16	8,041
Steroids	773	539	596	5,815	61	7,784
Bronchodilators	513	236	397	4,371	23	5,540
Vasopressors	57	30	237	3,362	7	3,693
Glucose	232	29	179	1,909	1	2,350
Neuromuscular blocker	46	15	176	1,175	3	1,415
Antihypertensive	7	8	104	1,171	4	1,294
Anticonvulsants	76	24	130	697	2	929
Cardiopulmonary resuscitation (CPR)	27	8	65	573	3	676
Antiarrhythmic	14	5	62	436	0	517
Pacemaker	2	0	9	196	1	208
Cardioversion	3	0	17	178	0	198
Alkalinization	126	75	1,709	6,776	27	8,713
Hyperbaric oxygen	40	43	37	323	3	446
ECMO	3	0	2	1	0	6
Organ transplatation	1	1	3	21	0	26
Specific antidote administration						
Benzodiazepine	730	302	3,105	14,038	25	18,200
N-acetylcysteine (oral)	216	82	3,433	9,446	39	13,216
Naloxone	523	109	1,306	10,899	30	12,867
Calcium	7,771	409	222	1,767	4	10,173
N-acetylcysteine (IV)	121	53	1,805	5,052	10	7,041
Flumazenil	83	11	182	1,757	8	2,041
Nalmefene	1	0	3	8	0	12
Hydroxocobalam	0	0	0	4	0	4

Continued

TABLE 15
(Continued)

Therapy	<6 y	6–12 y	13–19 y	>19 y	Unknown	Total
Fomepizole	97	17	79	1,012	1	1,206
Antivenom (Fab)	74	100	116	846	4	1,140
Atropine	83	20	59	861	2	1,025
Glucagon	18	8	42	876	0	944
Insulin	3	4	39	774	1	821
Phytonadione	51	5	70	524	1	651
Fab fragments	21	26	22	514	1	584
Folate	13	0	31	538	0	582
Pyridoxine	17	12	68	307	1	405
Ethanol	22	4	32	320	0	378
Antivenom (excluding Fab)	40	38	28	227	0	333
Succimer	130	9	6	80	2	227
Octreotide	33	4	22	144	0	203
Physostigmine	6	3	52	121	0	182
EDTA	70	7	0	21	1	99
Methylene blue	14	1	6	75	0	96
Pralidoxime (2-PAM)	15	1	2	71	0	89
Deferoxamine	28	0	23	31	0	82
Dimercaprol (BAL)	28	2	1	29	1	61
Sodium thiosulfate	2	2	2	47	2	55
Sodium nitrite	0	0	6	24	2	32
Penicillamine	1	0	1	8	0	10
Amyl nitrite	1	0	2	5	0	8

Looking only at primary agents thought responsible for a poisoning death, the order changes to analgesics, stimulants/street drugs, antidepressants, cardiovascular agents, and sedative/hypnotics/antipsychotics:

In 416 fatalities, an analgesic was felt to be the primary responsible agent. Forty-eight were associated with acetaminophen as a single agent, 47 with acetaminophen plus one or two other drugs, and 92 with an acetaminophen combination product (often acetaminophen plus an opioid).

There were 20 fatalities where aspirin as a single agent was felt to be responsible. Nine acute cases recorded salicylate concentrations measured >100 mg/dL. Most of these cases did not undergo dialysis within a useful time frame. These data suggest that more aggressive and earlier use of dialysis may be indicated in the treatment of large salicylate ingestions.

Sixty-nine deaths were attributed to methadone (versus 76 cases in 2004) and 31 were attributed to oxycodone (versus 31 cases in 2004). Long-acting opioid preparations (controlled release or transdermal) other than methadone were felt to be the primary responsible agent in 32 deaths in 2005.

The second most common class of drugs associated with fatalities as the primary agent was stimulants and street drugs (148). Cocaine was noted as the primary agent in 76 cases. There was a marked jump in cases where heroin was coded as the primary agent, with 38 deaths in 2005 compared to 22 deaths in 2004 and 23 deaths in 2003. Twenty-six deaths were thought primarily related to methamphetamine use (compared to 26 cases in 2004). For the first time in three years (since 2002), gamma-hydroxybutyrate was listed as the likely cause of a poisoning fatality.

Antidepressants were the third most common class of drugs reported. When coded as the primary agent, they account for 128 deaths, similar to other recent years. Bupropion (35 deaths) surpassed amitriptyline (21 deaths) as the single most commonly recorded antidepressant associated with fatalities.

The fourth most common class of drugs associated with fatalities as the primary agent was cardiovascular agents, accounting for 120 deaths. The two most common drugs in this class were verapamil and diltiazem, accounting for 30 and 23 deaths, respectively. Long-acting preparations accounted for 33 of the deaths in this class.

TABLE 16
Decontamination trends

Year	Human exposures reported	Ipecac administered (% of all exposures)	Activated charcoal administered (% of all exposures)	% of exposures involving children <6 y	Ipecac administered (% of child exposures)	Activated charcoal administered (% of child exposures)
1985	886,389	132,947 (15.0)	41,063 (4.6)	568,691 (64.2)	94,919 (10.7)	14,718 (1.7)
1986	1,095,228	145,516 (13.3)	56,481 (5.2)	690,137 (63.0)	99,688 (9.1)	18,191 (1.7)
1987	1,164,648	117,840 (10.1)	60,310 (5.2)	730,228 (62.7)	83,443 (7.2)	18,507 (1.6)
1988	1,364,113	114,654 (8.4)	88,876 (6.5)	843,106 (61.8)	80,749 (5.9)	26,118 (1.9)
1989	1,578,968	110,545 (7.0)	101,368 (6.4)	963,924 (61.0)	79,192 (5.0)	30,345 (1.9)
1990	1,646,946	98,986 (6.0)	108,341 (6.6)	999,751 (60.7)	73,469 (4.5)	31,579 (1.9)
1991	1,836,364	94,877 (5.2)	129,092 (7.0)	1,099,179 (59.9)	73,069 (4.0)	36,177 (2.0)
1992	1,862,796	79,493 (4.3)	135,625 (7.3)	1,094,256 (58.7)	63,486 (3.4)	38,937 (2.1)
1993	1,747,147	65,078 (3.7)	127,893 (7.3)	978,560 (56.0)	50,834 (2.9)	35,791 (2.0)
1994	1,926,992	51,356 (2.7)	138,247 (7.2)	1,042,651 (54.1)	41,489 (2.2)	35,670 (1.9)
1995	2,023,089	47,359 (2.3)	155,880 (7.7)	1,070,472 (52.9)	38,372 (1.9)	38,095 (1.9)
1996	2,155,952	39,376 (1.8)	157,331 (7.3)	1,137,263 (52.7)	32,622 (1.5)	37,986 (1.8)
1997	2,192,088	32,098 (1.5)	156,213 (7.1)	1,150,931 (52.5)	26,536 (1.2)	35,856 (1.6)
1998	2,241,082	26,653 (1.2)	152,134 (6.8)	1,180,989 (52.7)	22,247 (1.0)	34,302 (1.5)
1999	2,201,156	21,942 (1.0)	145,853 (6.6)	1,154,799 (52.5)	18,326 (0.8)	33,812 (1.5)
2000	2,168,248	18,177 (0.8)	145,911 (6.7)	1,142,796 (52.7)	15,239 (0.7)	31,554 (1.5)
2001	2,267,979	16,058 (0.7)	149,442 (6.6)	1,169,478 (51.6)	13,389 (0.6)	30,367 (1.3)
2002	2,380,028	13,555 (0.6)	149,527 (6.3)	1,227,381 (51.6)	11,163 (0.5)	30,340 (1.3)
2003	2,395,582	9,284 (0.4)	140,412 (5.9)	1,245,584 (52.0)	7,310 (0.3)	28,888 (1.2)
2004	2,438,643	4,701 (0.2)	135,969 (5.6)	1,250,536 (51.3)	3,366 (0.1)	28,335 (1.2)
2005	2,424,180	3,027 (0.1)	123,263 (5.1)	1,233,695 (50.9)	1,999 (0.1)	26,338 (1.1)

The fifth most common class of drugs as the primary agent associated with deaths were the sedative hypnotics/antipsychotics. These drugs were reported as an agent of exposure 415 times, with 76 cases listing a sedative/hypnotic/antipsychotic as the primary agent. As in recent years past, alprazolam and quetiapine are the most common drugs involved, most typically in combination with other drugs.

The vast majority (75.4%) of reported fatalities in 2005, as in past years, were the result of intentional actions. The percentage of fatalities attributable to other reasons remained little changed from previous years (Table 8). A disturbing number of deaths continue to occur because of therapeutic errors; the 61 cases reported in 2005 are more than the numbers in the three previous years (41 cases in 2004, 48 cases in 2003, and 54 in 2002). Adverse drug reactions were also reported as contributing to 28 deaths.

The 10 occupational-related deaths in 2005 were similar to 2004, but fewer than in any year since 1999 (11 cases in 2004). As in the previous 3 years, there were no reported fatalities from product tampering.

Demographic Data

Tables 22A and 22B provide summary demographic data on patient age, reason for exposure, medical outcome, and use of a health care facility for all 2,424,166 exposures, presented by substance categories. Table 22A focuses on nonpharmaceuticals; Table 22B presents drug/pharmaceuticals. Of the 2,765,665 substances logged in Tables 22A and 22B, 48.9% were nonpharmaceuticals, and 51.1% were pharmaceuticals.

The reason for the exposure was intentional for 29.2% of pharmaceutical substances implicated, compared with 5.6% of nonpharmaceutical substances. Correspondingly, treatment in a health care facility was provided in a higher percentage of exposures to pharmaceutical substances (41.4%), compared with nonpharmaceutical substances (18.5%). Pharmaceutical exposures also had more severe outcomes. Of substances implicated in fatal cases, 84.8% were pharmaceuticals, compared with 51.0% of substances reported in nonfatal cases. Similarly, 85.9% of substances implicated in major outcomes were pharmaceuticals.

TABLE 17A
Substances most frequently involved in human exposures

Substance	No.	%*
Analgesics	283,253	11.7
Cosmetics/personal care products	221,935	9.2
Cleaning substances (household)	218,316	9.0
Sedative/hypnotics/antipsychotics	135,090	5.6
Foreign bodies/toys/miscellaneous	122,443	5.1
Cold and cough preparations	116,084	4.8
Topical preparations	109,831	4.5
Pesticides	101,746	4.2
Antidepressants	98,202	4.1
Bites and envenomations	88,844	3.7
Cardiovascular drugs	77,989	3.2
Antihistamines	75,467	3.1
Alcohols	73,175	3.0
Plants	68,847	2.8
Antimicrobials	67,296	2.8
Food products/food poisoning	64,464	2.7
Vitamins	62,446	2.6
Hydrocarbons	53,889	2.2
Hormones and hormone antagonists	50,461	2.1
Gastrointestinal preparations	48,973	2.0
Chemicals	46,240	1.9
Stimulants and street drugs	45,923	1.9
Anticonvulsants	39,638	1.6

Despite a high frequency of involvement, these substances are not necessarily the most toxic, but rather may be the most readily available.

*Percentages are based on the total number of human exposures (2,424,180) rather than the total number of substances.

TABLE 17B
Substances most frequently involved in pediatric exposures (children younger than 6 years)

Substance	No.	%*
Cosmetics/personal care products	165,329	13.4
Cleaning substances (household)	121,498	9.8
Analgesics	100,595	8.2
Foreign bodies/toys/miscellaneous	91,422	7.4
Topical preparations	88,859	7.2
Cold and cough preparations	70,398	5.7
Plants	49,410	4.0
Pesticides	49,232	4.0
Vitamins	48,604	3.9
Antihistamines	35,766	2.9
Antimicrobials	34,296	2.8
Gastrointestinal preparations	32,694	2.7
Arts/crafts/office supplies	28,242	2.3
Hormones and hormone antagonists	23,808	1.9
Electrolytes and minerals	23,755	1.9
Cardiovascular drugs	22,082	1.8
Alcohols	19,905	1.6
Hydrocarbons	17,685	1.4
Food products/food poisoning	17,209	1.4
Deodorizers	16,497	1.3
Asthma therapies	15,343	1.2
Dietary supplements/herbals/homeopathic	14,137	1.1
Antidepressants	13,804	1.1

Despite a high frequency of involvement, these substances are not necessarily the most toxic, but rather may be the most readily available.

*Percentages are based on the total number of exposures in children younger than 6 years (1,233,695) rather than the total number of substances.

Surveillance

In 2005, real-time monitoring of cases submitted to the AAPCC's national database was expanded to include new surveillance case definitions, and enhanced toxicosurveillance at the regional PCC level. Monitoring results were reviewed daily by a team of five medical and clinical toxicologists working across four time zones. The core approach included monitoring of increased PCCcase activity, increased reporting of clinical effects as compared to a three year baseline, and cases that met surveillance case definitions as described in the 2003 AAPCC Annual Report.

Sixty of 61 U.S. PCCs continue to submit data to the AAPCC's database in almost real time, with most centers submitting cases every 4 to 10 minutes. When outliers are identified, surveillance query results are automatically sent for analysis to toxicologists at the AAPCC. When reports of potential public health importance are detected, additional information is obtained via e-mail or phone from reporting PCCs. Public health issues are brought to the attention of the National Center for Environmental Health/Agency for Toxic Substances Disease Registry at the Centers for Disease Control and Prevention. Affected state or local health departments are also alerted.

Data on clinical effect anamolies are provided daily to 43 individual poison centers, covering all, or parts of, 39 states. In a few cases, results are also sent directly to state or local health departments. In most states, results are interpreted by PCCstaff before the results are communicated to the appropriate health authorities.

Individual PCCs have developed surveillance case definitions, and new monitors identify cases that meet these definitions. Current surveillance definitions identify cases that have clinical effects suggestive of nerve agents, cyanide, arsenic, botulism, ricin, anthrax (systemic and dermal), irritant gases,

TABLE 17C
Substances most frequently involved in adult exposures (>19 years)

Substance	No.	%*
Analgesics	126,901	15.0
Sedative/hypnotics/antipsychotics	101,853	12.0
Cleaning substances (household)	77,087	9.1
Antidepressants	65,573	7.7
Bites and envenomations	57,579	6.8
Cardiovascular drugs	49,096	5.8
Alcohols	44,137	5.2
Pesticides	42,472	5.0
Cosmetics/personal care products	37,834	4.5
Food products/food poisoning	36,005	4.2
Hydrocarbons	28,281	3.3
Chemicals	27,876	3.3
Fumes/gases/vapors	26,679	3.1
Anticonvulsants	26,374	3.1
Antihistamines	24,745	2.9
Antimicrobials	23,950	2.8
Stimulants and street drugs	23,238	2.7
Hormones and hormone antagonists	22,406	2.6
Cold and cough preparations	21,257	2.5
Muscle relaxants	17,687	2.1
Topical preparations	15,042	1.8
Gastrointestinal preparations	12,591	1.5
Foreign bodies/toys/miscellaneous	11,599	1.4

Despite a high frequency of involvement, these substances are not necessarily the most toxic, but rather may be the most readily available.

*Percentages are based on the total number of exposures in adults older than 19 years (847,483) rather than the total number of substances.

TABLE 18
Categories associated with largest number of reported deaths

Substance	No. of cases with substance	% of all exposures in category
Analgesics	696	0.246
Sedative/hypnotics/antipsychotics	384	0.284
Antidepressants	317	0.323
Stimulants and street drugs	253	0.551
Cardiovascular drugs	234	0.300
Alcohols	131	0.179
Anticonvulsants	79	0.199
Antihistamines	78	0.103
Fumes/gases/vapors	77	0.197
Muscle relaxants	73	0.310
Hormones and hormone antagonists	57	0.113
Chemicals	55	0.119
Unknown drug	50	0.287
Cleaning substances (household)	36	0.016
Gastrointestinal preparations	29	0.059
Pesticides	23	0.023
Automotive/aircraft/boat products	22	0.147
Antimicrobials	20	0.030
Miscellaneous drugs	19	0.084
Cold and cough preparations	18	0.016
Diuretics	17	0.173
Hydrocarbons	13	0.024
Anticoagulants	12	0.219

Substance categories associated with deaths reported by 60 of 61 U.S. Poison Control Centers (PCCs). Numbers represent total exposures associated with 1,261 fatalities; each fatality may have had exposure to more than one category of agent.

smallpox, arenavirus, radiation, and puffer fish ingestions with neurological effects. These monitors have been implemented in response to public health issues or concerns, and are run daily at 1- to 12-hour intervals. Cases coded as specific substances, for example, arsenic, ricin, carbon monoxide, and food poisoning/food products, are also monitored. Surveillance processes and anamoly definitions continue to be developed, refined, and evaluated.

Most notably in 2005, information collected by U.S. PCCs in Gulf Coast states was used to provide post-hurricane situation awareness on substances of interest following Hurricanes Katrina (August 2005) and Rita (September 2005). Daily reports were generated and evaluated by toxicologists at the AAPCC and Centers for Disease Control (CDC) in order to identify and target where to deploy additional personnel, educational materials and public service announcements. Substances of interest included carbon monoxide, snake envenomations, reports of suspected food poisoning and water contamination, and gasoline (hydrocarbon) ingestion which may correlate with gas siphoning. This reporting system has remained in place since 2005 and continues to be used for hurricane season 2006.

Database Enhancements

In 2005, the AAPCC embarked on one of its largest and most important projects since its founding in 1958: development of new database software and migration to web-hosting of the information currently stored in the AAPCC's national poisoning and exposure database. Since 1993, the database has been used to answer many toxiclogy related questions from individual poison centers, academic researchers, public health personnel, and corporate research and development teams.

The new new web-based software for querying, reporting and surveillance application will allow the AAPCC, its

TABLE 19
Twenty-one year comparisons of fatality data

	Total fatalities		Suicides		Pediatric death	
Year	No.	% of cases	No.	% of deaths	No.	% of deaths
1985	328	0.037	174	(53.0)	20	(6.1)
1986	406	0.037	223	(54.9)	15	(3.7)
1987	398	0.034	227	(57.0)	22	(5.5)
1988	544	0.040	296	(54.4)	30	(5.5)
1989	590	0.037	323	(54.7)	24	(4.1)
1990	553	0.034	320	(57.9)	21	(3.8)
1991	764	0.042	408	(53.4)	44	(5.8)
1992	705	0.038	395	(56.0)	29	(4.1)
1993	626	0.036	338	(54.0)	27	(4.3)
1994	766	0.040	410	(53.5)	26	(3.4)
1995	724	0.036	405	(55.9)	20	(2.8)
1996	726	0.034	358	(49.3)	29	(4.0)
1997	786	0.036	418	(53.2)	25	(3.2)
1998	775	0.035	421	(54.3)	16	(2.1)
1999	873	0.040	472	(54.1)	24	(2.7)
2000	921	0.042	477	(51.8)	20	(2.2)
2001	1,085	0.048	553	(51.0)	27	(2.5)
2002	1,169	0.049	635	(54.3)	27	(2.3)
2003	1,109	0.046	592	(53.4)	35	(3.2)
2004	1,190	0.049	642	(53.9)	27	(2.3)
2005	1,261	0.052	623	(49.4)	24	(1.9)

TABLE 20
Frequency of plant exposures by plant type

Botanical name	Common name	Frequency
Spathiphyllum spp	Peace lily	2,350
Phytolacca americana	Pokeweed, inkberry	2,214
Euphorbia pulcherrima	Poinsettia	1,917
Philodendron spp	Philodendron	1,679
Ilex spp	Holly	1,401
Toxicodendron radicans	Poison ivy	1,367
Berry (botanic definition)	Unspecified berry	951
Nerium oleander	Oleander	766
Schlumbergera bridgesii	Christmas cactus	766
Crassula argentea	Jade plant	722
Taraxacum officinale	Dandelion	656
Malus spp	Apple, crabapple (plant parts)	630
Caladium spp	Caladium	627
Epipremnum areum	Pothos, devil's ivy	621
Dieffenbachia spp	Dumbcane	605
Chrysanthemum spp	Chrysanthemum	550
Hedera helix	English ivy	540
Cactus spp	Cactus	525
Nandina domestica	Heavenly bamboo	496
Fragaria spp	Strawberry	474

member centers and public health agencies to study U.S. poisoning exposures Users will be able to access local and regional data for their own areas and view national aggregate data. The new application allows for increased "drill-down" capability and Mapping (GIS). Custom surveillance definitions will be available along with ad hoc reporting tools. The new software will serve the AAPCC well into the 21st century.

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TABLE 21
Summary of fatal exposures reported to TESS in 2005

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
Nonpharmaceuticals							
Alcohols							
1	17 yr	ethanol	A	Ingestion	Int abuse	340 mg/dL	
2 p	25 yr	ethanol	C	Ingestion	Int abuse	30 mg/dL[§]	
3	36 yr	ethanol	A/C	Ingestion	Int abuse	1,199 mg/dL	
4	42 yr	ethanol	C	Ingestion	Int abuse		
5	46 yr	ethanol	A	Ingestion	Int abuse		
6	71 yr	ethanol	C	Ingestion	Unknown	67 mg/dL	
7	79 yr	ethanol	A	Ingestion	Unknown	515 mg/dL	
8 i	>19 yr	ethanol	U	Ingestion	Int abuse		
9	55 yr	ethanol amphetamines tricyclic antidepressant[A]	U	Ing/Inh	Int abuse		
10 p	53 yr	ethanol benzodiazepine	A	Ingestion	Int abuse	532 mg/dL	
11 p	60 yr	ethanol bromethalin household cleaner	A/C	Ingestion	Int suicide	180 mg/dL[§]	
12	59 yr	ethanol cocaine marijuana	C	Ing/Inh	Int suicide	34 mg/dL	
13	49 yr	ethanol ethylene glycol	A	Ingestion	Unknown		
14 p	62 yr	ethanol fentanyl patch metoclopramide[A]	U	Derm/Ing	Unknown	220 mg/dL[§] 1.2 ng/mL[§]	
15	62 yr	ethanol isopropyl alcohol quetiapine	C	Ingestion	Int abuse		
16	50 yr	ethanol kava kava valerian[A]	C	Ingestion	Int abuse		
17	25 yr	ethanol marijuana	C	Ing/Inh	Withdrawal		
18 p	51 yr	ethanol oxycodone trazodone[A]	U	Ingestion	Int suicide	340 mg/dL[§] 70 ng/mL[§] 100 ng/mL[§]	
19	61 yr	isopropyl alcohol ethanol	U	Ingestion	Int suicide	16 mg/dL acetone 17 mg/dL	
20	43 yr	methanol	A	Ingestion	Unknown	139 mg/dL	
21	44 yr	methanol	A	Ingestion	Int suicide	256 mg/dL	
22	56 yr	methanol	A	Ingestion	Int suicide	193 mg/dL	
23	57 yr	methanol	A	Ingestion	Int suicide	265 mg/dL	
24	44 yr	methanol cocaine	A	Ing/Unk	Int suicide	197 mg/dL	
25	44 yr	methanol fomepizole	A	Ing/Paren	Int suicide		

26	42 yr	unk alcohol	A	Ingestion	Int suicide		
27 p	48 yr	unk alcohol	A	Ingestion	Int suicide		

See also cases 19, 48, 55, 59, 60, 80, 92, 113, 185, 218, 219, 289, 292 thru 294, 296, 299 thru 308, 314, 351, 352, 385 thru 390, 419, 420, 451, 452, 468, 482, 486, 492, 534, 555, 556, 593, 596, 604, 614, 619, 648, 691, 701 thru 703, 728, 729, 732, 734, 735, 745, 768, 787, 792, 813, 877, 891, 892, 939, 940, 944, 957, 958, 966, 1,016 thru 1,018 1,030 1,036 1,092 1,093 1,156 1,157 1,223 (ethanol); 15, 114, 314, 605 (isopropyl alcohol).

Automotive/aircraft/boat products

28	27 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
29 i	40 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide	35.2 mg/dL	
30 p	40's yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
31 p	41 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
32	41 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
33	47 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide	70.4 mg/dL	22 h
34	48 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
35 p	51 yr	antifreeze (ethylene glycol)	A	Ingestion	Int unk		
36 p	54 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
37	55 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide	105 mg/dL	
38	59 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide	174.6 mg/dL	
39	64 yr	antifreeze (ethylene glycol)	A	Ingestion	Int suicide	13 mg/dL	
40	76 yr	antifreeze (ethylene glycol)	A	Ingestion	Unint misuse	98 mg/dL	
41	25 yr	antifreeze (ethylene glycol) acetaminophen/ diphenhydramine	A	Ingestion	Int suicide	67.5 mg/dL	
42	45 yr	antifreeze (ethylene glycol) acetaminophen/oxycodone	A	Ingestion	Int suicide		
43	27 yr	antifreeze (ethylene glycol) midazolam cocaine	A	Ing/Paren/Unk	Unint misuse		
44	55 yr	antifreeze (ethylene glycol) unk drug	A	Ingestion	Int suicide		
45 p	35 yr	automotive product (methanol)	A	Ingestion	Int suicide	288 mg/dL	
46 p	29 yr	brake fluid (glycol ethers/ diethylene glycol)	A	Asp/Ing	Int suicide		
47	30's yr	carburetor cleaner (ethylene glycol) unk drug	U	Ingestion	Int suicide	120 mg/dL	
48	41 yr	fuel injector (methanol) ethanol	A	Ingestion	Int abuse		
49	46 yr	methanol/glycol	U	Ingestion	Int unk	methanol 449 mg/dL	
50	55 yr	windshield washer (methanol)	A	Ingestion	Int abuse		
51	25 yr	windshield washer fluid (methanol)	A	Ingestion	Int suicide		
52	53 yr	windshield washer fluid (methanol)	A	Ingestion	Int suicide	219 mg/dL	

Batteries

53	18 mo	button (disc) battery	A	Ingestion	Unint gen		

Bites and envenomations

54	55 yr	Crotalus adamenteus	A	Bite/sting	Bite/sting		
55 ip	25 yr	Crotalus horridus horridus ethanol	A	Bite/sting/Ing	Bite/sting	290 mg/dL[§]	
56 ip	44 yr	Hymenoptera	A	Bite/sting	Bite/sting		
57 p	32 yr	rattlesnake	A	Bite/sting	Bite/sting		

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
58	44 yr	rattlesnake	A	Bite/sting	Bite/sting		
59 p	43 yr	snake, crotaline ethanol	A	Bite/sting	Bite/sting	160 mg/dL[§]	
60 ip	44 yr	snake, crotaline ethanol	A	Bite/sting	Bite/sting	120 mg/dL[§]	
Building and construction products							
61	64 yr	propane/n-butylacetate/ isobutane/hydrocarbon	A	Inhalation	Env		
See also case 86 (soldering flux (hydrochloric acid)).							
Chemicals							
62 p	19 yr	ammonia bleach (sodium hypochlorite)	A	Asp/Ing	Int suicide		
63 p	23 yr	cyanide	A	Ingestion	Int suicide	>10 μg/mL[§]	
64 p	51 yr	cyanide	A	Ingestion	Int suicide	3.3 μg/mL[§]	
65	51 yr	cyanide	A	Ingestion	Int suicide	0.34 μg/mL	
66	55 yr	cyanide	A	Ingestion	Int suicide	2 μg/mL	
67	54 yr	cyanide carbon monoxide	A	Inhalation	Env		
68	26 yr	ethylene glycol	A	Ingestion	Int suicide	81 mg/dL	
69	41 yr	ethylene glycol	A	Ingestion	Unknown	12 mg/dL	
70 p	41 yr	ethylene glycol	A	Ingestion	Int suicide	90 mg/dL	
71	43 yr	ethylene glycol	A	Ingestion	Int suicide		
72	47 yr	ethylene glycol	A	Ingestion	Int suicide	1,033 mg/dL	
73	50 yr	ethylene glycol	A	Ingestion	Int suicide		
74	50 yr	ethylene glycol	A	Ing/Unk	Unknown	349 mg/dL	
75	55 yr	ethylene glycol	A	Ingestion	Int suicide	202.6 mg/dL	
76	63 yr	ethylene glycol	A	Ingestion	Int suicide	865 mg/dL	
77	78 yr	ethylene glycol	A	Ingestion	Int suicide	104.3 mg/dL	
78	41 yr	ethylene glycol alprazolam	A	Ingestion	Int suicide		
79	48 yr	ethylene glycol atenolol simvastatin[A]	A	Ingestion	Int suicide	83 mg/dL	
80 p	49 yr	ethylene glycol ethanol acetic acid (4–6%)	A	Ingestion	Malicious		
81	63 yr	ethylene glycol fentanyl patch	A	Derm/Ing	Int suicide		
82	42 yr	ethylene glycol lamotrigine	A	Ingestion	Int suicide		
83	47 yr	ethylene glycol risperidone	A	Ing/Paren	Unknown	80.5 mg/dL	
84	40 yr	ethylene glycol unk drug	U	Ing/Unk	Int suicide		
85 p	24 yr	formaldehyde/methanol	A	Ingestion	Int suicide	methanol 43 mg/dL[§]	
86	47 yr	hydrochloric acid soldering flux (hydrochloric acid)	A	Ingestion	Int suicide		

87	58 yr	hydrofluoric acid/sulfuric acid/phosphoric acid	A	Ingestion	Unint misuse
88	50's yr	methyl bromide	A	Unknown	Occ
89 p	55 yr	unk acid	A	Ingestion	Int suicide
90	20 yr	unk chemical	A	Ingestion	Int suicide
91	81 yr	unk chemical	A	Ingestion	Unknown
92	53 yr	unk chemical ethanol	U	Ingestion	Int abuse

See also cases 221, 705, 1062 (activated charcoal); 381, 1196 (cocaine); 184 (cyanide); 13,308 (ethylene glycol); 157 (hydrochloric acid); 324, 783,1157 (unk chemical).

Cleaning substances (household)

93	67 yr	bleach, household (hypochlorite)	A	Ingestion	Unint gen
94	67 yr	bleach, industrial (sodium hypochlorite)	A	Ingestion	Int suicide
95	67 yr	cleaner (anionic/nonionic)	A	Asp/Ing	Unint misuse
96	48 yr	dishwashing detergent (anionic/nonionic)	A	Asp/Ing	Unint misuse
97	83 yr	dishwashing detergent (anionic/nonionic)	A	Asp/Ing	Unint misuse
98	85 yr	dishwashing detergent (anionic/nonionic)	A	Ingestion	Unint misuse
99	85 yr	dishwashing detergent (anionic/nonionic)	A	Asp/Ing	Unint misuse
100	87 yr	disinfectant (cationic)	A	Asp/Ing	Unint misuse
101	54 yr	drain opener (alkali)	A	Ingestion	Int suicide
102	50 yr	drain opener (hydrochloric acid, 10–20%)	A	Ingestion	Int suicide
103	78 yr	drain opener (sodium hydroxide)	A	Ingestion	Unint gen
104	58 yr	drain opener (sodium hydroxide/sodium hypochlorite)	A	Ingestion	Int suicide
105 ip	84 yr	drain opener (sodium hydroxide/sodium hypochlorite)	A	Derm/Ing	Int suicide
106	80 yr	drain opener (sulfuric acid)	A	Ingestion	Unknown
107	60 yr	laundry detergent (solvent-based) metal polish (naphtha/ammonia) hydrocarbon/mineral oil	A	Asp/Ing	Int suicide
108 p	80 yr	pine oil cleaner	A	Asp/Ing	Unknown
109	82 yr	pine oil/isopropyl alcohol cleaner	A	Asp/Ing	Unint gen
110 p	88 yr	pine oil/isopropyl alcohol cleaner	A	Asp/Ing	Unint misuse
111 p	90 yr	pine oil/isopropyl alcohol cleaner	A	Ingestion	Unint misuse
112	102 yr	pine oil/isopropyl alcohol cleaner	A	Asp/Ing	Unknown

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
113	78 yr	pine oil/isopropyl alcohol cleaner ethanol	A/C	Asp/Ing	Int unk		
114	44 yr	pine oil/isopropyl alcohol cleaner isopropyl alcohol mouthwash (ethanol)[A]	A	Ingestion	Int suicide		
115	31 yr	sodium carbonate/silicate/ perborate	A	Ingestion	Int unk		
116	60 yr	toilet bowl cleaner	A	Ingestion	Int suicide		
117	48 yr	wheel cleaner (hydrofluoric acid)	A	Ingestion	Unint misuse		
See also cases 1,235 (bleach (hypochlorite)); 62 (bleach (sodium hypochlorite)); 232 (chlorine); 1,235 (fabric softener); 11 (household cleaner); 353 (household cleaner (unknown)); 973 (pine oil/isopropyl alcohol cleaner); 1,155 (toilet bowl cleaner (iodine)).							
Cosmetics/personal care products							
118 p	>19 yr	depilatory (calcium hydroxide/ thioglycolate)	A	Ingestion	Int suicide		
119 p	Unk	hair spray furniture polish	C	Inhalation	Int abuse		
120 p	44 yr	mouthwash (ethanol) thioridazine valproic acid	U	Ingestion	Int unk	210 mg/dL[§] 590 ng/mL[§] 50 μg/mL[§]	
121 p	30 yr	mouthwash (phenol, 1.4%)	A	Ingestion	Unknown		
See also case 114 (mouthwash (ethanol))							
Deodorizers							
122 ip	13 yr	air freshener	U	Inhalation	Unknown		
123 p	26 yr	holding tank deodorant (methanol/formaldehyde)	A	Ingestion	Int suicide		
See also case 1,220 (air freshener (fatty alcohol ethoxylate))							
Essential oils							
124	27 yr	Mentha pulegium/citronella/ other herbals aceite de resina	A/C	Ingestion	Adv rxn		
Food products/food poisoning							
125	82 yr	Clostridium botulinum	A	Ingestion	Food Pois		
126	67 yr	Clostridium perfringens	A	Ingestion	Food Pois		
See also case 80 (acetic acid (4–6%)).							
Foreign bodies/toys/miscellaneous							
See also cases 722, 799, 810, 894 (activated charcoal)							
Fumes/gases/vapors							
127 ip	3 yr	carbon monoxide	A	Inhalation	Env		
128 p	7 yr	carbon monoxide	A	Inhalation	Env	>30%	
129 p	8 yr	carbon monoxide	A	Inhalation	Malicious		
130 p	8 yr	carbon monoxide	A	Inhalation	Malicious		
131 ip	11 yr	carbon monoxide	A	Inhalation	Env	54%	
132 ip	14 yr	carbon monoxide	A	Inhalation	Env	58%[§]	
133 ip	15 yr	carbon monoxide	A	Inhalation	Env	58%[§]	

134 p	23 yr	carbon monoxide	A	Inhalation	Unknown	
135 p	27 yr	carbon monoxide	U	Inhalation	Env	
136 p	35 yr	carbon monoxide	A	Inhalation	Env	40.5%
137 p	38 yr	carbon monoxide	A	Inhalation	Occ	52%
138 p	41 yr	carbon monoxide	A	Inhalation	Unknown	31%
139 p	42 yr	carbon monoxide	A	Inhalation	Int suicide	
140 p	42 yr	carbon monoxide	A	Inhalation	Malicious	
141 ip	48 yr	carbon monoxide	A	Inhalation	Env	52%§
142 ip	49 yr	carbon monoxide	A	Inhalation	Env	
143 ip	50's yr	carbon monoxide	A	Inhalation	Env	62%§
144 ip	52 yr	carbon monoxide	A	Inhalation	Env	76%§
145 p	67 yr	carbon monoxide	A	Inhalation	Env	52%§
146 p	67 yr	carbon monoxide	A	Inhalation	Env	
147 ip	69 yr	carbon monoxide	A	Inhalation	Int suicide	
148 ip	87 yr	carbon monoxide	A	Inhalation	Env	68%§
149 p	89 yr	carbon monoxide	A	Inhalation	Int suicide	79%§
150 p	90 yr	carbon monoxide	A	Inhalation	Int suicide	82%§
151 ip	>19 yr	carbon monoxide	A	Inhalation	Env	
152 p	>19 yr	carbon monoxide	A	Inhalation	Int suicide	
153 p	>19 yr	carbon monoxide	A	Inhalation	Env	52.7%
154 i	>19 yr	carbon monoxide	A	Inhalation	Env	
155 p	19 yr	carbon monoxide acetaminophen/ dextromethorphan/ doxylamine/ pseudoephedrine	A	Ing/Inh	Int suicide	
156 p	50 yr	carbon monoxide acetaminophen/ propoxyphene alprazolam	A	Ing/Inh	Int suicide	251 µg/mL¥
157 p	46 yr	carbon monoxide hydrochloric acid other swimming pool product	A	Inhalation	Env	48.4%§
158 p	36 yr	carbon monoxide hydrocodone	A	Ing/Inh	Int suicide	72%§ 1,750 ng/mL§
159 p	17 mo	carbon monoxide/smoke	A	Inh/Unk	Env	
160	3 yr	carbon monoxide/smoke	A	Inhalation	Env	66%§
161 p	3 yr	carbon monoxide/smoke	A	Inhalation	Env	30%
162 p	4 yr	carbon monoxide/smoke	A	Inhalation	Env	
163 p	7 yr	carbon monoxide/smoke	A	Inhalation	Malicious	56%
164 p	11 yr	carbon monoxide/smoke	A	Inhalation	Env	40%
165 p	6–12 yr	carbon monoxide/smoke	A	Inhalation	Env	
166 p	6–12 yr	carbon monoxide/smoke	A	Inhalation	Env	
167 ip	19 yr	carbon monoxide/smoke	A	Inhalation	Env	50%§
168 p	32 yr	carbon monoxide/smoke	A	Inhalation	Env	2%
169 p	38 yr	carbon monoxide/smoke	A	Inhalation	Env	50%§
170 p	41 yr	carbon monoxide/smoke	A	Inhalation	Env	57%
171 p	44 yr	carbon monoxide/smoke	A	Inhalation	Env	63%§
172 p	49 yr	carbon monoxide/smoke	A	Inhalation	Env	
173 p	51 yr	carbon monoxide/smoke	A	Inhalation	Env	44%
174 p	51 yr	carbon monoxide/smoke	A	Inhalation	Env	28.7%
175	51 yr	carbon monoxide/smoke	A	Inhalation	Env	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
176 ip	56 yr	carbon monoxide/smoke	A	Inhalation	Env		
177 p	60's yr	carbon monoxide/smoke	A	Inhalation	Env		
178	70 yr	carbon monoxide/smoke	A	Inhalation	Env		
179 p	70 yr	carbon monoxide/smoke	A	Inhalation	Env		
180 p	86 yr	carbon monoxide/smoke	A	Inhalation	Env	30%	
181	90 yr	carbon monoxide/smoke	A	Inhalation	Env	31%	
182 p	>19 yr	carbon monoxide/smoke	A	Inhalation	Env	41%	
183	95 yr	carbon monoxide/smoke	A	Inhalation	Env		
184 p	7 yr	carbon monoxide/smoke cyanide	A	Inhalation	Env	34%	
185 ip	22 yr	carbon monoxide/smoke ethanol	A	Ing/Inh	Env	> 50%[§] 110 mg/dL[§]	
186	28 yr	chlorine	A	Inhalation	Env		
187 p	27 yr	helium	A	Inhalation	Int unk		
188 p	57 yr	helium	A	Inhalation	Int suicide		
189 p	41 yr	hydrogen sulfide	A	Inhalation	Occ		
190 p	56 yr	hydrogen sulfide	A	Inhalation	Occ		
191 p	>19 yr	hydrogen sulfide	A	Inhalation	Occ		
192 p	>19 yr	hydrogen sulfide	A	Inhalation	Occ		
193 p	>19 yr	hydrogen sulfide	A	Inhalation	Occ		
194 p	Unk	hydrogen sulfide	A	Inhalation	Occ		
195	29 yr	nitrogen	A	Inhalation	Occ		
196	57 yr	nitrogen	A	Inhalation	Occ		
See also cases 67, 201, 1050 (carbon monoxide).							
Hydrocarbons							
197 p	19 yr	chlorofluorocarbon	A	Inhalation	Int suicide		
198 ip	37 yr	chlorofluorocarbon	A	Inhalation	Int abuse		
199 p	41 yr	chlorofluorocarbon	A	Inhalation	Int abuse		
200 p	58 yr	chlorofluorocarbon	A	Inhalation	Env		
201 p	50's yr	chlorofluorocarbon carbon monoxide	A	Inhalation	Env		
202 p	27 yr	difluoroethane	A/C	Inhalation	Int abuse		
203	15 mo	gasoline	A	Asp/Ing	Unint gen		
204	30's yr	kerosene	A	Ingestion	Unint misuse		
205	61 yr	kerosene	A	Ing/Inh	Unknown		
206 p	2 yr	lighter fluid (naptha)	A	Asp/Ing	Unint gen		
See also cases 1,135 (chlorofluorocarbon); 107 (hydrocarbon/mineral oil).							
Mushrooms							
207	56 yr	Amanita bisporigera	A	Ingestion	Unint misuse		
208	56 yr	Amanita bisporigera	A	Ingestion	Unint misuse		
209	70's yr	Amanita phalloides	A	Ingestion	Unint misuse		
Pesticides: Fumigants							
210	15 yr	aluminum phosphide	A	Ingestion	Int suicide		
211	20 yr	aluminum phosphide	A	Inh/Unk	Env		
212 i	81 yr	phosphine	A	Inhalation	Malicious		
213	37 yr	sulfuryl fluoride	A	Inhalation	Env		
Pesticides: Herbicides (incl. algaecides, defoliants, desiccants, plant growth regulators)							
214	40 yr	diquat	A	Ingestion	Int suicide		

215	45 yr	glyphosate	A	Ingestion	Int suicide		
216	69 yr	glyphosate	A	Ingestion	Int suicide		
217	77 yr	herbicide, unknown	A	Ingestion	Unint misuse		
218	41 yr	paraquat	A	Ingestion	Int suicide		
		ethanol				316 mg/dL	8 h
219	62 yr	paraquat	A	Ingestion	Int suicide	51 µg/mL	
		organophosphate					
		ethanol				59 mg/dL	
Pesticides: Insecticides (incl. insect growth regulators, molluscicides, nematicides)							
220 p	44 yr	aldicarb	A	Ingestion	Int suicide		
221	38 yr	aldicarb	A	Asp/Ing	Int suicide		
		activated charcoal					
222	18 mo	allethrin/piperonyl butoxide/ mineral spirits	A	Asp/Ing	Unint gen		
223 p	64 yr	carbamate	A	Ingestion	Int suicide		
		unknown drug					
224 p	60 yr	chlorpyrifos/allethrin/butyl propasol/hydrocarbons	A	Unknown	Int misuse		
225 p	44 yr	malathion	A/C	Derm/Inh	Unint misuse		
226	23 yr	sodium sulfur arsenate	A	Ingestion	Int suicide	arsenic 65 µg/mL	
227 p	22 yr	terbufos	A	Unknown	Unknown		
228 p	46 yr	unk pesticide	A	Ingestion	Int suicide		
See also cases 580 (carbaryl); 219 (organophosphate).							
Pesticides: Rodenticides							
229	61 yr	anticoagulant rodenticide (long-acting)	A	Ingestion	Int suicide		
230	21 yr	bromethalin	A	Ingestion	Int suicide		
See also case 11 (bromethalin).							
Plants							
231	4 yr	Senecio longilobus	C	Ingestion	Unint gen		
Polishes and waxes							
See also case 107 (metal polish (naphtha/ammonia)).							
Swimming pool/aquarium							
232	55 yr	algicide (copper, 7.1%)	A	Ingestion	Int suicide		
		chlorine					
		zolpidem[A]					
See also case 157 (other swimming pool product).							
Other/unknown nondrug substances							
233	47 yr	unk substance	U	Unknown	Unknown		
234	48 yr	unk substance	U	Unknown	Int unk		
235	32 yr	unk substance	U	Unknown	Int suicide		
		opioid					
See also cases 119 (furniture polish); 1229 (unk substance); 1160 (unknown drug).							
Pharmaoeuticals							
Analgesics							
236	14 yr	acetaminophen	A	Ingestion	Int suicide		
237	19 yr	acetaminophen	A	Ingestion	Int suicide	138 µg/mL	16 h
238	20 yr	acetaminophen	A	Ingestion	Int suicide	90 µg/mL	
239	21 yr	acetaminophen	A	Ingestion	Int suicide	58 µg/mL	
240	21 yr	acetaminophen	A	Ingestion	Int suicide	96 µg/mL	
241	21 yr	acetaminophen	A	Ingestion	Int suicide	82.4 µg/mL	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
242	22 yr	acetaminophen	A	Ingestion	Int suicide		
243 p	25 yr	acetaminophen	A	Ingestion	Int suicide	89 µg/mL	
244	27 yr	acetaminophen	A	Ingestion	Ther err	47.6 µg/mL	
245	28 yr	acetaminophen	U	Ingestion	Int suicide	150 µg/mL	
246	30 yr	acetaminophen	C	Ingestion	Int misuse	79 µg/mL	
247	30 yr	acetaminophen	A	Ingestion	Int suicide	151.8 µg/mL	
248	31 yr	acetaminophen	A	Ingestion	Int suicide		
249	32 yr	acetaminophen	A	Ingestion	Int suicide	9 µg/mL	3 d
250	33 yr	acetaminophen	U	Ingestion	Int suicide		
251	33 yr	acetaminophen	A	Ingestion	Int suicide	225 µg/mL	
252	34 yr	acetaminophen	C	Ingestion	Int unk		
253	40 yr	acetaminophen	C	Ingestion	Ther err	106 µg/mL	
254	41 yr	acetaminophen	U	Ingestion	Int unk	57 µg/mL	
255 p	41 yr	acetaminophen	C	Ingestion	Int suicide	150 µg/mL	
256	44 yr	acetaminophen	A	Ingestion	Int suicide	225 µg/mL	9 h
257 i	44 yr	acetaminophen	U	Ingestion	Int unk	111.3 µg/mL	
258	44 yr	acetaminophen	C	Ingestion	Ther err	15 µg/mL	
259	45 yr	acetaminophen	C	Ingestion	Int misuse	50 µg/mL	
260	45 yr	acetaminophen	A/C	Ingestion	Ther err	63 µg/mL	
261	47 yr	acetaminophen	A	Ingestion	Int misuse		
262	48 yr	acetaminophen	A	Ingestion	Int suicide	90 µg/mL	
263	48 yr	acetaminophen	A	Ingestion	Int unk		
264	49 yr	acetaminophen	A	Ingestion	Int suicide	188 µg/mL	
265 i	49 yr	acetaminophen	C	Ingestion	Int unk		
266	50 yr	acetaminophen	C	Ingestion	Int misuse	86.5 µg/mL	
267	51 yr	acetaminophen	A	Ingestion	Int suicide	32 µg/mL	36 h
268	52 yr	acetaminophen	A/C	Ingestion	Int suicide	276 µg/mL	
269	52 yr	acetaminophen	A	Ingestion	Int suicide	494 µg/mL	
270	55 yr	acetaminophen	U	Ingestion	Int unk	40 µg/mL	
271	56 yr	acetaminophen	C	Ingestion	Int unk	1 µg/mL	
272 p	56 yr	acetaminophen	A	Ingestion	Int suicide	57.4 µg/mL	
273	60 yr	acetaminophen	A	Ingestion	Int suicide	256 µg/mL	
274	65 yr	acetaminophen	C	Ingestion	Int misuse	48.3 µg/mL	
275	68 yr	acetaminophen	A	Ingestion	Int suicide	78 µg/mL	
276	69 yr	acetaminophen	A	Ingestion	Int suicide	200 µg/mL	
277	70 yr	acetaminophen	A	Ingestion	Int suicide		
278	73 yr	acetaminophen	A/C	Ingestion	Int suicide	207 µg/mL	
279	74 yr	acetaminophen	C	Ingestion	Ther err	108.8 µg/mL	
280	75 yr	acetaminophen	C	Ingestion	Ther err	41 µg/mL	
281	77 yr	acetaminophen	U	Ingestion	Unknown	14 µg/mL	
282	82 yr	acetaminophen	A	Ingestion	Int suicide		
283	86 yr	acetaminophen	C	Ingestion	Ther err	47 µg/mL	
284	37 yr	acetaminophen	A/C	Ingestion	Ther err	58 µg/mL	
		acetaminophen/ aspirin/caffeine					
285	36 yr	acetaminophen	U	Ingestion	Ther err	392 µg/mL	
		acetaminophen/codeine					
286	84 yr	acetaminophen	C	Ingestion	Ther err	421 µg/mL	
		acetaminophen/codeine					
		acetaminophen/tramadol					

287	40 yr	acetaminophen acetaminophen/ dextromethorphan/ doxylamine/ pseudoephedrine aspirin[A]	U	Ingestion	Int suicide	306 µg/mL 7.4 mg/dL[¶]	
288	46 yr	acetaminophen acetaminophen/ hydrocodone	C	Ingestion	Int misuse	160 µg/mL	
289	56 yr	acetaminophen acetaminophen/ oxycodone ethanol	A	Ingestion	Int misuse	331.8 µg/mL	
290	81 yr	acetaminophen amitriptyline benzodiazepine[A]	A	Ingestion	Int suicide	248 µg/mL	
291	36 yr	acetaminophen aspirin	C	Ingestion	Ther err	54.5 µg/mL 7.2 mg/dL	
292	31 yr	acetaminophen aspirin ethanol	U	Ingestion	Int suicide	123 µg/mL	
293	31 yr	acetaminophen aspirin ethanol	C	Ingestion	Int unk	4.8 µg/mL 18 mg/dL	
294	21 yr	acetaminophen clonazepam ethanol[A]	A	Ingestion	Int suicide	1,062 µg/mL 48 mg/dL	4 h
295	30 yr	acetaminophen clonazepam venlafaxine (long-acting)[A]	A	Ingestion	Int suicide	12 µg/mL	
296	53 yr	acetaminophen cocaine ethanol	A	Ing/Unk	Int suicide	48 µg/mL benzoylecgonine 0.146 µg/mL	
297	57 yr	acetaminophen diphenhydramine	A	Ingestion	Int suicide	24 µg/mL	
298	36 yr	acetaminophen diphenhydramine cocaine	A	Ingestion	Int suicide	38 µg/mL	
299	35 yr	acetaminophen ethanol	C	Ingestion	Int misuse	24 µg/mL 41 mg/dL	
300	38 yr	acetaminophen ethanol	C	Ingestion	Int misuse	36.5 µg/mL	
301	40's yr	acetaminophen ethanol	A	Ingestion	Int suicide	32 µg/mL	
302	45 yr	acetaminophen ethanol	C	Ingestion	Int misuse		
303	46 yr	acetaminophen ethanol	U	Ingestion	Int suicide		
304	47 yr	acetaminophen ethanol	A/C	Ingestion	Int misuse		
305	51 yr	acetaminophen ethanol	U	Ingestion	Int suicide		
306	66 yr	acetaminophen ethanol	U	Ingestion	Int suicide	809 µg/mL 107 mg/dL	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
307	90 yr	acetaminophen ethanol	C	Ingestion	Ther err	61 µg/mL	
308	26 yr	acetaminophen ethylene glycol ethanol	A	Ingestion	Int suicide	159 µg/mL 7.8 mg/dL 6 mg/dL	
309	50 yr	acetaminophen fluoxetine	U	Ingestion	Int suicide	53 µg/mL	
310	80 yr	acetaminophen fluoxetine	A	Ingestion	Int suicide	584 µg/mL 840 ng/mL[§] norfluoxetine 920 ng/mL[§]	
311	48 yr	acetaminophen hydrocodone temazepam[A]	C	Ingestion	Ther err	163.5 µg/mL	
312	19 yr	acetaminophen ibuprofen	A	Ingestion	Int suicide	1.8 µg/mL 3.3 µg/mL	 2 d
313	47 yr	acetaminophen ibuprofen	A	Ingestion	Int suicide	219 µg/mL	7.5 h
314	>19 yr	acetaminophen isopropyl alcohol ethanol	C	Ingestion	Int abuse		
315	67 yr	acetaminophen loperamide famotidine	A	Ingestion	Int suicide		
316	39 yr	acetaminophen metformin	A	Ingestion	Int suicide		
317	63 yr	acetaminophen methadone promethazine	U	Ingestion	Unknown	24 µg/mL	
318	24 yr	acetaminophen methamphetamine	A	Ingestion	Int suicide	112 µg/mL	17 h
319	77 yr	acetaminophen naproxen	A/C	Ingestion	Int suicide		
320	35 yr	acetaminophen oxycodone (long-acting)	A/C	Ingestion	Int abuse	45 µg/mL	
321	63 yr	acetaminophen temazepam paroxetine[A]	A/C	Ingestion	Int suicide	53.7 µg/mL	
322	52 yr	acetaminophen trazodone alprazolam[A]	A	Ingestion	Int suicide	516 µg/mL	
323 p	70 yr	acetaminophen trazodone mirtazepine	A	Asp/Ing	Int suicide	336 µg/mL	
324	18 yr	acetaminophen unk chemical	A	Ingestion	Int suicide	292 µg/mL	
325	33 yr	acetaminophen unk drug	U	Ingestion	Unknown	77.8 µg/mL	

326	40 yr	acetaminophen unk drug	U	Ingestion	Unknown	35 µg/mL	
327	91 yr	acetaminophen unk drug	A	Ingestion	Int suicide	975 µg/mL	
328	40 yr	acetaminophen valproic acid clonazepam[A]	A	Ingestion	Int suicide	>200 µg/mL 133 µg/mL	
329	41 yr	acetaminophen zolpidem acetaminophen/ hydrocodone[A]	A	Ingestion	Int suicide	147.6 µg/mL	
330	45 yr	acetaminophen zolpidem fentanyl[A]	A/C	Ing/Unk	Int suicide	37 µg/mL	
331 i	40 yr	acetaminophen (long-acting)	C	Ingestion	Ther err	121 µg/mL	
332	65 yr	acetaminophen/aspirin duloxetine (long-acting) methocarbamol	A	Ingestion	Int suicide	146.5 µg/mL[¥] 45.1 mg/dL[¶]	
333	49 yr	acetaminophen/aspirin/caffeine diphenhydramine	A	Ingestion	Int suicide	390 µg/mL[¥] caffeine >60 µg/mL theophylline 2.5 µg/mL 79 mg/dL[¶]	1 h 1 h 1 h 5.5 h
334	64 yr	acetaminophen/codeine	A/C	Ingestion	Int suicide	14 µg/mL[¥]	18 h
335	47 yr	acetaminophen/codeine amitriptyline	U	Ingestion	Int suicide	21.7 µg/mL[¥]	
336	81 yr	acetaminophen/codeine glimepiride	A	Ingestion	Int suicide	155 µg/mL[¥] codeine 1.1 µg/mL	6.5 h
337	21 yr	acetaminophen/ diphenhydramine	A	Ingestion	Int suicide	113 µg/mL[¥]	12 h
338	23 yr	acetaminophen/ diphenhydramine	U	Ing/Unk	Int unk	12 µg/mL[¥]	
339	29 yr	acetaminophen/ diphenhydramine	C	Ingestion	Unknown	10 µg/mL[¥]	
340	33 yr	acetaminophen/ diphenhydramine	C	Ingestion	Int suicide		
341	34 yr	acetaminophen/ diphenhydramine	A	Ingestion	Int suicide	39.3 µg/mL[¥]	3 d
342 p	38 yr	acetaminophen/ diphenhydramine	A	Ingestion	Int suicide	393 µg/mL[¥]	1 d
343	38 yr	acetaminophen/ diphenhydramine	A	Ingestion	Int suicide		
344	46 yr	acetaminophen/ diphenhydramine	A	Ingestion	Int suicide	193 µg/mL[¥]	
345	60 yr	acetaminophen/ diphenhydramine	A	Ingestion	Int suicide	156 µg/mL[¥]	
346	32 yr	acetaminophen/ diphenhydramine acetaminophen/oxycodone	A/C	Ingestion	Int abuse	28.3 µg/mL[¥]	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
347	25 yr	acetaminophen/ diphenhydramine aspirin acetaminophen	A	Ingestion	Int suicide	140 μg/mL[¥] 80.3 mg/dL	
348	37 yr	acetaminophen/ diphenhydramine clonazepam ziprasidone	A	Ingestion	Int suicide	697 μg/mL[¥] diphenhydramine 9.2 μg/mL[§]	
349	24 yr	acetaminophen/ diphenhydramine cocaine acetaminophen/ propoxyphene[A]	A	Ing/Inh	Int misuse	78 μg/mL[¥]	
350 p	50 yr	acetaminophen/ diphenhydramine diphenhydramine sertraline	A	Ingestion	Int suicide	357 μg/mL[¥]	
351	39 yr	acetaminophen/ diphenhydramine ethanol	A	Ingestion	Int unk	299 μg/mL[¥]	
352	42 yr	acetaminophen/ diphenhydramine ethanol	A/C	Ingestion	Int unk	70 μg/mL[¥]	
353	29 yr	acetaminophen/ diphenhydramine household cleaner (unknown)	C	Ingestion	Int suicide		
354	52 yr	acetaminophen/ diphenhydramine paroxetine	A	Ingestion	Int suicide	72 μg/mL[¥] diphenhydramine 3.3 μg/mL	
355	20 yr	acetaminophen/ hydrocodone	A	Ingestion	Int suicide		
356	27 yr	acetaminophen/ hydrocodone	C	Ingestion	Ther err	41 μg/mL[¥]	
357	27 yr	acetaminophen/hydrocodone	A	Ingestion	Unint misuse	95 μg/mL[¥]	
358	30 yr	acetaminophen/hydrocodone	C	Ingestion	Int misuse	40 μg/mL[¥]	
359	36 yr	acetaminophen/hydrocodone	C	Ingestion	Int misuse	43 μg/mL[¥]	
360 p	36 yr	acetaminophen/hydrocodone	A/C	Ingestion	Int misuse		
361	39 yr	acetaminophen/hydrocodone	A/C	Ingestion	Int unk	389 μg/mL[¥]	
362	44 yr	acetaminophen/hydrocodone	U	Ingestion	Int suicide	39 μg/mL[¥]	
363	46 yr	acetaminophen/hydrocodone	C	Ingestion	Int abuse		
364	49 yr	acetaminophen/hydrocodone	C	Ingestion	Int suicide		
365	51 yr	acetaminophen/hydrocodone	A/C	Ingestion	Int suicide	343 μg/mL[¥]	
366	52 yr	acetaminophen/hydrocodone	A/C	Ingestion	Int suicide	667 μg/mL[¥]	
367	53 yr	acetaminophen/hydrocodone	A	Ingestion	Int suicide	121 μg/mL[¥]	
368	58 yr	acetaminophen/hydrocodone	A	Ingestion	Int suicide	198 μg/mL[¥]	
369	63 yr	acetaminophen/hydrocodone	C	Ingestion	Unknown	36.8 μg/mL[¥]	
370	70 yr	acetaminophen/hydrocodone	C	Ingestion	Int suicide	109 μg/mL[¥]	
371	70 yr	acetaminophen/hydrocodone	A	Ingestion	Int suicide	189 μg/mL[¥]	

372 p	33 yr	acetaminophen/hydrocodone acetaminophen cyclobenzaprine[A]	A	Ingestion	Int suicide	167 µg/mL[¥] hydrocodone 50 ng/mL 0.66 µg/mL[§]
373	41 yr	acetaminophen/hydrocodone acetaminophen/oxycodone	U	Ingestion	Int suicide	188 µg/mL[¥]
374 p	21 yr	acetaminophen/hydrocodone alprazolam	U	Ingestion	Int unk	hydrocodone 339 ng/mL[§]
375 p	33 yr	acetaminophen/hydrocodone carisoprodol	A	Ingestion	Int suicide	
376 p	36 yr	acetaminophen/hydrocodone carisoprodol	A	Ingestion	Int suicide	117 µg/mL[¥]
377	39 yr	acetaminophen/hydrocodone carisoprodol	A/C	Ingestion	Int unk	31.4 µg/mL[¥]
378 p	56 yr	acetaminophen/hydrocodone carisoprodol	U	Ingestion	Unknown	hydrocodone 300 ng/mL[§] 15 µg/mL[§]
379 p	46 yr	acetaminophen/hydrocodone clomipramine	A	Ingestion	Int suicide	14 µg/mL[¥]
380	58 yr	acetaminophen/hydrocodone clopidogrel diphenoxylate/atropine[A]	A/C	Ingestion	Int suicide	281 µg/mL[¥]
381 p	25 yr	acetaminophen/hydrocodone cocaine tricyclic antidepressant[A]	A/C	Ing/Inh/Unk	Int abuse	
382	43 yr	acetaminophen/hydrocodone cyclobenzaprine	A/C	Ingestion	Int suicide	
383 p	42 yr	acetaminophen/hydrocodone cyclobenzaprine alprazolam	U	Ingestion	Int unk	97.8 µg/mL[¥]
384	50 yr	acetaminophen/hydrocodone diphenhydramine carbamazepine	A/C	Ingestion	Int suicide	hydrocodone 29 ng/mL 13.3 µg/mL
385 p	35 yr	acetaminophen/hydrocodone ethanol	A/C	Ingestion	Int unk	9.9 µg/mL[¥] 146 mg/dL
386	47 yr	acetaminophen/hydrocodone ethanol	C	Ingestion	Int misuse	116 µg/mL[¥] 160 mg/dL
387	48 yr	acetaminophen/hydrocodone ethanol	C	Ingestion	Int abuse	9.3 µg/mL[¥]
388	58 yr	acetaminophen/hydrocodone ethanol	A	Ingestion	Int suicide	24.5 µg/mL[¥] 54 mg/dL[§]
389	74 yr	acetaminophen/hydrocodone ethanol	C	Ingestion	Int suicide	
390	79 yr	acetaminophen/hydrocodone ethanol	A/C	Ingestion	Int suicide	75 µg/mL[¥] hydrocodone 37 ng/mL dihydrocodone 24 ng/mL[§] 10 mg/dL
391 p	40 yr	acetaminophen/hydrocodone fentanyl	U	Derm/Ing	Int unk	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
392	57 yr	acetaminophen/hydrocodone fluoxetine	A/C	Ingestion	Int suicide	60 µg/mL[¥] hydrocodone 965 ng/mL 640 ng/mL norfluoxetine 350 ng/mL	
393	33 yr	acetaminophen/hydrocodone ibuprofen	C	Ingestion	Int suicide	96.8 µg/mL[¥]	
394	33 yr	acetaminophen/hydrocodone ibuprofen	A	Ingestion	Int misuse	96.8 µg/mL[¥]	26 h
395 p	35 yr	acetaminophen/hydrocodone methadone diazepam	U	Ingestion	Int suicide	15 µg/mL[¥§] hydrocodone 400 ng/mL[§] 0.5 µg/mL[§] 200 ng/mL[§] nordiazepam 550 ng/mL[§]	
396	54 yr	acetaminophen/hydrocodone metoprolol (long-acting) cyclobenzaprine[A]	U	Ingestion	Int suicide	103 µg/mL[¥]	9 h
397	48 yr	acetaminophen/hydrocodone propoxyphene acetaminophen/codeine[A]	A/C	Ingestion	Int suicide		
398	41 yr	acetaminophen/hydrocodone (long-acting) acetaminophen/hydrocodone carisoprodol[A]	C	Ingestion	Int unk		
399 p	32 yr	acetaminophen/opioid	A	Ingestion	Int suicide	7.5 µg/mL[¥]	
400	15 yr	acetaminophen/oxycodone	A	Ingestion	Int suicide	5 µg/mL[¥] oxycodone 180 ng/mL[§]	
401 p	34 yr	acetaminophen/oxycodone	U	Ingestion	Int suicide	110 µg/mL[¥]	
402	38 yr	acetaminophen/oxycodone	A	Asp/Ing	Int suicide	56 µg/mL[¥]	
403 p	39 yr	acetaminophen/oxycodone	A/C	Ingestion	Int unk	24.1 µg/mL[¥]	
404	61 yr	acetaminophen/oxycodone acetaminophen	A/C	Ingestion	Int suicide	90 µg/mL[¥]	24 h
405	20 yr	acetaminophen/oxycodone alprazolam	U	Ingestion	Int unk		
406 ip	18 yr	acetaminophen/oxycodone alprazolam hydrocodone	C	Ing/Inh	Int abuse	35 µg/mL[¥§] oxycodone 1,000 ng/mL[§] 30 ng/mL[§]	
407	35 yr	acetaminophen/oxycodone carisoprodol	A/C	Ingestion	Int suicide	36.715 µg/mL[¥] opiates 114 ng/mL	
408 p	34 yr	acetaminophen/ oxycodone lorazepam carisoprodol[A]	A	Ingestion	Int suicide		

409	39 yr	acetaminophen/oxycodone methadone	U	Ingestion	Unknown	24 µg/mL[¥]	
410	44 yr	acetaminophen/propoxyphene	U	Ingestion	Int suicide		
411	45 yr	acetaminophen/propoxyphene	C	Ingestion	Int suicide	174 µg/mL[¥]	
412 p	47 yr	acetaminophen/propoxyphene	A/C	Ingestion	Int suicide		
413 p	57 yr	acetaminophen/propoxyphene	A	Ingestion	Int suicide	198 µg/mL[¥]	
414	57 yr	acetaminophen/propoxyphene	A	Ingestion	Int suicide	48 µg/mL[¥]	
415 p	63 yr	acetaminophen/propoxyphene	A/C	Ingestion	Int suicide	90 µg/mL[¥]	
416	68 yr	acetaminophen/propoxyphene	A/C	Ingestion	Int suicide		
417	80 yr	acetaminophen/propoxyphene	C	Ingestion	Int abuse		
418	95 yr	acetaminophen/propoxyphene	A	Ingestion	Int suicide	451.6 µg/mL[¥]	
419 p	24 yr	acetaminophen/propoxyphene acetaminophen/hydrocodone ethanol[A]	A	Ingestion	Int abuse	propoxyphene 2.46 µg/mL[§#] hydrocodone 711 ng/mL[§#] 129 mg/dL[§]	
420 p	39 yr	acetaminophen/propoxyphene acetaminophen/hydrocodone ethanol	A	Ingestion	Int suicide	78 µg/mL[¥] 290 mg/dL	
421 p	19 yr	acetaminophen/propoxyphene chlorpheniramine/ dextromethorphan	A	Ingestion	Int misuse	37 µg/mL[¥]	
422 p	40 yr	acetaminophen/propoxyphene cocaine	A/C	Ing/Inh	Int suicide	149 µg/mL[¥]	
423	43 yr	acetaminophen/propoxyphene perphenazine diphenhydramine	A	Ingestion	Int suicide	propoxyphene 2.2 µg/mL norpropoxyphene 2.3 µg/mL	
424	16 yr	aspirin	A	Ingestion	Int suicide	118 mg/dL	
425	19 yr	aspirin	A	Ingestion	Int suicide	127 mg/dL	14 h
426	24 yr	aspirin	A	Ingestion	Int suicide	119 mg/dL	
427	28 yr	aspirin	A	Ingestion	Int suicide	96.4 mg/dL	
428 p	30 yr	aspirin	A	Ingestion	Int suicide	125 mg/dL	
429	35 yr	aspirin	U	Ingestion	Int unk	90 mg/dL	
430	35 yr	aspirin	A	Ingestion	Int suicide		
431	40 yr	aspirin	C	Ingestion	Int suicide	100 mg/dL	
432	40 yr	aspirin	A	Ingestion	Int suicide	54.5 mg/dL	
433	45 yr	aspirin	C	Ingestion	Int misuse	72.8 mg/dL	
434	49 yr	aspirin	A	Ingestion	Int unk	123 mg/dL	
435	53 yr	aspirin	U	Ingestion	Int suicide	110 mg/dL	
436	54 yr	aspirin	A	Ingestion	Int suicide	110 mg/dL	
437 p	56 yr	aspirin	A	Ingestion	Int suicide	75.7 mg/dL[§]	
438	56 yr	aspirin	A	Ingestion	Int suicide	83.2 mg/dL	
439	59 yr	aspirin	A	Ingestion	Int suicide	44 mg/dL	
440	59 yr	aspirin	A	Ingestion	Int suicide	112 mg/dL	
441	61 yr	aspirin	A	Ingestion	Int suicide	117 mg/dL	
442	63 yr	aspirin	A/C	Ingestion	Int suicide	91 mg/dL	
443	89 yr	aspirin	A	Ingestion	Int suicide	23.7 mg/dL	4.5 h
444	44 yr	aspirin acetaminophen	A	Ingestion	Int suicide	95.2 mg/dL 13 µg/mL	
445	51 yr	aspirin acetaminophen	A/C	Ingestion	Int suicide	101.7 mg/dL[§]	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
446	36 yr	aspirin acetaminophen chlorpromazine	A	Ingestion	Int suicide	58.4 mg/dL 221.6 µg/mL	
447 p	>19 yr	aspirin benzonatate acetaminophen/ hydrocodone	U	Unknown	Unknown		
448	32 yr	aspirin bupropion (long-acting) venlafaxine (long-acting)	A/C	Ingestion	Int suicide	67.3 mg/dL	
449	55 yr	aspirin carisoprodol naproxen	U	Ingestion	Int suicide	99 mg/dL	
450	56 yr	aspirin clonazepam lisinopril	A/C	Ingestion	Int suicide	91.6 mg/dL	
451	54 yr	aspirin ethanol	U	Ingestion	Int suicide	100.9 mg/dL 60 mg/dL	
452	88 yr	aspirin ethanol	A	Ingestion	Int suicide	118 mg/dL	
453	42 yr	aspirin quetiapine zolpidem	A	Ingestion	Int suicide	86 mg/dL	
454	43 yr	aspirin sertraline cocaine	U	Ing/Unk	Int suicide	51 mg/dL	
455	43 yr	aspirin venlafaxine (long-acting) buspirone	A	Ingestion	Int suicide	88.9 mg/dL	
456	65 yr	aspirin verapamil (long-acting)	A	Ingestion	Int suicide	92.6 mg/dL	7 h
457 p	43 yr	codeine alprazolam zolpidem[A]	A	Ingestion	Int suicide	6 µg/mL[§] 200 ng/mL[§] 1,400 ng/mL[§]	
458	36 yr	codeine hydrocodone butalbital[A]	U	Ingestion	Int unk	2.3 µg/mL[§] 300 ng/mL[§] 13 µg/mL[§]	
459	49 yr	colchicine	C	Parenteral	Adv rxn		
460	76 yr	colchicine	A/C	Ingestion	Ther err		
461	84 yr	colchicine	C	Ingestion	Ther err		
462	58 yr	colchicine carvedilol warfarin[A]	A/C	Ingestion	Int suicide		
463 i	26 yr	fentanyl	U	Unknown	Unknown		
464 p	29 yr	fentanyl	A	Parenteral	Int abuse		
465 p	50 yr	fentanyl	A	Parenteral	Int abuse	33 ng/mL[§] norfentanyl 1 ng/mL[§]	
466	>19 yr	fentanyl	U	Ingestion	Adv rxn		

467 p	17 yr	fentanyl	A/C	Ingestion	Int abuse	14 ng/mL[§]
		cocaine				0.03 μg/mL[§]
						benzoylecgonine 1 μg/mL[§]
						ecgoninemethylester μg/mL[§]
						0.27
468 ip	36 yr	fentanyl	A	Ing/Inh	Int abuse	15 ng/mL[§]
		cocaine				0.11 μg/mL[§]
						cocaethylene 0.08 μg/mL[§]
		ethanol				100 mg/dL[§]
469 p	48 yr	fentanyl	A/C	Derm/Ing	Int unk	7.9 ng/mL[§]
						norfentanyl 6.2 ng/mL[§]
		diphenhydramine				
		sildenafil				
470 p	42 yr	fentanyl	U	Ingestion	Int unk	31 ng/mL[§]
		methylphenidate				0.07 μg/mL[§]
471 p	49 yr	fentanyl	U	Derm/Ing	Int unk	13.7 ng/mL[§#]
		morphine				130 ng/mL[§]
		codeine[A]				2.5 μg/mL[§]
472 p	28 yr	fentanyl	A/C	Unknown	Int suicide	14.4 ng/mL[§#]
		oxycodone				
473 ip	16 yr	fentanyl patch	A	Ingestion	Int abuse	
474 p	29 yr	fentanyl patch	A	Ingestion	Int abuse	
475 p	31 yr	fentanyl patch	A	Ingestion	Int unk	5 ng/mL
476 p	39 yr	fentanyl patch	A/C	Ingestion	Int suicide	
477 p	41 yr	fentanyl patch	A	Dermal	Int suicide	
478 p	43 yr	fentanyl patch	A	Ingestion	Int abuse	
479 p	56 yr	fentanyl patch	A/C	Unknown	Unknown	8 ng/mL[§]
480 p	49 yr	fentanyl patch	U	Ingestion	Unknown	16 ng/mL[§#]
		acetaminophen/ hydrocodone				hydrocodone 80 ng/mL[§]
		alprazolam				30 ng/mL[§]
481 p	>19 yr	fentanyl patch	A	Ingestion	Int suicide	43,000 ng/mL[§]
		bupropion				
		cyclobenzaprine[A]				
482 p	28 yr	fentanyl patch	A	Ingestion	Int abuse	
		ethanol				
483 ip	52 yr	fentanyl patch	A/C	Derm/Ing	Unknown	
		gabapentin				
		fluoxetine[A]				
484 p	47 yr	hydrocodone	U	Ing/Unk	Unknown	400 ng/mL[§]
		acetaminophen				
485 p	29 yr	hydrocodone	U	Ing/Unk	Unknown	200 ng/mL[§]
		alprazolam				80 ng/mL[§]
486 p	Unk	hydrocodone	U	Ingestion	Int suicide	242 ng/mL
		ethanol				59 mg/dL[§]
		diphenhydramine				0.946 μg/mL[§]

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
487 p	18 yr	hydrocodone	U	Ingestion	Unknown	250 ng/mL[§]	
		methadone				0.1 µg/mL[§]	
		alprazolam[A]				100 ng/mL[§]	
488 p	33 yr	hydrocodone	A	Ingestion	Int unk	300 ng/mL[§]	
		methadone				0.1 µg/mL[§]	
		alprazolam[A]				100 ng/mL[§]	
489	67 yr	hydrocodone	A/C	Ing/Paren	Unknown		
		morphine					
490 p	44 yr	hydrocodone	U	Ingestion	Unknown	400 ng/mL[§]	
		oxycodone				400 ng/mL[§]	
		trazodone[A]				600 ng/mL[§]	
491 p	>19 yr	hydrocodone	A	Ingestion	Int suicide		
		unk muscle relaxant					
		diphenhydramine[A]					
492 p	26 yr	hydromorphone	U	Ingestion	Int suicide		
		ethanol					
493	17 yr	ibuprofen	A	Ingestion	Int suicide		
494 p	17 yr	ibuprofen	A	Ingestion	Int unk		
		unk drug					
		promethazine[A]					
495	49 yr	ibuprofen	A	Ingestion	Int suicide	260 µg/mL	
		valproic acid				> 150 µg/mL	
496 p	32 yr	levorphanol	A	Ingestion	Int abuse		
497 p	32 yr	meperidine	A	Parenteral	Int unk		
498	49 yr	meperidine	U	Parenteral	Unknown	2.5 µg/mL[§]	
499	55 yr	meperidine/	A	Ingestion	Int suicide		
		promethazine					
500	5 yr	metamizol	C	Ingestion	Adv rxn		
501 ip	2 mo	methadone	A	Ingestion	Malicious		
502 ip	15 mo	methadone	A	Ingestion	Malicious	0.3 µg/mL[§]	
503 p	6 yr	methadone	A	Ingestion	Unint gen	0.07 µg/mL[§]	
504 p	14 yr	methadone	A	Ingestion	Int abuse		
505 p	16 yr	methadone	A	Ingestion	Int suicide	0.29 µg/mL[§]	
						EDDP 0.01 µg/mL[§]	
506 p	17 yr	methadone	A	Ing/Paren	Int abuse	0.079 µg/mL	
507 p	18 yr	methadone	A	Ingestion	Int abuse		
508 p	19 yr	methadone	A	Unknown	Int abuse	0.211 µg/mL[§]	
509 p	25 yr	methadone	A/C	Ingestion	Int suicide		
510	26 yr	methadone	A	Ingestion	Int unk		
511 p	38 yr	methadone	A	Ingestion	Int unk		
512 p	40 yr	methadone	U	Ingestion	Unknown		
513 p	43 yr	methadone	A	Ingestion	Int suicide		
514 p	47 yr	methadone	U	Unknown	Int suicide		
515 p	47 yr	methadone	A/C	Ingestion	Int suicide		
516 ip	50 yr	methadone	A	Ingestion	Int misuse		
517 ip	>19 yr	methadone	U	Unknown	Int abuse		

518 p	>19 yr	methadone	U	Unknown	Int abuse	
519	>19 yr	methadone	A	Ingestion	Unknown	
520 p	>19 yr	methadone	A/C	Ingestion	Int abuse	
521 p	Unk	methadone	A	Unknown	Int abuse	0.209 µg/mL[§]
522 p	30 yr	methadone acetaminophen oxycodone[A]	A	Ingestion	Int suicide	
523 p	43 yr	methadone acetaminophen/ hydrocodone	U	Ingestion	Int unk	0.1 µg/mL[§] hydrocodone 460 ng/mL[§]
524	54 yr	methadone acetaminophen/ hydrocodone cocaine[A]	A	Ing/Unk	Int abuse	7.5 µg/mL[¥]
525 p	30 yr	methadone acetaminophen/ hydrocodone cyclobenzaprine[A]	U	Ingestion	Int suicide	
526 p	40 yr	methadone acetaminophen/ hydrocodone phenobarbital	C	Ingestion	Int suicide	1 µg/mL[§] hydrocodone 100 ng/mL[§] 1.4 µg/mL[§]
527 p	27 yr	methadone alprazolam	U	Unknown	Int unk	0.2 µg/mL[§] 50 ng/mL[§]
528	31 yr	methadone alprazolam	U	Ingestion	Unknown	
529 p	33 yr	methadone alprazolam	U	Unknown	Int abuse	
530 p	48 yr	methadone alprazolam	A	Ing/Unk	Int unk	
531 p	32 yr	methadone alprazolam clonazepam[A]	U	Ing/Unk	Int unk	
532 p	18 yr	methadone alprazolam cocaine	U	Ing/Unk	Int abuse	
533 p	29 yr	methadone alprazolam escitalopram	U	Ingestion	Int unk	0.471 µg/mL[§] 180 ng/mL[§]
534 p	28 yr	methadone alprazolam ethanol[A]	C	Ingestion	Int abuse	
535 p	33 yr	methadone alprazolam oxycodone[A]	U	Ingestion	Unknown	0.5 µg/mL[§] 60 ng/mL[§] 40 ng/mL[§]
536 p	34 yr	methadone alprazolam promethazine[A]	U	Ing/Inh/Paren	Int unk	0.23 µg/mL[§] 40 ng/mL[§]
537 p	49 yr	methadone amitriptyline	A/C	Ingestion	Int suicide	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
538 p	23 yr	methadone benzodiazepine	A	Ing/Unk	Int abuse		
539 p	34 yr	methadone benzodiazepine cocaine	A	Ing/Unk	Int suicide		
540 p	34 yr	methadone buprenorphine	A	Ingestion	Int abuse		
541 p	30 yr	methadone buspirone aripiprazole[A]	A	Ingestion	Int abuse	0.424 μg/mL[§] 9.9 ng/mL[§]	
542 p	34 yr	methadone cocaine	A/C	Ing/Inh	Int abuse	0.37 μg/mL[§] EDDP 0.04 μg/mL[§]	
543 p	40 yr	methadone cocaine alprazolam	A	Ing/Unk	Int suicide		
544 p	19 yr	methadone cocaine oxycodone (long-acting)[A]	A/C	Ing/Unk	Int abuse	0.104 μg/mL[§]	
545 p	19 yr	methadone cocaine promethazine	U	Ing/Unk	Int abuse	0.6 μg/mL[§]	
546 p	28 yr	methadone cocaine promethazine[A]	U	Ing/Inh	Int abuse	0.4 μg/mL[§] 0.05 μg/mL[§] 300 ng/mL[§]	
547 p	28 yr	methadone cyclobenzaprine	U	Ingestion	Int suicide	1.1 μg/mL[§]	
548 p	20 yr	methadone diazepam	U	Ingestion	Int abuse	0.36 μg/mL[§] nordiazepam 200 ng/mL[§]	
549 p	24 yr	methadone diazepam	U	Ingestion	Int misuse	0.24 μg/mL	
550 p	46 yr	methadone diazepam	A/C	Ingestion	Int suicide	0.47 μg/mL[§#]	
551	59 yr	methadone diazepam	A	Ingestion	Int suicide		
552 p	33 yr	methadone diazepam marijuana[A]	A/C	Ing/Inh	Int suicide	0.15 μg/mL EDDP 0.02 μg/mL 80 ng/mL nordiazepam 180 ng/mL	
553 p	30 yr	methadone diazepam oxycodone[A]	U	Ingestion	Int unk	1.1 μg/mL[§] 680 ng/mL[§#] 80 ng/mL[§]	
554 p	53 yr	methadone diazepam quetiapine[A]	A/C	Ingestion	Int abuse	0.1 μg/mL 74 ng/mL 63 ng/mL	
555 p	23 yr	methadone	A	Ingestion	Int abuse		

		ethanol				
556 p	35 yr	methadone ethanol	A	Ing/Unk	Int abuse	
557	18 yr	methadone fluoxetine marijuana	A	Ing/Inh	Int abuse	
558 p	20 yr	methadone hydrocodone methamphetamine[A]	C	Ingestion	Int unk	0.5 µg/mL[§] 80 ng/mL[§]
559	26 yr	methadone marijuana	A	Ing/Inh	Int suicide	
560 p	27 yr	methadone morphine (long-acting)	U	Unknown	Int suicide	0.337 µg/mL
561 p	31 yr	methadone nortriptyline alprazolam[A]	U	Ing/Unk	Int suicide	0.25 µg/mL[§] 219 ng/mL[§]
562 p	45 yr	methadone olanzapine alprazolam	A	Ingestion	Int unk	
563	48 yr	methadone opioid	A	Unknown	Int abuse	
564	45 yr	methadone oxycodone alprazolam[A]	A	Ing/Unk	Int suicide	
565 p	30 yr	methadone oxycodone (long-acting) acetaminophen/oxycodone[A]	C	Ingestion	Int abuse	
566 p	44 yr	methadone oxycodone (long-acting) alprazolam[A]	U	Ing/Inh/Unk	Int abuse	
567 p	23 yr	methadone tizanidine clonazepam	A	Ingestion	Int suicide	0.15 µg/mL[§]
568 p	56 yr	methadone trazodone loperamide[A]	U	Ingestion	Int unk	0.37 µg/mL[§] 100 ng/mL[§]
569	25 yr	methadone ziprasidone	A/C	Ingestion	Int unk	0.135 µg/mL
570 p	21 mo	morphine	A	Ingestion	Unknown	> 5,000 ng/mL
571 ip	16 yr	morphine	A	Ingestion	Int abuse	
572 ip	22 yr	morphine	U	Unknown	Unknown	
573 p	22 yr	morphine	U	Unknown	Unknown	37 ng/mL[§]
574 i	24 yr	morphine	U	Unknown	Unknown	
575 i	24 yr	morphine	U	Ingestion	Unknown	
576 p	37 yr	morphine	U	Unknown	Unknown	100 ng/mL[§]
577 p	43 yr	morphine	A	Unknown	Int abuse	26 ng/mL[§]
578	59 yr	morphine	A/C	Other	Ther err	
579	88 yr	morphine	A/C	Ingestion	Ther err	
580 p	>19 yr	morphine amitriptyline carbaryl	A/C	Ing/Unk	Int suicide	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
581 p	29 yr	morphine cocaine marijuana	U	Ing/Inh	Int unk	40 ng/mL[§] 0.6 µg/mL[§#]	
582 p	47 yr	morphine diazepam	A	Unknown	Unknown	1,900 ng/mL[§] 0.3 µg/mL[§#]	
583 p	>19 yr	morphine diazepam	U	Ingestion	Unknown	152 ng/mL[§] 267 ng/mL[§] nordiazepam 353 ng/mL[§]	
584	50 yr	morphine hydrocodone	A	Ingestion	Int suicide		
585 p	>19 yr	morphine hydromorphone alprazolam	U	Ing/Unk	Int suicide	2,003 ng/mL[§] 180 ng/mL[§] 22 ng/mL[§]	
586 p	43 yr	morphine methadone alprazolam[A]	A/C	Ingestion	Int suicide		
587 p	13 yr	morphine (long-acting)	A	Ingestion	Int abuse		
588 p	37 yr	morphine (long-acting)	A	Ingestion	Int suicide		
589	42 yr	morphine (long-acting)	A	Ingestion	Int unk		
590 p	>19 yr	morphine (long-acting)	U	Unknown	Unknown		
591	53 yr	morphine (long-acting) acetaminophen/hydrocodone diazepam[A]	A/C	Ingestion	Unknown		
592 p	31 yr	morphine (long-acting) alprazolam temazepam	A/C	Ingestion	Unknown	84 ng/mL[§] 53 ng/mL[§]	
593 ip	17 yr	morphine (long-acting) ethanol	A	Ingestion	Int unk	590 ng/mL[§] 50 mg/dL[§]	
594 p	19 yr	morphine (long-acting) oxycodone (long-acting) marijuana	A/C	Ing/Inh	Int abuse		
595	57 yr	morphine (long-acting) unk drug	A	Ingestion	Int suicide		
596	63 yr	naproxen ethanol	A	Ingestion	Int suicide	1,100 µg/mL[§] 260 mg/dL[§]	
597	24 yr	opioid	A	Unknown	Int abuse		
598 p	25 yr	opioid	A	Ingestion	Int abuse		
599 p	29 yr	opioid	A	Ingestion	Int suicide		
600 p	30 yr	opioid	A	Ingestion	Int suicide		
601 p	20 yr	opioid cocaine benzodiazepine	U	Ing/Unk	Int suicide		
602 p	30 yr	opioid cocaine benzodiazepine[A]	A	Ing/Inh/Unk	Int suicide		
603	35 yr	opioid cocaine marijuana[A]	U	Ing/Inh	Int abuse		

604	39 yr	opioid ethanol acamprosate[A]	A/C	Ingestion	Int suicide	273 mg/dL
605	50 yr	opioid isopropyl alcohol hydrogen peroxide[A]	A	Ingestion	Int suicide	
606	57 yr	opium tincture tramadol metoprolol[A]	A/C	Ingestion	Int suicide	
607 p	3 yr	oxycodone	A	Ingestion	Unint gen	free oxycodone 280 ng/mL[§]
608	19 yr	oxycodone	A	Other	Int abuse	
609 p	38 yr	oxycodone	A	Ingestion	Int unk	1,500 ng/mL[§]
610 p	>19 yr	oxycodone	U	Ingestion	Int abuse	
611 p	53 yr	oxycodone alprazolam	U	Ingestion	Int suicide	1,000 ng/mL[§] 100 ng/mL[§]
612 p	Unk	oxycodone amitriptyline citalopram	U	Ingestion	Int unk	581 ng/mL[§] 145 ng/mL[§] 199 ng/mL[§]
613 p	28 yr	oxycodone citalopram	U	Ingestion	Unknown	1,500 ng/mL[§]
614 p	36 yr	oxycodone cocaine ethanol[A]	A/C	Ing/Unk	Int abuse	450 ng/mL[§] benzoylecgonine 0.54 µg/mL[§]
615 p	45 yr	oxycodone cyclobenzaprine clonazepam[A]	A/C	Ingestion	Int suicide	1,540 ng/mL[§] free oxycodone 1,110 ng/mL[§] oxymorphone 1,890 ng/mL[§]
616 p	57 yr	oxycodone cyclobenzaprine phentermine[A]	U	Ingestion	Unknown	500 ng/mL[§] 0.1 µg/mL[§]
617 p	62 yr	oxycodone diazepam potassium chloride	U	Ingestion	Int unk	200 ng/mL[§]
618 ip	43 yr	oxycodone doxepin fluoxetine[A]	C	Ingestion	Ther err	110 ng/mL[§] 430 ng/mL[§] 1,540 ng/mL[§]
619 i	45 yr	oxycodone ethanol	U	Ingestion	Unknown	
620 p	47 yr	oxycodone fentanyl patch	A	Derm/Ing	Int suicide	
621 p	36 yr	oxycodone heparin	A	Paren/Unk	Int abuse	
622 p	39 yr	oxycodone ibuprofen	U	Ingestion	Int unk	
623 p	22 yr	oxycodone methadone aripiprazole	A	Ingestion	Int unk	400 ng/mL[§] 0.08 µg/mL[§]

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
624 p	51 yr	oxycodone methadone diazepam[A]	A	Ingestion	Int suicide	7,000 ng/mL[§] 1.3 µg/mL[§] 400 ng/mL[§#]	
625 p	48 yr	oxycodone trazodone	A	Ingestion	Int suicide	3,600 ng/mL[§] 5,000 ng/mL[§]	
626 ip	17 yr	oxycodone (long-acting)	A	Ingestion	Int misuse		
627 p	29 yr	oxycodone (long-acting)	A	Ingestion	Int suicide		
628	43 yr	oxycodone (long-acting)	U	Unknown	Unknown		
629 p	24 yr	oxycodone (long-acting) acetaminophen/ hydrocodone alprazolam	U	Ingestion	Int suicide		
630 i	21 yr	oxycodone (long-acting) alprazolam diazepam	U	Ingestion	Int unk	280 ng/mL[§] 120 ng/mL[§] 150 ng/mL[§] nordiazepam 230 ng/mL[§]	
631 p	63 yr	oxycodone (long-acting) carvedilol gabapentin	A	Ingestion	Int suicide		
632 ip	47 yr	oxycodone (long-acting) diazepam	A/C	Ing/Paren	Int abuse	1,600 ng/mL	
633 ip	19 yr	oxycodone (long-acting) hydrocodone amitriptyline[A]	C	Ing/Inh	Int abuse	400 ng/mL[§] 50 ng/mL 600 ng/mL[§] nortriptyline 700 ng/mL[§]	
634 p	26 yr	oxycodone (long-acting) hydromorphone promethazine	A	Ingestion	Int unk		
635 p	>19 yr	oxycodone (long-acting) meperidine acetaminophen/hydrocodone	A/C	Ing/Paren	Ther err		
636 p	46 yr	oxycodone (long-acting) methadone hydrocodone[A]	U	Ingestion	Unknown	300 ng/mL[§] 0.06 µg/mL[§] 60 ng/mL[§]	
637 p	41 yr	oxycodone (long-acting) quetiapine gabapentin	U	Ingestion	Int unk		
638 ip	34 yr	propoxyphene	A	Ingestion	Int suicide		
639	38 yr	propoxyphene	A	Ingestion	Int suicide		
640	43 yr	propoxyphene	U	Ingestion	Int suicide		
641 p	44 yr	propoxyphene	A	Ingestion	Int suicide		
642 p	35 yr	propoxyphene acetaminophen/caffeine/ butalbital	U	Ingestion	Unknown		

643 p	51 yr	propoxyphene	U	Ing/Unk	Int abuse	1.56 µg/mL[§]
		amitriptyline				280 ng/mL[§#]
		cocaine[A]				0.48 µg/mL[§#]
644 p	Unk	propoxyphene	A	Ingestion	Int suicide	0.89 µg/mL[§]
		meperidine				1.077 µg/mL[§]
645 p	50 yr	propoxyphene	A/C	Ingestion	Int suicide	
		oxycodone				
		risperidone[A]				
646	65 yr	salicylate	U	Ingestion	Int unk	55.4 mg/dL
647 p	24 yr	tramadol	A	Ingestion	Int abuse	
648 p	41 yr	tramadol	U	Ingestion	Int unk	
		ethanol				
649 p	20 yr	tramadol	A	Ing/Inh/Unk	Int abuse	0.116 µg/mL[§]
		fentanyl				desmethyltramadol
		clonazepam[A]				38 µg/mL[§]
						1.8 ng/mL[§]
						36.9 ng/mL[§]
650	94 yr	tramadol	A/C	Ingestion	Int suicide	
		temazepam				
		citalopram				
651	52 yr	unk opioid	U	Ingestion	Int suicide	
		unk benzodiazepine				
		methamphetamine[A]				

See also cases 347, 372, 404, 444 thru 446, 484, 522, 671, 698, 760, 800, 809, 817, 821, 956, 966, 983, 999, 1000, 1025, 1042, 1059, 1256, 1257 (acetaminophen); 284, 1038 (acetaminophen/aspirin/caffeine); 642 (acetaminophen/caffeine/butalbital); 285, 286, 397, 753, 869, 959, 1046 (acetaminophen/codeine); 41 (acetaminophen/diphenhydramine); 288, 329, 398, 419, 420, 447, 480, 523 thru 526, 591, 629, 635, 766, 826, 905, 993, 994, 997, 1001, 1002, 1010, 1034, 1046, 1060, 1061, 1127, 1128, 1218 (acetaminophen/hydrocodone); 42, 289, 346, 373, 565, 762, 777, 1061, 1219 (acetaminophen/oxycodone); 156, 349, 662 (acetaminophen/propoxyphene) (acetaminophen/tramadol); 286, 287, 291 thru 293, 347, 769, 844, 1257, 1259, 1261 (aspirin); 540 (buprenorphine); 471 (codeine); 330, 391, 649 (fentanyl); 14, 81, 620, 767 (fentanyl patch); 158, 311, 406, 458, 558, 584, 633, 636, 756, 804, 922, 1000, 1035 (hydrocodone); 585, 634, 757 (hydromorphone); 312, 313, 393, 394, 622, 688, 700, 705, 779 (ibuprofen); 839 (meloxicam); 635, 644, 788 (meperidine); 317, 395, 409, 487, 488, 586, 623, 624, 636, 840, 1024, 1130, 1145, 1195, 1199, 1200 (methadone); 471, 489, 972, 1019, 1020, 1037, 1153 (morphine); 560 (morphine (long-acting)); 319, 449, 942 (naproxen); 235, 563, 672, 694, 754, 786, 789, 816, 889, 1023, 1024, 1086, 1144, 1147 thru 1151, 1227 (opioid); 18, 472, 490, 522, 535, 553, 564, 645, 996, 1009, 1131, 1152, 1201 (oxycodone); 320, 544, 565, 566, 594 (oxycodone (long-acting)); 848 (piroxicam); 397 (propoxyphene); 606, 696, 737, 1006, 1010, 1048 (tramadol); 1228 (unk analgesic); 1091 (unknown opioid).

Anesthetics

652	11 yr	bupivacaine	A	Oth/Paren	Ther err	
653 ip	22 yr	lidocaine	A	Dermal	Ther err	7.9 µg/mL
654 p	>19 yr	lidocaine patch	A	Dermal	Unknown	
655 ip	27 yr	nitrous oxide	U	Inhalation	Int abuse	
656	20 yr	unk anesthetics	A	Inh/Paren	Adv rxn	

See also cases 1142 (ketamine); 823 (lidocaine).

Anticholinergic drugs

657	50 yr	benztropine	A/C	Ingestion	Int suicide	

See also cases 1039 (benzotropine); 761 (benztropine); 840 (unknown anticholinergic).

Anticoagulants

658	88 yr	eptifibatide	A	Parenteral	Ther err	
659	82 yr	heparin	C	Parenteral	Adv rxn	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
660	67 yr	warfarin amlodipine ramipril[A]	A/C	Ingestion	Int suicide		
661	60's yr	warfarin temazepam eszopiclone[A]	A	Ingestion	Int suicide		
See also cases 380, 936 (clopidogrel); 621 (heparin); 462, 873, 918 (warfarin).							
Anticonvulsants							
662	30 yr	carbamazepine acetaminophen/ ropoxyphene venlafaxine[A]	U	Ingestion	Int suicide	39.5 µg/mL 120 µg/mL[¥]	
663 p	46 yr	carbamazepine mirtazapine clonazepam[A]	A	Ingestion	Int suicide	7.8 µg/mL	
664	37 yr	carbamazepine tricyclic antidepressant citalopram[A]	A/C	Ingestion	Int suicide	20.9 µg/mL	
665	48 yr	lamotrigine clonazepam	A/C	Ingestion	Int suicide		
666	59 yr	oxcarbazepine	A/C	Ingestion	Int suicide		
667	32 yr	oxcarbazepine levetiracetam	A/C	Ingestion	Int suicide		
668	30 yr	oxcarbazepine venlafaxine cocaine	A	Ing/Unk	Int suicide	34.42 µg/mL[¥] 86,000 ng/mL[§] 0.37 µg/mL[§#]	
669	35 yr	topiramate quetiapine escitalopram[A]	A/C	Ingestion	Int suicide		
670	27 yr	valproic acid	A/C	Ingestion	Int suicide	3,465 µg/mL	
671	61 yr	valproic acid acetaminophen enalapril	A	Ingestion	Int suicide	337 µg/mL 332.8 µg/mL	
672	57 yr	valproic acid benzodiazepine opioid	U	Ingestion	Int suicide	66.4 µg/mL	
673	52 yr	valproic acid citalopram imipramine	U	Ingestion	Adv rxn		
674 p	32 yr	valproic acid insulin amphetamine[A]	A	Ing/Paren/Unk	Int suicide	1,138.7 µg/mL	
675	47 yr	valproic acid mirtazapine trazodone[A]	A	Ingestion	Int suicide	609 µg/mL	
676	18 yr	valproic acid olanzapine	A/C	Ingestion	Int suicide	1,044 µg/mL	

See also cases 384, 844 (carbamazepine); 483, 631, 637, 692, 696, 704, 750, 753, 986, 1068, 1082 (gabapentin); 82, 706, 779, 793 thru 795, 1048, 1084 (lamotrigine); 667 (levetiracetam); 692 (ocarbazepine); 737, 770, 794, 841 (oxcarbazepine); 847, 1071, 1261 (phenytoin); 1005 (tiagabine); 768, 946 (topiramate); 120, 328, 495 (valproic acid); 947 (valproic Acid); 1044, 1063, 1073, 1154 (valproic acid).

Antidepressants

677 p	33 yr	amitriptyline	U	Ingestion	Int suicide		
678	35 yr	amitriptyline	A	Ingestion	Int suicide		
679 p	36 yr	amitriptyline	A	Ingestion	Int suicide	400 ng/mL	
680	54 yr	amitriptyline	A/C	Ingestion	Int suicide	2,509 ng/mL	4 d
681	55 yr	amitriptyline	A	Ingestion	Int suicide		
682	63 yr	amitriptyline	A	Ingestion	Int suicide		
683 p	Unk	amitriptyline	A	Ingestion	Int suicide		
684	50 yr	amitriptyline amlodipine diphenhydramine	A	Ingestion	Int suicide		
685 p	50 yr	amitriptyline benzodiazepine	U	Ingestion	Int suicide		
686 p	41 yr	amitriptyline benzodiazepine quetiapine	A/C	Ingestion	Int suicide		
687 p	51 yr	amitriptyline bisacodyl	U	Ingestion	Int suicide	420 ng/mL[§]	
688	16 yr	amitriptyline bupropion (long-acting) ibuprofen	A	Ingestion	Int suicide		
689 p	25 yr	amitriptyline clonazepam clonidine[A]	A/C	Ingestion	Int unk		
690 p	36 yr	amitriptyline escitalopram phenobarbital[A]	A/C	Ingestion	Int suicide		
691 p	59 yr	amitriptyline ethanol	A/C	Ingestion	Int suicide	3,606 ng/mL[§#]	
692	24 yr	amitriptyline ocarbazepine gabapentin[A]	A/C	Ingestion	Int suicide		
693 p	28 yr	amitriptyline olanzapine escitalopram[A]	A/C	Ingestion	Int suicide		
694 p	25 yr	amitriptyline opioid benzodiazepine	A/C	Ingestion	Int suicide	807 ng/mL[#]	
695 p	46 yr	amitriptyline simvastatin	A/C	Ingestion	Int suicide		
696 p	23 yr	amitriptyline tramadol gabapentin	A/C	Ingestion	Int suicide		
697 p	29 yr	amitriptyline ziprasidone haloperidol[A]	U	Ingestion	Unknown		
698	19 yr	bupropion acetaminophen	A	Ingestion	Int suicide	308 µg/mL	
699 p	44 yr	bupropion cocaine	A/C	Ing/Unk	Int suicide		

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
700	23 yr	bupropion cocaine ibuprofen[A]	U	Ing/Unk	Int abuse		
701 p	24 yr	bupropion ethanol	A/C	Ingestion	Int suicide	7,600 ng/mL[§] hydroxybupropion 5,640 ng/mL[§]	
702	38 yr	bupropion ethanol	U	Asp/Ing	Int suicide	1,200 ng/mL[§] 113 mg/dL[§]	
703	38 yr	bupropion ethanol	A/C	Ingestion	Int suicide		
704	27 yr	bupropion gabapentin ziprasidone	A/C	Ingestion	Int suicide		
705	35 yr	bupropion ibuprofen activated charcoal[A]	U	Asp/Ing	Int suicide	1,900 ng/mL[§] morpholinobupropion ng/mL[§] 1,500 threobupropion 3,600 ng/mL[§] 130 µg/mL[§]	
706	41 yr	bupropion lamotrigine sertraline	U	Ingestion	Int unk		
707	44 yr	bupropion loratadine	A	Ingestion	Int suicide		
708	50 yr	bupropion losartan hydrochlorothiazide[A]	A/C	Ingestion	Int suicide		
709 p	40 yr	bupropion olanzapine aripiprazole[A]	A/C	Ingestion	Int suicide		
710 p	36 yr	bupropion propranolol trazodone[A]	A	Ingestion	Int suicide		
711	37 yr	bupropion risperidone clonazepam[A]	A/C	Ingestion	Int abuse		
712	40 yr	bupropion trazodone methamphetamine[A]	A	Ingestion	Int suicide	3,900 ng/mL[§] 80 ng/mL[§] 0.027 µg/mL[§]	
713 p	49 yr	bupropion valsartan eszopiclone	U	Ingestion	Unknown		
714	18 yr	bupropion venlafaxine	A/C	Ingestion	Int suicide		
715	23 yr	bupropion venlafaxine (long-acting)	A	Ingestion	Int suicide		

716 p	16 yr	bupropion (long-acting)	A	Ingestion	Int suicide	
717	21 yr	bupropion (long-acting)	A/C	Ingestion	Int suicide	6,130 ng/mL[§]
718	21 yr	bupropion (long-acting)	A/C	Ingestion	Int suicide	5,200 ng/mL[§]
719	41 yr	bupropion (long-acting)	A/C	Ingestion	Int suicide	
720	50 yr	bupropion (long-acting)	A	Ingestion	Int suicide	
721	88 yr	bupropion (long-acting)	A/C	Ingestion	Int suicide	
722	31 yr	bupropion (long-acting) activated charcoal	A	Asp/Ing	Int suicide	
723	42 yr	bupropion (long-acting) atenolol metoprolol (long-acting)[A]	A/C	Ingestion	Int suicide	
724 p	27 yr	bupropion (long-acting) bupropion	U	Ingestion	Int suicide	
725	17 yr	bupropion (long-acting) cocaine	A	Ing/Inh	Int suicide	
726	47 yr	bupropion (long-acting) cocaine hydroxyzine[A]	U	Ingestion	Int suicide	
727	57 yr	bupropion (long-acting) diltiazem (long-acting)	A/C	Ingestion	Int suicide	
728	34 yr	bupropion (long-acting) ethanol	A/C	Ingestion	Int suicide	
729	40 yr	bupropion (long-acting) ethanol trazodone	A	Ingestion	Int suicide	
730	42 yr	bupropion (long-acting) methamphetamine amphetamine[A]	U	Ingestion	Int suicide	15,000 ng/mL[§] 0.57 µg/mL[§] 0.05 µg/mL[§]
731	16 yr	buproprion (long-acting)	A	Ingestion	Int suicide	
732	50 yr	buproprion (long-acting) ethanol	A	Ingestion	Int suicide	
733	>19 yr	citalopram	A	Ingestion	Int suicide	
734 p	29 yr	citalopram diphenhydramine ethanol	A	Ingestion	Unknown	 174 mg/dL
735 p	61 yr	citalopram quetiapine ethanol[A]	A	Ingestion	Int suicide	 190 mg/dL[§]
736 p	65 yr	citalopram quetiapine propranolol[A]	A/C	Ingestion	Int suicide	
737	38 yr	clomipramine oxcarbazepine tramadol[A]	A/C	Asp/Ing	Int suicide	
738	19 yr	clomipramine ziprasidone sertraline	A/C	Ingestion	Int suicide	
739	40 yr	desipramine	A/C	Ingestion	Int suicide	1,470 ng/mL
740	23 yr	desipramine cocaine methamphetamine	A/C	Ing/Unk	Int suicide	
741	74 yr	desipramine	A/C	Ingestion	Int suicide	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
		mirtazapine clonazepam[A]					
742 p	60's yr	doxepin	U	Ingestion	Int suicide		
743 p	30 yr	doxepin cocaine	A/C	Ing/Unk	Int suicide	> 10,000 ng/mL[§] nordoxepin 900 ng/mL[§] 0.06 µg/mL[§] cocaethylene 0.08 µg/mL[§]	
		promethazine				100 ng/mL[§]	
744 p	48 yr	doxepin diphenhydramine	A	Ingestion	Int suicide		
745	35 yr	doxepin ethanol methamphetamine	A	Ingestion	Int suicide	720 ng/mL nordoxepin 210 ng/mL 0.11 µg/mL amphetamine 0.03 µg/mL	
746 p	44 yr	doxepin mirtazapine quetiapine[A]	A	Ingestion	Int suicide		
747	38 yr	doxepin quetiapine cocaine[A]	A	Ing/Unk	Int suicide	2,200 ng/mL[§] nordoxepin 1,800 ng/mL[§] ecgonine 0.338 µg/mL[§] benzoylecgonine 2.1 µg/mL[§]	
748	56 yr	duloxetine (long-acting)	C	Ingestion	Adv rxn		
749 p	39 yr	escitalopram chlorpheniramine alprazolam	U	Ingestion	Int suicide	citalopram 730 ng/mL[§#] 0.38 µg/mL[§]	
750	45 yr	escitalopram gabapentin	A/C	Ingestion	Int suicide		
751 i	75 yr	escitalopram levothyroxine venlafaxine[A]	A/C	Ingestion	Int suicide		
752	55 yr	fluoxetine	A	Ingestion	Int suicide		
753 p	48 yr	fluoxetine acetaminophen/codeine gabapentin[A]	A	Ingestion	Int suicide	425.9 ng/mL[§] norfluoxetine 213.5 ng/mL[§] 9.3 µg/mL[¥] codeine 0.068 µg/mL[§] hydrocodone 295 ng/mL[§]	

754 p	27 yr	fluoxetine cocaine opioid[A]	U	Ing/Unk	Unknown	
755	38 yr	fluoxetine diltiazem (long-acting) metoprolol[A]	A/C	Ingestion	Int suicide	290 µg/mL norfluoxetine 270 µg/mL 1.27 µg/mL 0.6 µg/mL
756 ip	51 yr	fluoxetine hydrocodone atenolol	A/C	Ingestion	Int suicide	1,000 ng/mL[§] norfluoxetine 1,000 ng/mL[§] 14 ng/mL
757 p	40 yr	fluoxetine hydromorphone	U	Ing/Paren	Int unk	1,500 ng/mL[§]
758 p	27 yr	imipramine amitriptyline	A	Ingestion	Int suicide	
759	70 yr	lithium	C	Ingestion	Ther err	2.4 mEq/L
760	42 yr	lithium acetaminophen	A	Asp/Ing/Inh	Int suicide	0.93 mEq/L > 300 µg/mL
761	37 yr	lithium benztropine paroxetine	A	Ingestion	Adv rxn	
762 p	35 yr	mirtazapine acetaminophen/oxycodone alprazolam	A/C	Ingestion	Int suicide	
763	40 yr	nortriptyline	A	Ingestion	Unknown	
764	53 yr	nortriptyline	A/C	Ingestion	Int suicide	
765	59 yr	nortriptyline	C	Ingestion	Ther err	1,405 ng/mL
766	36 yr	nortriptyline acetaminophen/hydrocodone olanzapine[A]	A	Ingestion	Int suicide	
767 p	49 yr	nortriptyline amitriptyline fentanyl patch	U	Derm/Ing	Int suicide	
768	19 yr	nortriptyline ethanol topiramate	A	Ingestion	Int suicide	
769 p	20 yr	nortriptyline haloperidol aspirin	A	Ingestion	Int suicide	
770	52 yr	nortriptyline haloperidol oxcarbazepine[A]	A	Ingestion	Int suicide	
771	52 yr	nortriptyline quetiapine bupropion[A]	C	Ingestion	Int suicide	
772	43 yr	nortriptyline venlafaxine baclofen[A]	U	Ingestion	Int suicide	
773 p	28 yr	nortriptyline	A	Ingestion	Int suicide	

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
		venlafaxine quetiapine[A]					
774	28 yr	nortripytyline	U	Ingestion	Int suicide	> 1,000 ng/mL	
775	56 yr	phenelzine	U	Ingestion	Int unk		
776 p	24 yr	sertaline bupropion	A	Ingestion	Int suicide	2,800 ng/mL[§] 3,600 ng/mL[§]	
777	38 yr	sertraline acetaminophen/oxycodone phenobarbital/belladonna[A]	A/C	Ingestion	Int abuse	7.9 µg/mL[¥]	6 h
778	48 yr	sertraline amphetamine	A	Ingestion	Int suicide		
779	38 yr	sertraline lamotrigine ibuprofen	A	Ingestion	Int suicide	400 µg/mL[§]	
780	47 yr	tranylcypromine paroxetine benzodiazepine	A/C	Ingestion	Int suicide		
781 p	40's yr	trazodone	A/C	Ingestion	Int suicide		
782 p	>19 yr	trazodone	U	Ingestion	Unknown		
783	48 yr	trazodone alprazolam unk chemical	A/C	Ingestion	Int suicide		
784 p	54 yr	tricyclic antidepressant	A	Ingestion	Int suicide	373 ng/mL	
785	34 yr	tricyclic antidepressant alprazolam escitalopram[A]	A	Ingestion	Int suicide		
786 p	43 yr	tricyclic antidepressant cocaine opioid	U	Ing/Unk	Int abuse		
787 p	41 yr	tricyclic antidepressant ethanol	A/C	Ingestion	Int suicide	4,284.5 ng/mL[§]	
788 p	49 yr	tricyclic antidepressant meperidine	U	Ingestion	Int suicide		
789	18 yr	tricyclic antidepressant opioid benzodiazepine	A	Ingestion	Int suicide		
790	20 yr	venlafaxine	U	Ingestion	Int suicide		
791	40 yr	venlafaxine	A/C	Ingestion	Int suicide		
792	30 yr	venlafaxine ethanol	A/C	Ingestion	Unknown	23 mg/dL	
793	50 yr	venlafaxine lamotrigine	A/C	Ingestion	Int suicide		
794	41 yr	venlafaxine lamotrigine oxcarbazepine	A/C	Ingestion	Int suicide		
795 p	35 yr	venlafaxine lamotrigine risperidone[A]	A/C	Ing/Inh	Int suicide	17,800 ng/mL[§] 11.78 µg/mL[§]	
796	28 yr	venlafaxine quetiapine	A/C	Ingestion	Int suicide		

797	30's yr	venlafaxine (long-acting)	A/C	Ingestion	Int suicide	
798	40 yr	venlafaxine (long-acting)	A/C	Ingestion	Int suicide	9,000 ng/mL
						o-norvenlafaxine 3,000 ng/mL
799	35 yr	venlafaxine (long-acting)	A/C	Asp/Ing	Int suicide	480 ng/mL[§]
		activated charcoal				
		nortiptyline[A]				320 ng/mL[§]
800	42 yr	venlafaxine (long-acting)	A/C	Ingestion	Int suicide	
		amitriptyline				
		acetaminophen				
801	69 yr	venlafaxine (long-acting)	A	Ingestion	Int suicide	44,000 ng/mL[§]
		bupropion (long-acting)				2,700 ng/mL[§]
802 p	18 yr	venlafaxine (long-acting)	A	Ingestion	Int suicide	
		bupropion (long-acting)				
		escitalopram				
803 p	56 yr	venlafaxine (long-acting)	A	Ingestion	Int suicide	61,200 ng/mL[§#]
		citalopram				470 ng/mL[§]
804 p	32 yr	venlafaxine (long-acting)	A	Ingestion	Unknown	
		hydrocodone				
		alprazolam[A]				

See also cases 290, 335, 537, 580, 612, 633, 643, 758, 767, 800, 886, 932, 1068, 1075, 1127, 1141, 1188 (amitriptyline); 481, 724, 771, 776, 845, 987, 1027, 1030, 1063, 1084 (bupropion); 448, 688, 801, 802, 907, 1064 (bupropion (long-acting)); 612, 613, 650, 664, 673, 803, 901, 933, 989 (citalopram); 379 (clomipramine); 1035 (desipramine); 618 (doxepin); 838, 913 (duloxetine); 332, 938 (duloxetine (long-acting)); 533, 669, 690, 693, 785, 802, 959, 965, 1031(escitalopram); 309, 310, 392, 483, 557, 618, 848, 923, 935, 1047 (fluoxetine); 1059 (fluvoxamine); 673 (imipramine); 1074, 1225 (lithium); 663, 675, 741, 746, 1042, 1070 (mirtazapine); 323 (mirtazepine); 799 (nortiptyline); 561, 931, 943, 947 (nortriptyline); 321, 354, 761, 780, 894, 1003, 1067, 1083, 1187, (paroxetine); 350, 454, 706, 738, 913, 945, 1004, 1043, 1072, 1196, 1225 (sertraline); 18, 322, 323, 490, 568, 625, 675, 710, 712, 729, 945, 1047, 1156 (trazodone); 9, 381, 664, 939, 1037 (tricyclic antidepressant); 1228 (unk antidepressant); 662, 668, 714, 751, 772, 773, 1006, 1041, 1075 (venlafaxine); 295, 448, 455, 715, 1031 (venlafaxine (long-acting)).

Antihistamines

805 p	19 yr	diphenhydramine	A	Ingestion	Int suicide	
806	33 yr	diphenhydramine	A	Ingestion	Int unk	
807	43 yr	diphenhydramine	A	Ingestion	Int suicide	
808 p	88 yr	diphenhydramine	A	Ingestion	Int suicide	
809	24 yr	diphenhydramine	C	Ingestion	Int unk	
		acetaminophen				70.5 µg/mL
810	58 yr	diphenhydramine	A/C	Asp/Ing	Int suicide	
		activated charcoal				
		aripiprazole[A]				
811	22 yr	diphenhydramine	A	Ingestion	Int suicide	
		dimenhydrinate				
812 p	20 yr	diphenhydramine	U	Ingestion	Int suicide	4.6 µg/mL[§]
		doxylamine				
813 p	49 yr	diphenhydramine	A	Ingestion	Int suicide	2 µg/mL
		ethanol				
814	36 yr	diphenhydramine	A/C	Ingestion	Int suicide	
		quetiapine				
		lorazepam[A]				
815 p	17 yr	doxylamine	A	Ingestion	Int suicide	
		dextromethorphan				
816	44 yr	hydroxyzine	A	Ingestion	Int suicide	
		alprazolam				

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
		opioid					
817	41 yr	promethazine acetaminophen	U	Ingestion	Int suicide	40 ng/mL 99 μg/mL	2 d
818	41 yr	promethazine carisoprodol prochlorperazine[A]	A/C	Ingestion	Int suicide	1,510 ng/mL	
819 p	20's yr	promethazine prochlorperazine dicyclomine[A]	U	Ingestion	Int suicide		
See also cases 749 (chlorpheniramine); 811 (dimenhydrinate); 297, 298, 333, 350, 384, 423, 469, 486, 491, 684, 734, 744, 922, 1009, 1039, 1050, 1077, 1136 (diphenhydramine); 315 (famotidine); 839, 978 (fexofenadine); 726 (hydroxyzine); 707 (loratadine); 317, 494, 536, 545, 546, 634, 743, 996 (promethazine).							
Antimicrobials							
820	39 yr	isoniazid	C	Ingestion	Adv rxn		
821	28 yr	isoniazid acetaminophen	A/C	Ingestion	Unknown		
822	90 yr	penicillin	A	Parenteral	Adv rxn		
823	43 yr	primaquine benzocaine/ cetylpyridinium chloride lidocaine	C	Ingestion	Adv rxn		
824	62 yr	quinine	A/C	Ingestion	Int suicide	2.2 μg/mL	
825	87 yr	quinine	A	Ingestion	Int suicide		
826 p	33 yr	quinine cyclobenzaprine acetaminophen/hydrocodone	A	Ingestion	Int suicide	100 μg/mL[¥]	
827	14 yr	stavudine lamivudine zidovudine[A]	C	Ingestion	Adv rxn		
828	26 yr	telithromycin	C	Ingestion	Adv rxn		
See also cases 827 (lamivudine); 872 (quinine); 827 (zidovudine).							
Antineoplastics							
829	89 yr	methotrexate	C	Ingestion	Ther err		
Asthma therapies							
830	51 yr	theophylline	C	Ingestion	Adv rxn	34.2 μg/mL	
831	55 yr	theophylline	C	Ingestion	Ther err	39 μg/mL	
832	56 yr	theophylline	A/C	Ingestion	Int suicide	127 μg/mL	
833	75 yr	theophylline	C	Ingestion	Ther err	35 μg/mL	
834	77 yr	theophylline	A/C	Ingestion	Ther err	35 μg/mL	
Cardiovascular drugs							
835	66 yr	amiodarone allopurinol torsemide[A]	A/C	Ingestion	Ther err		
836	100 yr	amiodarone amlodipine timolol	C	Ing/Ocu	Adv rxn		
837 p	52 yr	amlodipine atenolol cocaine[A]	A/C	Ingestion	Int suicide	benzoylecgonine 0.42 μg/mL	17 h

838	98 yr	amlodipine duloxetine levothyroxine	A/C	Ingestion	Int suicide	
839	42 yr	amlodipine meloxicam fexofenadine[A]	A/C	Ingestion	Int suicide	
840	66 yr	amlodipine methadone unknown anticholinergic	A/C	Ingestion	Int suicide	
841	47 yr	amlodipine oxcarbazepine metformin[A]	A	Ingestion	Int suicide	
842	89 yr	atenolol	C	Ingestion	Ther err	
843	86 yr	atenolol amiodarone digoxin	A/C	Ingestion	Ther err	 0.2 ng/mL
844 p	61 yr	atenolol aspirin carbamazepine[A]	A/C	Ingestion	Int suicide	 80 mg/dL 12.5 µg/mL
845 p	51 yr	atenolol bupropion ziprasidone[A]	A/C	Ingestion	Int suicide	3.8 µg/mL[§] 750 ng/mL[§]
846	30 yr	atenolol clonazepam	A	Ingestion	Int suicide	
847	84 yr	atenolol phenytoin temazepam[A]	A/C	Ingestion	Int suicide	 67 µg/mL
848 p	60 yr	atenolol piroxicam fluoxetine[A]	U	Ingestion	Int suicide	
849	81 yr	beta-blocker	A/C	Ingestion	Int suicide	
850	2 yr	clonidine	A	Asp/Ing	Unint gen	
851 p	>19 yr	clonidine	U	Ing/Unk	Int suicide	
852	44 yr	clonidine clonazepam atenolol[A]	A/C	Ingestion	Int suicide	
853 p	67 yr	clonidine diazepam	A/C	Ingestion	Int suicide	
854	83 yr	digitoxin	C	Ingestion	Ther err	digoxin 5.6 ng/mL
855 p	63 yr	digoxin	A/C	Ingestion	Int suicide	5.6 ng/mL
856	73 yr	digoxin	A/C	Ingestion	Int suicide	4 ng/mL
857 p	78 yr	digoxin	C	Ingestion	Unknown	5.5 ng/mL
858	78 yr	digoxin	C	Ingestion	Ther err	4 ng/mL
859	83 yr	digoxin	A/C	Ingestion	Ther err	2.3 ng/mL
860	83 yr	digoxin	A/C	Ingestion	Unknown	4.7 ng/mL
861	84 yr	digoxin	C	Ingestion	Ther err	2.7 ng/mL
862	85 yr	digoxin	U	Ingestion	Unknown	3.6 ng/mL
863	86 yr	digoxin	C	Ingestion	Ther err	2.3 ng/mL
864	86 yr	digoxin	C	Ingestion	Adv rxn	3.3 ng/mL
865	87 yr	digoxin	C	Ingestion	Ther err	4.7 ng/mL

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
866	89 yr	digoxin	C	Ingestion	Int unk	4.8 ng/mL	2 d
867	90 yr	digoxin	C	Ingestion	Adv rxn		
868	91 yr	digoxin	C	Ingestion	Adv rxn	2.9 ng/mL	
869	69 yr	digoxin acetaminophen/codeine	A	Ingestion	Int suicide	31.5 ng/mL 41 μg/mL[¥]	
870	82 yr	digoxin amiodarone metoprolol	C	Ingestion	Ther err	3.2 ng/mL	
871	94 yr	digoxin atenolol	C	Ingestion	Ther err	13.2 ng/mL	
872 i	66 yr	digoxin verapamil quinine	C	Ingestion	Ther err	2.5 ng/mL	
873	90 yr	digoxin warfarin	C	Ingestion	Ther err	6.3 ng/mL	
874	42 yr	diltiazem	A	Parenteral	Ther err		
875	40 yr	diltiazem atenolol temazepam[A]	U	Ingestion	Unknown		
876 p	38 yr	diltiazem disulfiram	A	Ingestion	Int suicide		
877	44 yr	diltiazem fosinopril ethanol[A]	A/C	Asp/Ing	Int suicide	 144 mg/dL	
878	58 yr	diltiazem metoprolol metformin	A/C	Ingestion	Int suicide		
879	82 yr	diltiazem metoprolol (long-acting) isosorbide mononitrate[A]	A	Ingestion	Int suicide	1 μg/mL	
880 p	19 yr	diltiazem (long-acting)	A	Ingestion	Int suicide	7.1 μg/mL[§]	
881	59 yr	diltiazem (long-acting)	A	Ingestion	Int suicide		
882	69 yr	diltiazem (long-acting)	U	Ingestion	Int suicide		
883 p	70's yr	diltiazem (long-acting)	A	Ingestion	Int suicide		
884	79 yr	diltiazem (long-acting)	A	Ingestion	Int suicide		
885	81 yr	diltiazem (long-acting)	A	Ingestion	Ther err		
886 p	49 yr	diltiazem (long-acting) amitriptyline	A	Ingestion	Int suicide		
887	38 yr	diltiazem (long-acting) amlodipine/benazepril lisinopril[A]	A	Ingestion	Int suicide		
888	34 yr	diltiazem (long-acting) atenolol clonidine	C	Ingestion	Ther err		
889 p	44 yr	diltiazem (long-acting) atenolol opioid[A]	U	Ingestion	Int suicide		
890	57 yr	diltiazem (long-acting) doxazosin isorbide dinitrate[A]	A/C	Ingestion	Int suicide		
891	50 yr	diltiazem (long-acting)	A/C	Ingestion	Int suicide		

		ethanol				144 mg/dL	
892	65 yr	diltiazem (long-acting)	A	Ingestion	Int suicide		
		ethanol				19 mg/dL	
893	38 yr	diltiazem (long-acting)	A/C	Ingestion	Int suicide		
		metoprolol					
		diazepam[A]					
894	50 yr	diltiazem (long-acting)	A/C	Asp/Ing	Int suicide		
		paroxetine					
		activated charcoal					
895	42 yr	diltiazem (long-acting)	A/C	Ingestion	Int suicide		
		quetiapine					
		zaleplon[A]					
896	61 yr	diltiazem (long-acting)	A/C	Ingestion	Int suicide	1 µg/mL	
		temazepam					
		zolpidem[A]					
897 p	83 yr	flecainide	A/C	Ingestion	Int suicide	21 µg/mL[§]	
898	29 yr	labetalol	A	Parenteral	Ther err		
899	83 yr	metoprolol	A/C	Ingestion	Unknown		
900	91 yr	metoprolol	A	Ingestion	Adv rxn		
901	27 yr	metoprolol	U	Ingestion	Int suicide	1.7 µg/mL[§]	
		citalopram				3,600 ng/mL[§]	
		cocaine				benzoylecgonine	
						0.72 µg/mL[§]	
902	55 yr	metoprolol	U	Ingestion	Int suicide		
		diltiazem					
903	55 yr	metoprolol	A	Ing/Unk	Int suicide		
		methamphetamine				1.1 µg/mL	
		cocaine[A]					
904	61 yr	metoprolol (long-acting)	A/C	Ingestion	Int suicide		
905	54 yr	metoprolol (long-acting)	A/C	Ingestion	Int suicide		
		acetaminophen/hydrocodone				103 µg/mL[¥]	8 h
906	48 yr	metoprolol (long-acting)	A	Ingestion	Int suicide		
		amlodipine					
907	50 yr	metoprolol (long-acting)	U	Ingestion	Int suicide		
		bupropion (long-acting)					
908 p	48 yr	metoprolol (long-acting)	A	Ingestion	Int suicide		
		diltiazem					
909	52 yr	metoprolol (long-acting)	A	Ingestion	Int suicide		
		lisinopril					
910	95 yr	nesiritide	A	Parenteral	Ther err		
911	50 yr	nifedepine (long-acting)	A/C	Ingestion	Int suicide		
		metoprolol (long-acting)					
		quetiapine[A]					
912 p	81 yr	nifedipine	A/C	Ingestion	Int unk		
		atenolol					
		glibenclamide					
913	>19 yr	nifedipine	U	Ingestion	Int suicide		
		duloxetine					
		sertraline[A]					
914 i	2 yr	nifedipine (long-acting)	A	Ingestion	Unint gen		
915	64 yr	nifedipine (long-acting)	A/C	Ingestion	Int suicide		
916 p	45 yr	propafenone	A	Ingestion	Ther err	47 µg/mL[§]	
917 p	50's yr	propafenone	A	Ingestion	Int suicide	5.4 µg/mL[§]	
918	42 yr	propafenone	A/C	Ingestion	Int suicide		
		carvedilol					

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
		warfarin					
919 p	38 yr	propranolol	U	Ingestion	Int suicide		
920 p	45 yr	propranolol	U	Ingestion	Int suicide		
921	48 yr	propranolol	A	Ingestion	Int suicide		
922	61 yr	propranolol	A	Ingestion	Int suicide	26.4 µg/mL	
		diphenhydramine				37.2 µg/mL	
		hydrocodone[A]				15,500 ng/mL	
923 p	50 yr	propranolol	A	Ingestion	Int suicide		
		fluoxetine					
		cyclobenzaprine[A]					
924	87 yr	sotalol	A	Ingestion	Ther err		
925	39 yr	verapamil	A/C	Ingestion	Int suicide	4 µg/mL	
926	45 yr	verapamil	A	Ingestion	Int suicide	1.6 µg/mL	
927 p	45 yr	verapamil	A/C	Ingestion	Int unk		
928	62 yr	verapamil	A/C	Ingestion	Ther err		
929	62 yr	verapamil	A/C	Ingestion	Ther err		
930	50 yr	verapamil	A	Ingestion	Int suicide		
		alprazolam					
931	39 yr	verapamil	A/C	Ingestion	Int suicide		
		alprazolam					
		nortriptyline					
932	44 yr	verapamil	A/C	Ingestion	Int suicide		
		amitriptyline					
933	57 yr	verapamil	A/C	Ingestion	Unknown		
		clonazepam					
		citalopram					
934	35 yr	verapamil	A/C	Ingestion	Int suicide		
		clonidine					
		metoprolol[A]					
935	50 yr	verapamil	A	Ingestion	Int suicide		
		cyclobenzaprine					
		fluoxetine					
936	81 yr	verapamil	A/C	Ingestion	Int suicide		
		digoxin				4.4 ng/mL	
		clopidogrel					
937	89 yr	verapamil	A/C	Ingestion	Int suicide		
		donepezil					
		memantine					
938 p	47 yr	verapamil	A/C	Ingestion	Int suicide	11.4 µg/mL[§]	
		duloxetine (long-acting)					
		cyclobenzaprine[A]					
939	50 yr	verapamil	A/C	Ingestion	Int suicide		
		ethanol					
		tricyclic antidepressant					
940	39 yr	verapamil	A	Ingestion	Int suicide	2.6 µg/mL[§]	
		hydrochlorothiazide				3.3 µg/mL[§]	
		ethanol				212 mg/dL[§]	
941	53 yr	verapamil	U	Ingestion	Int suicide		
		lisinopril					
		lorazepam[A]					

942	79 yr	verapamil naproxen glucosamine	A/C	Ingestion	Int suicide		
943	69 yr	verapamil nortriptyline quetiapine[A]	A/C	Ingestion	Int suicide		
944	29 yr	verapamil pindolol ethanol	A	Ingestion	Int suicide		
945	83 yr	verapamil sertraline trazodone[A]	A/C	Ingestion	Int suicide	1.61 µg/mL[§] 1,660 ng/mL norsertraline 1,110 ng/mL 2,330 ng/mL	 1 d 1 d
946	45 yr	verapamil topiramate	A/C	Ingestion	Int suicide		
947	46 yr	verapamil valproic Acid nortriptyline[A]	A/C	Ingestion	Int suicide		
948	23 yr	verapamil (long-acting)	A	Ingestion	Int suicide	0.364 µg/mL	
949 p	33 yr	verapamil (long-acting)	A/C	Ingestion	Int suicide		
950	50 yr	verapamil (long-acting)	A	Ingestion	Int suicide		
951	82 yr	verapamil (long-acting)	A/C	Ingestion	Int suicide	2.9 µg/mL[§]	
952	89 yr	verapamil (long-acting)	A	Ingestion	Ther err		
953	91 yr	verapamil (long-acting)	A	Ingestion	Ther err		
954	62 yr	verapamil/trandolapril	A	Ingestion	Ther err		

See also cases 843, 870 (amiodarone); 660, 684, 836, 906 (amlodipine); 887 (amlodipine/benazepril); 79, 723, 756, 837, 852, 871, 875, 888, 889, 912, 980 (atenolol); 1082 (atorvastatin); 462, 631, 918 (carvedilol); 689, 888, 934 (clonidine); 843, 936 (digoxin); 902, 908 (diltiazem); 727, 755 (diltiazem (long-acting)); 890 (doxazosin); 671 (enalapril); 877 (fosinopril); 890 (isorbide dinitrate); 879 (isosorbide mononitrate); 450, 887, 909, 941 (lisinopril); 708 (losartan); 606, 755, 870, 878, 893, 934, 1078 (metoprolol); 396, 723, 879, 911 (metoprolol (long-acting)); 944 (pindolol); 710, 736 (propranolol); 660 (ramipril); 469 (sildenafil); 79, 695 (simvastatin); 836 (timolol); 713, 1074 (valsartan); 872 (verapamil); 456 (verapamil (long-acting)).

Cold and cough preparations

955 p	29 yr	acetaminophen/decongestant/ antihistamine unk benzodiazepine	A	Ingestion	Int unk		
956	13 yr	acetaminophen pseudoephedrine acetaminophen	C	Ingestion	Ther err	74.6 µg/mL[¥]	
957 p	8 yr	chlorpheniramine/ phenylephrine/ methscopolamine ethanol	A	Ingestion	Unknown	chlorpheniramine 0.388 µg/mL[§] 68 mg/dL[§]	
958 p	31 yr	phenylephrine/hydrocodone/ chlorpheniramine ethanol	A	Ingestion	Int suicide		
959 p	18 yr	pseudoephedrine acetaminophen/codeine escitalopram[A]	A/C	Ingestion	Int suicide	 49.4 µg/mL[¥]	
960 p	2 mo	pseudoephedrine/ dextromethorphan senna	U	Unknown	Unknown	pseudoephedrine 3.4 µg/mL[§]	

See also cases 155, 287 (acetaminophen/dextromethorphan/doxylamine/pseudoephedrine); 1219 (acetaminophen/doxylamine/dextromethorphan); 447 (benzonatate); 421 (chlorpheniramine/dextromethorphan); 815 (dextromethorphan).

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
Diagnostic agents							
961 p	61 yr	iopromide	A	Parenteral	Adv rxn		
Dietary supplements/herbals/homeopathic							
962	58 yr	unk chinese herbal	A	Ingestion	Int suicide		
See also cases 124 (aceite de resina); 1163 (ephedra); 942 (glucosamine); 16 (kava kava); 973 (melatonin); 16 (valerian).							
Diuretics							
See also cases 708, 940 (hydrochlorothiazide); 835 (torsemide).							
Electrolytes and minerals							
963	40 yr	iron	A	Ingestion	Int suicide	16,289 µg/dL	
964	5 yr	sodium bicarbonate	A	Ingestion	Unint misuse		
See also case 617 (potassium chloride).							
Eye/ear/nose/throat preparations							
965 p	28 yr	atropine clozapine escitalopram[A]	A	Ingestion	Int suicide		
See also case 823 (benzocaine/cetylpyridinium chloride).							
Gastrointestinal preparations							
See also cases 687 (bisacodyl); 819 (dicyclomine); 380 (diphenoxylate/atropine); 315, 568 (loperamide); 14 (metoclopramide); 777 (phenobarbital/belladonna); 960 (senna).							
Hormones and hormone antagonists							
966 p	40 yr	anabolic steroids ethanol acetaminophen	U	Unknown	Int suicide		
967	41 yr	dinoprost	C	Parenteral	Int misuse		
968	69 yr	glibenclamide	U	Ingestion	Unknown		
969	36 yr	glipizide (long-acting) glipizide metformin	A	Ingestion	Int suicide		
970	81 yr	glyburide	C	Ingestion	Ther err		
971	29 yr	insulin	A/C	Parenteral	Int suicide		
972 p	35 yr	insulin clonazepam morphine[A]	A	Ingestion	Int suicide	 69 ng/mL[§] 7-aminoclonazepam 220 ng/mL[§] 390 ng/mL[§]	
973 p	25 yr	insulin pine oil/isopropyl alcohol cleaner melatonin	A	Asp/Ing/Paren	Int suicide		
974	40 yr	metformin	A/C	Ingestion	Int suicide		
975	63 yr	metformin	U	Ingestion	Ther err		
976	78 yr	metformin	C	Ingestion	Adv rxn		
977	87 yr	metformin	C	Ingestion	Adv rxn		
978	49 yr	metformin chlordiazepoxide fexofenadine	A	Ingestion	Int suicide		
979	74 yr	metformin glipizide	A/C	Ingestion	Int unk		

980	65 yr	metformin	A/C	Ingestion	Int suicide	
		sulfonylurea				
		atenolol[A]				1.89 µg/mL
981	42 yr	metformin	C	Ingestion	Adv rxn	
		temazepam				
982	69 yr	rosiglitazone/metformin	A	Ingestion	Unknown	

See also cases 912 (glibenclamide); 336 (glimepiride); 969, 979, 1040, 1079 (glipizide); 674 (insulin); 751, 838 (levothyroxine); 316, 841, 878, 969, 1079 (metformin); 980 (sulfonylurea).

Miscellaneous drugs

983	51 yr	activated charcoal/sorbitol	C	Asp/Ing	Ther err	
		acetaminophen				278 µg/mL
		risperidone[A]				
984 p	5 yr	disodium EDTA	A/C	Parenteral	Adv rxn	
985	45 yr	eleptriptan	C	Ing/Unk	Ther err	
		frovatriptan				
		almotriptan				
986 p	41 yr	eletriptan	A/C	Ingestion	Int suicide	
		gabapentin				
		metaxalone[A]				
987	49 yr	sumatriptan	A	Ingestion	Int suicide	

See also cases 835 (allopurinol); 985 (almotriptan); 1038 (atomoxetine); 876 (disulfiram); 937 (donepezil); 25 (fomepizole); 985 (frovatriptan); 937, bupropion 1080 (memantine); 1080 (rivastigmine).

Muscle relaxants

988	3 yr	baclofen	U	Other	Adv rxn	
989	42 yr	baclofen	A/C	Ingestion	Int suicide	
		citalopram				
		lorazepam				
990	44 yr	carisoprodol	A	Ingestion	Int suicide	
991	45 yr	carisoprodol	A	Ingestion	Int suicide	
992	47 yr	carisoprodol	U	Ingestion	Int suicide	
993 p	47 yr	carisoprodol	U	Ingestion	Unknown	
		acetaminophen/hydrocodone				17 µg/mL[¥]
994	55 yr	carisoprodol	A/C	Ingestion	Int suicide	
		acetaminophen/hydrocodone				
995 p	55 yr	carisoprodol	A	Ingestion	Int suicide	
		alprazolam				
996 p	33 yr	carisoprodol	U	Ingestion	Unknown	4 µg/mL[§]
						meprobamate
						12 µg/mL[§]
		oxycodone				200 ng/mL[§]
		promethazine[A]				100 ng/mL[§]
997	53 yr	carisoprolol	A/C	Ingestion	Int suicide	3.8 µg/mL[§]
		acetaminophen/				meprobamate
		hydrocodone				8.1 µg/mL[§]
		diazepam[A]				
998	41 yr	cyclobenzaprine	A	Ingestion	Int suicide	
999	>19 yr	cyclobenzaprine	A	Ingestion	Int suicide	
		acetaminophen				180 µg/mL
1000 p	50 yr	cyclobenzaprine	A	Ingestion	Int suicide	0.69 µg/mL[§]
		acetaminophen				56 µg/mL[§]
		hydrocodone[A]				463 ng/mL[§]

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
1001 p	40 yr	cyclobenzaprine acetaminophen/hydrocodone	U	Ingestion	Int suicide		
1002 p	42 yr	cyclobenzaprine acetaminophen/hydrocodone metaxalone[A]	A	Ing/Inh	Int suicide		
1003	43 yr	cyclobenzaprine metaxalone paroxetine[A]	A	Ing/Unk	Int suicide		
1004	33 yr	cyclobenzaprine sertraline	A	Ingestion	Int suicide		
1005 p	54 yr	cyclobenzaprine tiagabine eszopiclone[A]	A	Ing/Inh	Int suicide		
1006	32 yr	metaxalone venlafaxine tramadol[A]	A/C	Ingestion	Int suicide		
1007 p	Unk	methocarbamol	U	Ingestion	Int suicide		
1008	50 yr	methocarbamol benzodiazepine	U	Ingestion	Int suicide		
1009 p	32 yr	orphenadrine diphenhydramine oxycodone[A]	A	Ingestion	Int unk	1.5 µg/mL[§] 1 µg/mL[§] 500 ng/mL[§]	
1010 p	12 mo	tizanidine acetaminophen/hydrocodone tramadol[A]	A	Ingestion	Unint gen		

See also cases 772 (baclofen); 375 thru 378, 398, 407, 408, 449, 818, 1018 (carisoprodol); 372, 382, 383, 396, 481, 525, 547, 615, 616, 826, 923, 935, 938, 1032 (cyclobenzaprine); 986, 1002, 1003 (metaxalone); 332 (methocarbamol); 567 (tizanidine); 491 (unk muscle relaxant); 1093 (unk muscle relaxer).

Sedative/hypnotics/antipsychotics

1011 p	35 yr	alprazolam	A/C	Ingestion	Int suicide		
1012 i	44 yr	alprazolam	A/C	Ingestion	Unknown		
1013 p	47 yr	alprazolam	A/C	Ingestion	Int suicide		
1014	56 yr	alprazolam	A/C	Ingestion	Int suicide		
1015 p	37 yr	alprazolam chloral hydrate	A/C	Ingestion	Int suicide		
1016 p	19 yr	alprazolam ethanol	A	Ingestion	Int unk		
1017	70 yr	alprazolam ethanol	A/C	Ingestion	Int unk	37 mg/dL	
1018	41 yr	alprazolam ethanol carisoprodol	A	Ingestion	Int suicide	90 mg/dL	
1019 p	19 yr	alprazolam morphine	A	Ing/Unk	Int abuse		
1020	19 yr	alprazolam morphine marijuana[A]	U	Ing/Inh/Unk	Int abuse		

1021 p	44 yr	alprazolam quetiapine	A	Ingestion	Int suicide		
1022 p	26 yr	barbiturate cocaine benzodiazepine[A]	U	Ing/Unk	Int suicide		
1023 p	17 yr	benzodiazepine marijuana opioid[A]	U	Ing/Unk	Int suicide		
1024 p	24 yr	benzodiazepine methadone opioid	A	Ingestion	Unknown		
1025 p	45 yr	butalbital acetaminophen	A/C	Asp/Ing	Int abuse	 87 μg/mL	
1026 ip	2 mo	chloral hydrate	A	Ingestion	Int unk		
1027	66 yr	chlorpromazine bupropion alprazolam	A	Asp/Ing	Int suicide		
1028 p	57 yr	clonazepam	U	Ingestion	Unknown		
1029 p	>19 yr	clonazepam	U	Unknown	Unknown		
1030 p	45 yr	clonazepam bupropion ethanol	A/C	Ingestion	Int unk		
1031	35 yr	clonazepam escitalopram venlafaxine (long-acting)[A]	A/C	Ingestion	Int suicide		
1032 p	55 yr	clonazepam quetiapine cyclobenzaprine[A]	U	Ingestion	Int suicide		
1033	67 yr	clozapine	A	Ingestion	Int suicide		
1034 p	5 yr	clozapine thioridazine acetaminophen/ hydrocodone[A]	A	Ingestion	Unint gen		
1035 p	39 yr	diazepam desipramine hydrocodone[A]	U	Ing/Paren/Unk	Int suicide	908 ng/mL[§#] 72.6 ng/mL[§]	
1036 p	44 yr	diazepam ethanol	C	Ingestion	Int suicide		
1037 p	51 yr	diazepam morphine tricyclic antidepressant	A	Ingestion	Int suicide	880 ng/mL[#] 160 ng/mL	
1038	23 yr	eszopiclone atomoxetine acetaminophen/aspirin/ caffeine[A]	A	Ingestion	Int suicide	 166 μg/mL[¥] 96 mg/dL[¶]	 2 h 13 h
1039	45 yr	haloperidol benzotropine diphenhydramine[A]	C	Ingestion	Adv rxn		
1040	68 yr	lorazepam clonazepam glipizide[A]	A/C	Ingestion	Int suicide		

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
1041 p	42 yr	lorazepam clonazepam venlafaxine	A	Ingestion	Int misuse		
1042 p	31 yr	lorazepam mirtazapine acetaminophen	U	Ing/Unk	Int abuse		
1043	52 yr	loxapine sertraline flurazepam[A]	A/C	Ingestion	Int suicide		
1044	39 yr	meprobamate valproic acid	U	Ingestion	Int suicide	52.6 μg/mL 254.8 μg/mL	
1045	33 yr	olanzapine	A/C	Ingestion	Int suicide		
1046	63 yr	olanzapine acetaminophen/hydrocodone acetaminophen/codeine	A/C	Asp/Ing	Int suicide		
1047	51 yr	olanzapine fluoxetine trazodone[A]	A/C	Ingestion	Int suicide		
1048	53 yr	olanzapine lamotrigine tramadol	A/C	Ingestion	Int suicide		
1049 p	40 yr	phenobarbital	A	Ingestion	Int suicide	88 μg/mL[§]	
1050 ip	63 yr	phenobarbital diphenhydramine carbon monoxide[A]	U	Ing/Inh	Int suicide	85 μg/mL[§] 0.346 μg/mL[§]	
1051	42 yr	propofol	A	Parenteral	Ther err		
1052	15 yr	quetiapine	A	Ingestion	Int suicide		
1053	26 yr	quetiapine	A/C	Ingestion	Int suicide		
1054 p	31 yr	quetiapine	A	Ingestion	Int suicide		
1055	33 yr	quetiapine	A/C	Ingestion	Int suicide		
1056 p	39 yr	quetiapine	A	Ingestion	Int suicide	2,100 ng/mL[§]	
1057	42 yr	quetiapine	A/C	Ingestion	Int suicide		
1058	53 yr	quetiapine	A	Ingestion	Int unk		
1059	43 yr	quetiapine acetaminophen fluvoxamine	A	Ingestion	Int suicide	700 μg/mL	
1060	55 yr	quetiapine acetaminophen/hydrocodone	A	Ingestion	Int suicide		
1061 p	24 yr	quetiapine acetaminophen/oxycodone acetaminophen/hydrocodone	A	Ingestion	Int suicide	127 μg/mL[¥]	3.8 h
1062	22 yr	quetiapine activated charcoal	A/C	Asp/Ing	Int suicide		
1063	26 yr	quetiapine bupropion valproic acid[A]	A	Ingestion	Int suicide		
1064	34 yr	quetiapine bupropion (long-acting)	A	Ingestion	Int suicide		
1065 p	45 yr	quetiapine clonazepam	A	Ingestion	Int suicide		

1066 p	37 yr	quetiapine	A/C	Ing/Unk	Int suicide	
		clonazepam				
		cocaine				
1067 p	50 yr	quetiapine	A	Ingestion	Int suicide	3,900 ng/mL[§]
		clonazepam				180 ng/mL[§]
		paroxetine				103 ng/mL[§]
1068	25 yr	quetiapine	A/C	Ingestion	Int suicide	
		gabapentin				
		amitriptyline				
1069 p	38 yr	quetiapine	A	Ingestion	Int suicide	
		lorazepam				
1070	61 yr	quetiapine	A/C	Ingestion	Int suicide	1,580 ng/mL
		mirtazapine				720 ng/mL
		olanzapine[A]				410 ng/mL
1071	24 yr	quetiapine	A	Ingestion	Int suicide	
		phenytoin				
1072	34 yr	quetiapine	A	Ingestion	Int suicide	
		sertraline				
		alprazolam[A]				
1073 p	50 yr	quetiapine	U	Ingestion	Int suicide	2,200 ng/mL
		valproic acid				473 µg/mL
1074 i	46 yr	quetiapine	A/C	Ingestion	Int suicide	
		valsartan				
		lithium[A]				1.8 mEq/L
1075	44 yr	quetiapine	A	Ingestion	Int suicide	
		venlafaxine				
		amitriptyline[A]				
1076	61 yr	quetiapine	U	Ingestion	Unknown	
		ziprasidone				
1077	55 yr	quetiapine	A	Ingestion	Int suicide	
		ziprasidone				
		diphenhydramine[A]				
1078 p	58 yr	quetiapine	A/C	Asp/Ing	Int suicide	
		zolpidem				
		metoprolol[A]				
1079	58 yr	risperidone	A/C	Ingestion	Int suicide	656 ng/mL[#]
		metformin				
		glipizide				0.41 µg/mL
1080 p	79 yr	risperidone	C	Ingestion	Adv rxn	
		rivastigmine				
		memantine[A]				
1081 p	42 yr	secobarbital	A	Ingestion	Int suicide	9.9 µg/mL
1082 p	34 yr	temazepam	U	Ingestion	Int suicide	
		gabapentin				
		atorvastatin				
1083	45 yr	temazepam	A/C	Ingestion	Int suicide	
		paroxetine				
		clonazepam[A]				
1084	38 yr	ziprasidone	A/C	Ingestion	Int suicide	
		bupropion				
		lamotrigine[A]				
1085	37 yr	zolpidem	U	Ingestion	Int suicide	
1086 p	47 yr	zolpidem	A	Ingestion	Int suicide	
		opioid				

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
See also cases 604 (acamprosate); 78, 156, 322, 374, 383, 405, 406, 457, 480, 485, 487, 488, 527 thru 536, 543, 561, 562, 564, 566, 585, 586, 592, 611, 629, 630, 749, 762, 783, 785, 804, 816, 930, 931, 995, 1027, 1072, 1128 thru 1131, 1187, 1194, 1218, 1222, 1258 (alprazolam); 541, 623, 709, 810 (aripiprazole); 1146, 1189 (barbiturate); 10, 290, 538, 539, 601, 602, 672, 685, 686, 694, 780, 789, 1008, 1022, 1132 thru 1134, 1150, 1199 (benzodiazepine); 455, 541 (buspirone); 458 (butalbital); 1015 (chloral hydrate); 978 (chlordiazepoxide); 446 (chlorpromazine); 294, 295, 328, 348, 450, 531, 567, 615, 649, 663 665, 689, 711, 741, 846, 852, 933, 972, 1040, 1041, 1065 thru 1067, 1083 (clonazepam); 965 (clozapine); 395, 548 thru 554, 582, 583, 591, 617, 624, 630,632, 853, 893, 997, 1129, 1145, 1152 (diazepam); 812 (doxylamine); 661, 713, 1005 (eszopiclone); 1043 (flurazepam); 697, 769, 770, 1137 (haloperidol); 408, 814, 941, 989, 1069, 1137 (lorazepam); 1223 (methaqualone); 43 (midazolam); 562, 676, 693, 709, 766, 1070 (olanzapine); 423 (perphenazine); 526, 690 (phenobarbital); 818, 819 (prochlorperazine); 15, 453, 554, 637, 669, 686, 735, 736, 746, 747, 771, 773, 796, 814, 895, 911, 943, 1021, 1032, 1154, 1188 (quetiapine); 83, 645, 711, 795, 983 (risperidone); 311, 321, 592, 650, 661, 847, 875, 896, 981 (temazepam); 120, 1034 (thioridazine); 651, 955, 1200 (unk benzodiazepine); 895 (zaleplon); 348, 569, 697, 704, 738, 845, 1076, 1077 (ziprasidone); 232, 329, 330, 453, 457, 896, 1078 (zolpidem).							
Stimulants and street drugs							
1087 p	16 yr	amphetamine	A	Ingestion	Int abuse		
1088	40 yr	amphetamine	C	Unknown	Int abuse		
1089 i	30 yr	amphetamine cocaine	A	Unknown	Int abuse		
1090 p	35 yr	amphetamine cocaine heroin	A	Ing/Unk	Int abuse		
1091	26 yr	amphetamine cocaine unknown opioid[A]	A/C	Ingestion	Int misuse		
1092 p	40 yr	amphetamine ethanol	U	Ingestion	Unknown		
1093	32 yr	amphetamine ethanol unk muscle relaxer	U	Ingestion	Int abuse		
1094 p	54 yr	butyl nitrite cyclohexyl nitrite isobutyl nitrite	U	Inhalation	Int misuse		
1095 p	16 yr	cocaine	U	Ingestion	Int misuse		
1096	17 yr	cocaine	A	Ingestion	Int misuse		
1097 p	17 yr	cocaine	U	Ing/Unk	Int abuse		
1098 p	18 yr	cocaine	U	Inhalation	Int abuse		
1099 p	22 yr	cocaine	A	Vaginal	Int misuse		
1100 p	24 yr	cocaine	A	Ingestion	Int misuse	6.4 μg/mL[§] ecgonine methylester 8.4 μg/mL[§] benzoylecgonine 12 μg/mL[§]	
1101 p	24 yr	cocaine	A	Unknown	Int abuse		
1102	24 yr	cocaine	A	Ingestion	Int abuse	3.554 μg/mL benzoylecgonine 4.179 μg/mL	
1103 ip	25 yr	cocaine	A	Ingestion	Int misuse	16.943 μg/mL[§] benzoylecgonine 9.338 μg/mL[§]	

1104 p	25 yr	cocaine	U	Parenteral	Int abuse	0.45 µg/mL[§] benzoylecgonine 9.5 µg/mL[§] ecgonine methylester 1.1 µg/mL[§]
1105	27 yr	cocaine	A	Unknown	Int abuse	
1106	28 yr	cocaine	A/C	Inhalation	Int abuse	
1107	30 yr	cocaine	A	Unknown	Int unk	
1108 p	30 yr	cocaine	U	Unknown	Unknown	benzoylecgonine 1.6 µg/mL
1109	31 yr	cocaine	A	Unknown	Int abuse	
1110	32 yr	cocaine	A	Ingestion	Int misuse	
1111	32 yr	cocaine	U	Unknown	Int abuse	
1112	32 yr	cocaine	A/C	Unknown	Int unk	
1113	33 yr	cocaine	U	Unknown	Int abuse	
1114	35 yr	cocaine	A	Inhalation	Int abuse	
1115 i	37 yr	cocaine	U	Unknown	Int unk	> 8 µg/mL[§] benzoylecgonine 11 µg/mL[§] ecgoninemethylester > 8 µg/mL[§]
1116 p	38 yr	cocaine	A	Unknown	Int abuse	
1117	40 yr	cocaine	A/C	Ingestion	Int unk	
1118 ip	40 yr	cocaine	A	Unknown	Int abuse	0.5 µg/mL[§] benzolyecgonine 4.4 µg/mL[§]
1119 p	42 yr	cocaine	A	Parenteral	Int abuse	
1120	42 yr	cocaine	A	Unknown	Int abuse	
1121 p	43 yr	cocaine	A/C	Inhalation	Int abuse	0.14 µg/mL[§] benzoylecgonine 2.8 µg/mL[§]
1122 p	44 yr	cocaine	A	Parenteral	Int abuse	0.8 µg/mL[§] benzoylecgonine 3.6 µg/mL[§]
1123	45 yr	cocaine	A	Unknown	Int abuse	
1124	45 yr	cocaine	A	Ingestion	Int abuse	
1125	49 yr	cocaine	A/C	Ing/Inh	Int abuse	
1126 p	Unk	cocaine	U	Unknown	Int suicide	0.712 µg/mL[§] benzoylecgonine 5.116 µg/mL[§]
1127 p	50 yr	cocaine acetaminophen/hydrocodone amitriptyline[A]	A/C	Derm/Ing/Unk	Int abuse	benzoylecgonine 0.68 µg/mL
1128	53 yr	cocaine alprazolam acetaminophen/ hydrocodone	A	Ing/Paren	Int suicide	24 µg/mL[¥]
1129	25 yr	cocaine alprazolam diazepam[A]	U	Ing/Inh/Unk	Int abuse	benzoylecgonine 0.657 µg/mL[§] 83 ng/mL§ nordiazepam 65 ng/mL[§]

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
1130 p	24 yr	cocaine alprazolam methadone	U	Ing/Unk	Int suicide	benzoylecgonine 1.9 µg/mL[§] 57 ng/mL[§]	
1131 p	19 yr	cocaine alprazolam oxycodone	A	Ing/Inh	Int unk	benzoylecognine > 15 µg/mL[§] 104 ng/mL[§] > 2,000 ng/mL[§]	
1132 ip	25 yr	cocaine benzodiazepine	U	Ing/Inh	Int abuse		
1133 p	27 yr	cocaine benzodiazepine	A	Ingestion	Int abuse		
1134	37 yr	cocaine benzodiazepine marijuana	U	Unknown	Int suicide		
1135 p	38 yr	cocaine chlorofluorocarbon	A	Inhalation	Int abuse	benzoylecgonine 1.56 µg/mL	
1136	30 yr	cocaine diphenhydramine	C	Inhalation	Int abuse	1.1 µg/mL[§] cocaethylene 0.1 µg/mL[§] 0.5 µg/mL[§]	
1137	38 yr	cocaine haloperidol lorazepam[A]	A	Ing/Paren/Unk	Unknown		
1138	29 yr	cocaine heroin	A	Unknown	Int suicide		
1139	33 yr	cocaine heroin	U	Ing/Unk	Int abuse		
1140 p	57 yr	cocaine heroin	A/C	Parenteral	Int abuse		
1141 p	38 yr	cocaine heroin amitriptyline[A]	A/C	Ing/Paren	Int abuse	benzoylecgonine 1.124 µg/mL[§]	
1142	47 yr	cocaine ketamine	A	Inhalation	Int abuse		
1143	35 yr	cocaine marijuana	A	Inh/Paren/Unk	Int abuse		
1144 p	22 yr	cocaine marijuana opioid[A]	A	Ing/Inh	Int unk		
1145	42 yr	cocaine methadone diazepam	U	Ing/Inh	Int suicide	0.09 µg/mL[§] benzoylecgonine 4.54 µg/mL[§] 0.52 µg/mL[§] morphine 20 ng/mL[§] 170 ng/mL[§]	
1146	38 yr	cocaine methamphetamine barbiturate[A]	U	Ing/Inh/Unk	Int abuse		

1147	25 yr	cocaine methamphetamine opioid[A]	C	Ing/Inh	Int abuse	
1148	28 yr	cocaine opioid	U	Unknown	Int abuse	
1149	65 yr	cocaine opioid	U	Unknown	Int abuse	
1150 p	33 yr	cocaine opioid benzodiazepine[A]	A/C	Ing/Inh/Unk	Int unk	
1151	Unk	cocaine opioid marijuana[A]	A	Ing/Inh	Int suicide	
1152 p	26 yr	cocaine oxycodone diazepam[A]	U	Ing/Unk	Unknown	ecgonine 0.761 µg/mL[§] benzolyecgonine 3.85 µg/mL[§] 431 ng/mL[§] 63 ng/mL[§] nordiazepam 78 ng/mL[§]
1153	40 yr	cocaine phencyclidine morphine	U	Unknown	Unknown	
1154 p	43 yr	cocaine quetiapine valproic acid	A	Ing/Unk	Int misuse	
1155 p	27 yr	cocaine toilet bowl cleaner (iodine)	A	Ing/Unk	Int unk	0.99 µg/mL[§] benzoylecgonine 4.1 µg/mL[§] ecgonine methylester 1.9 µg/mL[§]
1156 p	49 yr	cocaine trazodone ethanol	U	Ing/Unk	Unknown	1.893 µg/mL[§] benzoylecgonine 1.733 µg/mL[§] 127 mg/dL[§]
1157	35 yr	cocaine unk chemical ethanol	U	Ingestion	Int abuse	0.041 µg/mL[§] ecgoninemethylester µg/mL[§] 0.19 benzoylecgonine 1.2 µg/mL[§] 16 mg/dL
1158	18 yr	cocaine unk drug	U	Unknown	Int abuse	
1159	34 yr	cocaine unk drug	A/C	Ing/Unk	Int abuse	
1160 p	40 yr	cocaine unknown drug	A	Unknown	Int abuse	benzoylecgonine 1.6 µg/mL[§]

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
1161	19 yr	cocaine (crack)	A	Ingestion	Int misuse		
1162	43 yr	cocaine (crack)	U	Inhalation	Int abuse		
1163	31 yr	ephedrine ephedra	A	Ingestion	Unknown	1.2 µg/mL[§]	
1164 i	41 yr	gammahydroxybutyric acid	U	Ingestion	Int abuse		
1165 p	18 yr	heroin	U	Parenteral	Int abuse		
1166 p	22 yr	heroin	A/C	Parenteral	Int abuse		
1167 p	23 yr	heroin	A	Parenteral	Int abuse		
1168 ip	24 yr	heroin	U	Parenteral	Int abuse	morphine 1,040 ng/mL[§]	
1169 p	24 yr	heroin	U	Parenteral	Int abuse		
1170 p	24 yr	heroin	U	Parenteral	Int abuse		
1171 p	26 yr	heroin	A	Parenteral	Int abuse		
1172 p	28 yr	heroin	U	Parenteral	Int abuse		
1173	35 yr	heroin	A	Parenteral	Int abuse		
1174 p	37 yr	heroin	U	Parenteral	Int abuse		
1175 p	37 yr	heroin	A	Parenteral	Int abuse		
1176 ip	39 yr	heroin	U	Paren/Unk	Int abuse		
1177 ip	40 yr	heroin	U	Parenteral	Int abuse	morphine 370 ng/mL[§]	
1178 p	41 yr	heroin	A/C	Parenteral	Int abuse		
1179 p	42 yr	heroin	C	Parenteral	Int abuse		
1180 p	42 yr	heroin	U	Parenteral	Int abuse		
1181	48 yr	heroin	A	Inh/Unk	Int abuse		
1182	50 yr	heroin	A	Inhalation	Int abuse		
1183 p	51 yr	heroin	A	Parenteral	Int abuse		
1184	64 yr	heroin	C	Unknown	Int abuse		
1185 p	>19 yr	heroin	A	Parenteral	Int abuse		
1186 p	Unk	heroin	U	Unknown	Int unk	1.646 ng/mL[§#]	
1187	30 yr	heroin alprazolam paroxetine[A]	A/C	Ing/Paren	Int abuse	morphine 330 ng/mL[§]	
1188	43 yr	heroin amitriptyline quetiapine[A]	U	Ing/Paren	Int abuse	morphine 10 ng/mL[§] monoacetylmorphine 10 ng/mL[§] 640 ng/mL[§] nortriptyline 560 ng/mL[§]	
1189	26 yr	heroin barbiturate	A	Parenteral	Int abuse		
1190 p	18 yr	heroin cocaine	A	Unknown	Int abuse		
1191	24 yr	heroin cocaine	A	Unknown	Int abuse		
1192 ip	38 yr	heroin cocaine	U	Unknown	Int suicide		
1193 p	55 yr	heroin cocaine	U	Ing/Paren	Int suicide		
1194 p	37 yr	heroin cocaine alprazolam	A/C	Ing/Unk	Int abuse		

1195 p	37 yr	heroin cocaine methadone	A	Ing/Unk	Int abuse	
1196 p	48 yr	heroin cocaine sertraline[A]	A	Ing/Unk	Int abuse	morphine 32 ng/mL[§] 0.8 µg/mL[§] 200 ng/mL[§] norsertraline 2,100 ng/mL[§]
1197 ip	16 yr	heroin marijuana	U	Inh/Paren/Unk	Int unk	7.5 ng/mL[§#]
1198	25 yr	heroin marijuana	A	Inhalation	Int abuse	
1199 p	49 yr	heroin methadone benzodiazepine	A/C	Ing/Paren	Int abuse	
1200 p	27 yr	heroin methadone unk benzodiazepine	A/C	Ing/Unk	Int abuse	
1201 p	17 yr	heroin oxycodone	A/C	Parenteral	Int abuse	morphine 110 ng/mL[§] codeine 0.06 µg/mL[§] 120 ng/mL[§]
1202 p	20 yr	heroin unk drug	A	Asp/Ing/Unk	Int unk	morphine 840 ng/mL[§]
1203	42 yr	mescaline	A	Ingestion	Int abuse	
1204	17 yr	methamphetamine	A	Ingestion	Int abuse	
1205	20 yr	methamphetamine	A	Ingestion	Int misuse	6.018 µg/mL[§]
1206 p	21 yr	methamphetamine	A	Ing/Inh	Int abuse	
1207 p	23 yr	methamphetamine	U	Unknown	Int abuse	4.5 µg/mL
1208	25 yr	methamphetamine	A	Unknown	Int abuse	
1209	32 yr	methamphetamine	A	Inhalation	Int abuse	
1210	34 yr	methamphetamine	A/C	Unknown	Int abuse	
1211	40 yr	methamphetamine	A	Ingestion	Int misuse	
1212 p	43 yr	methamphetamine	A	Ing/Inh	Int abuse	
1213	45 yr	methamphetamine	A	Parenteral	Int abuse	
1214 p	48 yr	methamphetamine	U	Unknown	Int abuse	
1215 ip	52 yr	methamphetamine	A	Unknown	Int unk	1 µg/mL[§] amphetamine 0.6 µg/mL[§]
1216	>19 yr	methamphetamine	A	Unknown	Int abuse	
1217 ip	>19 yr	methamphetamine	U	Unknown	Int abuse	
1218 p	17 yr	methamphetamine acetaminophen/hydrocodone alprazolam[A]	U	Ing/Unk	Int abuse	
1219	28 yr	methamphetamine acetaminophen/oxycodone acetaminophen/doxylamine/dextromethorphan	A/C	Ingestion	Int suicide	202 µg/mL[¥]

Continued

TABLE 21
(Continued)

Case	Age	Substances	Chronicity	Route	Reason	Blood concentrations	Interval after exposure
1220	29 yr	methamphetamine air freshener (fatty alcohol ethoxylate)	A/C	Ing/Paren	Int abuse		
1221	21 yr	methamphetamine cocaine	U	Parenteral	Int abuse		
1222	24 yr	methamphetamine cocaine alprazolam	A	Unknown	Int unk	0.52 µg/mL[§] amphetamine 0.04 µg/mL[§]	
1223 p	22 yr	methamphetamine ethanol methaqualone	A/C	Ingestion	Int abuse	10.64 µg/mL amphetamine 0.123 µg/mL	
1224 p	27 yr	methamphetamine heroin	A	Unknown	Int abuse		
1225 p	24 yr	methamphetamine lithium sertraline	U	Ingestion	Int unk	0.45 µg/mL[§] amphetamine 0.13 µg/mL[§] 1 mEq/L[§] 0.26 µg/mL[§] norsertraline 0.38 µg/mL[§]	
1226	20 yr	methamphetamine marijuana	A	Inh/Unk	Int unk		
1227	33 yr	methamphetamine opioid	C	Parenteral	Int abuse		
1228 ip	27 yr	methamphetamine unk analgesic unk antidepressant	U	Ingestion	Unknown		
1229	36 yr	methamphetamine unk substance	U	Unknown	Unknown		
1230 p	21 yr	methylenedioxymethamphetamine	A	Ingestion	Int abuse		
1231 p	>19 yr	methylenedioxymethamphetamine	A	Ingestion	Int unk		
1232 p	16 yr	methylenedioxymethamphetamine cocaine methamphetamine	A	Ingestion	Int unk	0.1 µg/mL benzoylecgonine 0.075 µg/mL	
1233 p	>19 yr	unk street drug	A	Ingestion	Int abuse		
1234	35 yr	unk street drug cocaine	U	Inhalation	Int abuse	0.02 µg/mL[§] cocaethylene 0.03 µg/mL[§]	

See also cases 674, 730, 778 (amphetamine); 9 (amphetamines); 12, 24, 43, 296, 298, 349, 422, 454, 467, 468, 524, 532, 539, 542 thru 546, 581, 601 thru 603, 614, 643, 668, 699, 700, 725, 726, 740, 743, 747, 754, 786, 837, 901, 903, 1022, 1066, 1089 thru 1091, 1190 thru 1195, 1221, 1222, 1232, 1234 (cocaine); 1094 (cyclohexyl nitrite); 1090, 1138 thru 1141, 1224 (heroin); 1094 (isobutyl nitrite); 12, 17, 552, 557, 559, 581, 594, 603, 1020, 1023, 1134, 1143, 1144, 1151, 1197, 1198, 1226 (marijuana); 1260 (mescaline); 318, 558, 651, 712, 730, 740, 745, 903, 1146, 1147, 1232 (methamphetamine); 470 (methylphenidate); 1153 (phencyclidine); 616 (phentermine).

Topical preparations							
1235 p	54 yr	iodine bleach (hypochlorite) fabric softener	A/C	Ingestion	Int unk		

1236	84 yr	methyl salicylate	A	Ingestion	Unknown	10 mg/dL[§] 124 mg/dL[¶]

See also case 605 (hydrogen peroxide).

Unknown drug

1237	17 yr	unk drug	U	Unknown	Unknown	
1238	19 yr	unk drug	A	Ingestion	Int suicide	
1239	25 yr	unk drug	U	Unknown	Unknown	
1240 p	26 yr	unk drug	U	Unknown	Unknown	
1241 p	28 yr	unk drug	U	Unknown	Int suicide	
1242 i	29 yr	unk drug	A	Unknown	Unknown	
1243 p	30 yr	unk drug	U	Unknown	Int unk	
1244	31 yr	unk drug	U	Ingestion	Int suicide	
1245 p	33 yr	unk drug	U	Unknown	Unknown	
1246	34 yr	unk drug	U	Parenteral	Int suicide	
1247 p	35 yr	unk drug	U	Unknown	Int unk	
1248 p	37 yr	unk drug	U	Unknown	Unknown	
1249 ip	40 yr	unk drug	U	Ingestion	Int abuse	
1250	40 yr	unk drug	U	Unknown	Unknown	
1251 p	44 yr	unk drug	A	Unknown	Unknown	
1252 p	45 yr	unk drug	A	Ing/Inh	Int abuse	
1253 p	46 yr	unk drug	A	Ingestion	Unknown	
1254 i	52 yr	unk drug	A	Ingestion	Int suicide	
1255 ip	>19 yr	unk drug	U	Unknown	Int abuse	
1256 p	63 yr	unk drug	A	Ingestion	Int suicide	
		acetaminophen				48.8 µg/mL
1257	32 yr	unk drug	A	Ingestion	Int suicide	
		acetaminophen				144 µg/mL
		aspirin				15 mg/dL
1258 p	33 yr	unk drug	U	Ingestion	Int unk	
		alprazolam				
1259	45 yr	unk drug	A	Ingestion	Int suicide	
		aspirin				
1260	53 yr	unk drug	A	Unknown	Int abuse	
		mescaline				
1261	35 yr	unk drug	U	Unknown	Unknown	
		phenytoin				9.1 µg/mL
		aspirin				7.6 mg/dL

See also cases 44, 47, 84, 325 thru 327, 494, 595, 1158, 1159, 1202 (unk drug); 223 (unknown drug).

Summary log of 1,261 human exposures where the medical outcome was coded as "death" or "death, indirect report." 1,589 calls made to U.S. Poison Centers in 2005 were originally reported as fatalities; 328 cases were eventually determined to be either unrelated to the reported exposure or coded incorrectly as a death (including 16 cases recorded by one poison center which were unable to be verified).

Abbreviations: C, chronic exposure; A, acute exposure; A/C, acute on chronic; U, unknown; Ocu, ocular; Ot, otic; Inh, inhalation; Ing, ingestion; Adv rxn, adverse reaction; Env, environmental; Int, intentional; Occ, occupational; Paren, parenteral; Ther error, therapeutic error; Unint gen, unintentional general; unk, unknown.

[p] = Prehospital (cardiac and/or respiratory) arrest.

[i] = Reported to poison center indirectly (by coroner, medical examiner, or from other source) after the fatality occurred.

[§]Concentration obtained postmortem.

[¥]Acetaminophen concentration.

[¶]Salicylate concentration.

<substance>[Superscript capital A] = Additional substances not listed.

[#] = Concentration includes metabolite and parent compound.

Bolded case number = Abstract/narrative provided in Appendix.

m = Reported by medical examiner to poison center. No abstract or additional clinical or scenario data available.

The term "long-acting" is used throughout for all sustained release, extended release, delayed release, or long-acting formulations.

TABLE 22

Summary log including demographic profile of human exposure cases reported to U.S. Poison Control Centers in 2005.
Profiles are broken out by AAPCC generic categories and subcategories

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Adhesives/glues														
Cyanoacrylate	10,250	4,053	1,793	4,286	9,933	193	62	45	2,406	1,182	2,079	356	2	0
Epoxy	935	245	49	636	894	16	6	17	235	119	350	58	3	0
Toluene/xylene	648	366	54	219	609	24	6	8	136	151	101	27	0	0
Non-toxic	1,754	1,208	412	124	1,685	51	8	8	66	191	112	8	0	0
Unknown	4,314	2,057	571	1,643	4,065	131	33	69	905	777	817	208	10	0
Category total	17,901	7,929	2,879	6,908	17,186	415	115	147	3,748	2,420	3,459	657	15	0
Alcohols														
Ethanol: beverage	43,703	1,287	5,899	35,976	4,981	36,931	369	720	36,394	4,243	13,527	9,529	1,896	120
Ethanol: other	10,231	7,488	934	1,787	9,277	839	71	26	1,138	2,496	992	244	42	6
Higher alcohol	210	96	30	84	194	9	2	4	50	57	44	11	0	0
Isopropanol	7,394	4,129	679	2,539	6,186	1,085	63	18	1,798	1,940	1,366	406	52	5
Methanol	807	177	88	535	650	126	5	0	455	179	160	75	33	6
Rubbing alcohols														
Ethanol with methyl salicylate	7	5	0	2	7	0	0	0	2	4	1	0	0	0
Ethanol without methyl salicylate	259	173	13	73	234	23	2	0	41	94	26	3	1	1
Isopropanol with methyl salicylate	361	276	13	71	330	27	1	2	87	129	59	10	0	0
Isopropanol without methyl salicylate	7,734	4,968	555	2,186	6,856	798	42	11	1,404	1,779	1,193	223	31	1
Unknown rubbing alcohol	1,451	859	120	451	1,243	186	12	1	308	361	250	56	4	0
Other	466	349	29	87	442	18	0	5	52	141	47	6	0	0
Unknown	549	98	95	343	222	288	14	10	319	65	150	75	27	2
Category total	73,172	19,905	8,455	44,134	30,622	40,330	581	797	42,048	11,488	17,815	10,638	2,086	141
Arts/crafts/office supplies														
Artist paint, non-water color	3,011	2,127	391	476	2,915	71	4	18	163	474	193	14	1	0
Chalk	1,617	1,466	98	49	1,587	29	0	1	37	215	47	4	0	0
Clay	2,436	2,108	231	90	2,382	42	2	7	71	271	85	10	0	2
Crayon	2,175	1,913	185	64	2,149	19	1	5	50	237	50	3	0	0
Glaze	158	44	61	51	150	6	0	2	17	25	24	2	0	0

Office supplies: miscellaneous	313	152	22	137	306	4	1	2	41	59	35	5	0	0
Pencil	2,823	1,421	1,117	255	2,692	76	49	2	119	265	234	10	0	0
Pen/ink	17,730	11,895	4,995	755	17,041	558	59	53	475	2,407	486	33	0	0
Typewriter correction fluid	2,083	1,507	378	185	1,964	90	25	1	157	470	170	17	0	0
Water color	1,370	1,162	126	73	1,343	23	3	0	11	192	33	0	0	0
Other	5,521	4,342	659	506	5,365	128	13	12	276	796	243	31	2	1
Unknown	167	105	40	22	160	3	0	4	13	26	15	1	0	0
Category total	39,404	28,242	8,303	2,663	38,054	1,049	157	107	1,430	5,437	1,615	130	3	3
Automotive/aircraft/boat products														
Brake fluid	1,381	368	125	879	1,303	61	12	1	504	264	434	74	9	1
Ethylene glycol	5,469	564	722	4,111	4,582	738	76	24	2,298	937	947	415	176	16
Glycol: other	386	211	37	134	363	19	2	2	84	92	94	15	0	0
Glycol and methanol	232	62	49	119	213	14	3	0	86	63	47	4	1	1
Hydrocarbon	3,065	1,169	373	1,502	2,843	176	24	13	904	675	895	149	10	1
Methanol	1,469	284	220	948	1,242	174	36	6	728	410	354	87	27	6
Non-toxic	23	9	4	10	23	0	0	0	13	3	11	2	0	0
Other	2,735	918	404	1,390	2,613	55	22	39	829	517	976	195	12	0
Unknown	229	54	29	141	213	12	3	0	102	28	75	17	1	1
Category total	14,989	3,639	1,963	9,234	13,395	1,249	178	85	5,548	2,989	3,833	958	236	26
Batteries														
Automotive battery	1,300	79	154	1,052	1,268	14	3	10	478	112	409	121	7	0
Disc batteries														
Alkaline (MnO2)	115	79	17	19	113	1	0	1	80	62	16	3	1	0
Lithium	143	61	16	63	129	11	2	1	78	56	21	6	3	0
Mercuric oxide	13	9	2	2	13	0	0	0	5	4	0	1	0	0
Nickel cadmium	5	0	3	2	5	0	0	0	2	1	1	1	0	0
Silver oxide	43	27	3	13	42	0	0	0	36	30	1	0	0	0
Zinc-air	107	55	16	36	105	2	0	0	75	57	2	0	0	0
Other	19	16	1	2	19	0	0	0	10	6	1	1	0	0
Unknown	2,848	1,912	664	251	2,766	67	9	0	2,091	1,318	92	41	5	1
Dry cell battery	5,595	2,882	1,161	1,517	5,275	247	36	16	922	1,306	983	157	6	0
Other	97	22	15	52	94	3	0	0	34	29	14	3	0	0
Unknown	156	37	31	87	143	4	4	4	28	22	35	7	1	0
Category total	10,441	5,179	2,083	3,096	9,972	349	54	32	3,839	3,003	1,575	341	23	1
Bites and envenomations														
Aquatic														
Coelenterate	733	73	371	277	730	1	1	1	120	5	229	54	0	0

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Fish	1,090	21	186	875	1,080	2	0	6	414	12	339	142	1	0
Other/unknown	448	224	71	149	431	14	1	2	60	53	103	13	1	0
Insects														
Ant/fire ant	2,101	812	298	974	2,079	8	12	1	253	55	493	107	6	0
Bee/wasp/hornet	10,792	2,051	2,030	6,623	10,784	6	0	2	1,263	89	3,524	558	12	1
Caterpillar	1,449	337	363	736	1,421	19	0	9	135	44	442	56	1	0
Centipede/ millipede	1,909	312	331	1,247	1,897	6	0	5	146	82	677	52	0	0
Mosquito	462	118	110	226	459	1	0	1	73	10	93	20	0	0
Scorpion	14,521	1,243	2,831	10,390	14,519	2	0	0	976	84	2,388	399	20	0
Tick	2,971	549	554	1,832	2,962	1	0	6	532	74	295	60	6	0
Other	14,831	2,808	2,322	9,578	14,658	40	83	28	2,985	317	3,276	918	17	0
Mammals														
Bat	573	75	127	335	563	2	8	0	350	126	74	5	0	0
Cat	884	113	163	588	882	0	0	2	498	8	238	40	2	0
Dog	1,793	348	666	739	1,788	2	0	1	1,281	21	470	137	1	0
Fox	15	1	4	10	15	0	0	0	6	2	1	0	0	0
Human	43	6	10	26	38	0	5	0	13	1	9	0	0	0
Raccoon	111	6	19	83	111	0	0	0	70	8	20	7	0	0
Rodent/ lagomorph	1,800	420	575	757	1,766	8	16	6	471	70	416	36	1	0
Skunk	232	29	46	155	225	0	4	2	26	24	49	7	0	0
Other	1,045	144	324	554	1,024	6	10	2	499	52	187	34	1	0
Reptile: other/ unknown	973	340	325	292	941	18	3	8	188	64	316	17	0	0
Snakes														
Copperhead	1,051	33	209	803	1,049	2	0	0	1,013	19	351	475	44	0
Coral	58	1	13	44	58	0	0	0	55	8	21	13	6	0
Cottonmouth	194	4	37	149	192	1	0	1	182	10	64	67	5	0
Crotaline: unknown	413	28	112	267	412	0	0	0	380	15	109	181	25	2
Rattlesnake	1,255	51	184	1,013	1,251	3	0	1	1,175	32	300	581	96	4
Exotic snakes														
Poisonous	98	2	13	82	97	0	0	1	87	4	23	37	8	0
Nonpoisonous	142	12	53	76	142	0	0	0	56	5	46	6	0	0

Unknown if poisonous	6	0	4	2	6	0	0	0	2	0	2	0	0	0
Nonpoisonous snake	1,552	133	583	828	1,548	2	0	1	532	65	643	49	0	0
Unknown snake	1,972	131	553	1,265	1,969	1	1	0	1,562	66	833	363	31	0
Spiders														
Black widow	2,463	179	372	1,898	2,460	2	0	1	793	86	649	317	7	0
Brown recluse	2,236	180	284	1,749	2,226	5	2	2	1,016	31	493	505	14	0
Necrotizing spider:other	285	47	44	191	284	1	0	0	74	10	81	33	1	0
Tarantula	173	18	47	108	166	5	0	2	45	5	54	8	0	0
Other spider	11,894	1,238	2,125	8,388	11,871	11	3	6	2,285	182	2,660	742	14	0
Unknown insect or spider	5,910	784	1,049	4,032	5,899	1	1	5	695	25	508	207	1	0
Other/unknown bite/envenomation	366	63	63	238	362	1	2	1	146	3	87	43	0	0
Category total	88,844	12,934	17,471	57,579	88,365	171	152	103	20,457	1,767	20,563	6,289	321	7
Building and construction products														
Caulking compound and putty	2,543	1,735	126	665	2,481	23	5	30	288	499	207	53	1	0
Cement, concrete	1,943	530	155	1,238	1,899	14	3	21	856	188	402	380	18	0
Insulation														
Asbestos	601	47	71	479	590	0	2	7	135	78	52	9	0	0
Fiberglass	1,469	572	218	664	1,412	14	10	29	212	140	296	35	0	0
Urea/ formaldehyde	103	56	7	40	99	2	0	2	26	17	20	6	0	0
Other	153	55	10	82	152	1	0	0	23	16	24	7	0	0
Unknown	79	42	3	33	78	0	0	1	12	12	8	2	0	0
Soldering flux	317	116	35	164	303	7	2	5	97	57	78	27	1	1
Other	3,451	1,726	270	1,438	3,295	47	10	97	798	484	579	262	10	1
Unknown	117	23	8	85	109	0	0	7	47	13	25	16	0	0
Category total	10,776	4,902	903	4,888	10,418	108	32	199	2,494	1,504	1,691	797	30	2
Chemicals														
Acetone	1,188	325	134	721	1,067	61	32	14	389	187	290	82	9	0
Acids														
Hydrochloric	2,971	151	648	2,121	2,828	62	27	40	1,214	286	975	402	15	3
Hydrofluoric	920	34	49	821	893	14	2	6	789	69	338	250	20	1
Other	5,326	546	864	3,825	5,053	156	33	63	2,226	520	1,754	713	39	2
Unknown	393	30	67	294	367	9	8	6	192	27	129	57	3	1
Alkali	4,865	754	723	3,297	4,621	121	50	49	2,468	598	1,393	884	66	0
Ammonia	4,154	907	483	2,696	3,800	188	78	53	1,445	426	1,265	434	33	1

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Borate/boric acid	2,427	1,094	231	1,085	2,219	127	32	32	437	550	248	53	3	0
Chlorate	40	9	9	21	39	1	0	0	20	3	13	4	0	0
Cyanide	214	3	15	194	160	18	25	3	146	38	46	22	6	6
Dioxin	14	2	0	12	10	0	4	0	10	0	4	1	0	0
Ethylene glycol	751	69	98	582	421	281	10	0	515	128	96	100	120	25
Formaldehyde/ formalin	1,011	122	240	633	891	79	21	14	422	120	305	62	6	0
Glycol: other	893	326	101	462	801	58	8	19	354	184	211	48	10	0
Ketone	648	179	40	423	632	10	3	0	288	103	186	68	2	0
Methylene chloride	393	55	48	286	386	2	1	4	172	53	134	25	2	0
Nitrate and nitrite	1,369	330	527	502	1,203	131	13	16	304	256	268	64	10	0
Phenol/creosote	608	48	66	490	584	11	1	9	308	44	230	75	5	1
Strychnine	42	7	9	25	19	9	7	3	31	6	7	4	0	0
Toluene diisocyanate	730	158	94	470	704	18	2	5	183	79	154	43	1	0
Other	12,844	4,396	1,992	6,295	11,736	596	176	277	3,722	1,957	2,498	909	72	10
Other: unknown if toxic	80	66	2	11	77	0	3	0	4	12	2	1	0	0
Unknown	4,358	1,050	611	2,609	3,641	136	309	145	1,591	568	929	363	24	11
Category total	46,239	10,661	7,051	27,875	42,152	2,088	845	758	17,230	6,214	11,475	4,664	446	61
Cleaning substances (household)														
Ammonia cleaner	1,882	569	184	1,115	1,763	94	8	14	429	285	486	127	3	0
Automatic dishwasher detergents														
Granular	4,755	4,008	133	597	4,702	25	21	4	165	1,499	552	25	0	0
Liquid or gel	4,639	4,003	111	516	4,596	25	11	6	226	1,523	610	39	1	0
Tablet	1,504	1,420	22	58	1,501	2	0	1	48	552	203	4	0	0
Rinse agent	1,221	1,124	24	69	1,214	3	3	1	113	246	212	22	1	0
Other/unknown	2,059	1,811	45	197	2,044	7	6	2	77	601	302	14	0	0
Bleaches														
Borate	568	257	44	263	525	26	1	15	104	90	171	26	1	0
Hypochlorite	54,433	19,581	5,684	28,545	50,463	2,711	545	557	11,607	7,826	16,397	2,366	74	8
Nonhypochlorite	671	265	52	344	616	25	8	21	122	113	192	30	1	0
Other/unknown	511	189	70	241	471	28	5	2	141	57	127	48	0	0
Carpet/upholstery cleaner	5,397	3,947	317	1,100	5,173	96	23	99	649	1,237	967	90	3	0

Cleansers														
Anionic/ nonionic	3,610	2,780	171	649	3,511	66	12	15	311	882	467	50	2	0
Other/unknown	2,466	1,364	203	873	2,323	80	15	39	506	526	513	107	3	0
Disinfectants														
Hypochlorite	3,672	1,553	366	1,721	3,438	156	40	32	988	558	1,047	238	11	0
Phenol	915	574	98	236	859	37	8	11	148	223	172	31	0	0
Pine oil	4,851	2,652	409	1,761	4,371	356	45	58	1,131	1,306	1,197	117	24	7
Other/unknown	6,526	4,161	684	1,640	6,191	213	46	66	783	1,314	1,402	134	5	0
Drain cleaners														
Acid: hydrochloric	713	55	92	547	650	38	3	22	106	205	326	35	3	1
Acid: sulfuric	402	37	45	308	384	8	2	7	146	52	120	82	7	1
Acid: other/ unknown	57	10	1	46	55	2	0	0	20	5	13	9	0	0
Alkali	3,677	535	301	2,779	3,344	258	21	41	1,201	501	1,101	455	46	5
Other/unknown	790	138	63	571	732	43	5	5	240	108	201	73	4	0
Fabric softeners/antistatic agents														
Aerosol/spray	176	142	13	21	169	3	1	3	19	42	25	3	0	0
Dry/powder	4	3	0	1	4	0	0	0	0	1	0	0	0	0
Liquid	1,076	851	40	180	1,038	21	1	14	102	246	125	16	0	1
Solid/sheet	447	379	17	50	424	11	3	8	22	79	28	2	0	0
Other/unknown	11	8	0	3	9	0	2	0	1	3	2	0	0	0
Glass cleaners														
Ammonia	6,356	4,988	516	826	6,000	294	41	10	638	1,500	887	69	4	0
Anionic nonionic	231	158	21	51	219	8	1	1	20	61	33	2	0	0
Isopropanol	2,539	1,869	230	432	2,412	90	27	7	281	589	389	43	0	0
Other/unknown	1,192	879	120	186	1,111	62	13	4	157	256	165	19	0	0
Hand dishwashing														
Anionic/ nonionic	5,926	3,854	457	1,587	5,641	127	72	80	485	788	1,195	80	2	4
Other/unknown	2,701	1,672	224	797	2,554	57	54	31	164	307	486	28	1	0
Laundry additives														
Bluing/brightening agent	61	33	5	23	58	2	0	1	7	14	11	1	0	0
Detergent booster	38	21	3	13	36	2	0	0	7	4	6	2	0	0
Enzyme/ microbiological additive	67	40	4	23	64	2	0	1	17	13	12	3	0	0
Water softener	54	30	7	14	52	1	1	0	5	11	10	0	0	0

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Other/unknown	1,409	1,177	69	155	1,361	20	8	20	114	329	216	21	3	0
Laundry detergents														
Granular	4,463	3,567	214	653	4,331	81	16	33	545	910	1,021	69	2	1
Liquid	4,757	3,335	335	1,066	4,559	128	24	40	613	788	1,012	95	5	0
Soap	79	49	6	23	74	3	1	1	14	15	13	1	0	0
Other/unknown	165	115	13	36	152	8	2	3	36	44	26	6	0	0
Laundry prewash/stain removers														
Dry solvent-based	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Liquid solvent-based	920	714	49	154	904	7	4	5	113	313	145	11	0	1
Spray solvent-based	399	349	12	37	392	0	3	3	75	90	95	21	0	0
Other/unknown solvent-based	77	62	1	14	76	1	0	0	10	18	18	1	0	0
Dry surfactant-based	212	190	5	16	209	1	1	1	14	37	23	3	0	0
Liquid surfactant-based	2,167	1,917	76	168	2,134	22	5	5	290	420	393	69	1	0
Spray surfactant-based	558	483	12	60	541	8	4	3	113	91	128	30	1	0
Other/unknown surfactant-based	109	79	3	26	104	1	0	4	11	16	23	2	1	0
Other/unknown	2,755	1,927	147	666	2,695	33	11	16	311	606	616	44	0	0
Miscellaneous cleaners														
Acid	1,241	583	85	566	1,182	19	7	28	308	269	289	87	1	0
Alkali	8,510	5,210	606	2,648	8,148	217	60	73	1,662	1,754	1,721	361	6	0
Anionic/nonionic	7,420	5,063	560	1,765	7,088	199	43	79	1,125	1,458	1,366	176	10	1
Cationic	2,526	1,216	261	1,029	2,364	110	16	30	653	514	542	136	10	0
Ethanol	507	340	103	60	484	16	5	1	47	74	82	3	0	0
Glycols	1,047	577	163	278	997	25	11	10	166	223	205	30	1	0
Isopropanol	1,694	1,082	361	243	1,609	57	23	3	169	383	308	21	2	0
Methanol	34	14	2	18	30	3	0	1	12	6	7	2	0	1
Phenol	9	1	0	8	9	0	0	0	5	1	3	2	0	0
Other/unknown	5,014	2,938	591	1,446	4,718	169	65	46	987	1,121	1,183	181	7	2

Oven cleaners														
Acid	27	13	2	10	27	0	0	0	4	7	12	0	0	0
Alkali	2,645	568	288	1,761	2,538	48	26	28	1,060	323	799	374	19	0
Detergent	35	15	4	16	32	2	0	1	5	8	5	3	0	0
Other/unknown	295	57	39	197	271	8	9	5	124	31	72	45	3	0
Rust removers														
Alkali	8	1	1	6	7	0	0	1	5	1	2	3	1	0
Anionic/nonionic	1	0	0	1	1	0	0	0	0	0	1	0	0	0
Hydrofluoric acid	417	73	26	315	387	19	2	7	232	90	196	49	3	0
Other acid	833	325	52	447	793	26	5	9	210	204	227	57	3	0
Other/unknown	277	41	21	214	265	2	1	9	64	26	77	25	1	0
Spot removers/dry cleaning agents														
Anionic/ nonionic	281	213	8	58	276	2	1	2	29	61	56	6	0	0
Glycol	323	214	23	86	311	4	2	6	50	74	77	10	1	0
Carbon tetrachloride	1	0	0	1	1	0	0	0	1	0	1	0	0	0
Perchloroethylene	23	12	3	8	21	1	1	0	6	3	8	1	0	0
Isopropanol	52	41	2	9	51	1	0	0	3	10	10	1	1	0
Other halogenated hydrocarbon	34	14	8	12	32	2	0	0	11	7	16	3	0	0
Other nonhalogenated hydrocarbon	848	332	104	405	776	24	25	17	254	155	254	37	6	0
Other/unknown	186	118	18	48	180	2	1	3	27	43	28	1	0	0
Starch/fabric finish/ sizing	625	508	45	69	611	12	0	2	42	138	64	3	2	0
Toilet bowl cleaners														
Acid	5,210	1,396	545	3,191	4,912	236	7	46	1,093	1,053	2,401	332	19	0
Alkali	2,344	1,468	118	745	2,275	60	2	7	361	617	478	66	4	0
Other/unknown	2,907	1,826	154	905	2,806	65	9	23	398	691	461	98	3	2
Wall/floor/tile cleaners														
Acid	4,681	2,547	314	1,789	4,473	145	15	45	904	1,006	1,448	207	10	0
Alkali	9,236	5,537	708	2,942	8,785	295	54	87	1,853	2,056	2,215	426	15	2
Anionic/ nonionic	7,296	4,337	585	2,331	6,842	335	64	41	1,395	1,483	1,359	181	11	2
Cationic	2,863	1,746	232	862	2,695	124	21	17	441	561	608	71	1	2
Ethanol	173	151	5	17	172	1	0	0	14	53	22	0	0	0
Glycol	1,759	1,314	84	355	1,699	46	7	5	210	455	326	32	2	0

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Isopropanol	641	424	39	165	600	22	8	9	82	158	156	13	0	0
Methanol	1	0	1	0	0	0	1	0	0	1	0	0	0	0
Other/unknown	1,954	1,245	141	552	1,853	61	19	20	316	497	403	62	0	0
Wheel cleaner: HF/ bifluoride	70	14	4	52	69	0	0	1	57	6	17	22	2	1
Category total	218,316	121,498	18,024	77,087	206,639	7,650	1,633	1,974	37,830	42,921	51,386	7,890	353	42
Industrial cleaners														
Acid	1,986	579	174	1,217	1,882	72	10	20	567	338	551	153	8	0
Alkali	3,495	966	439	2,059	3,316	121	35	19	1,675	435	1,208	485	33	0
Anionic/nonionic	1,151	504	98	491	1,078	44	12	12	272	157	337	51	0	0
Cationic	648	159	98	387	598	33	7	6	253	82	229	52	1	0
Disinfectant	3,601	376	377	2,794	3,356	188	27	20	1,265	319	1,229	406	10	0
Other/unknown	1,871	523	226	1,105	1,733	75	29	30	836	291	612	203	9	0
Category total	12,752	3,107	1,412	8,053	11,963	533	120	107	4,868	1,622	4,166	1,350	61	0
Cosmetics/personal care products														
Baby oil	2,605	2,396	69	133	2,554	36	2	11	183	694	212	19	2	0
Bath oil/bubble bath	4,931	4,519	235	168	4,861	34	6	25	179	981	457	16	0	0
Cream/lotion/ make-up	24,704	20,908	1,157	2,561	23,942	280	40	431	904	3,908	1,352	88	5	0
Dental care products														
Denture cleaner	1,512	259	73	1,176	1,456	38	8	7	82	333	114	8	0	1
Toothpaste with fluoride	22,531	20,248	1,073	1,164	21,783	331	89	313	414	4,660	1,160	41	0	0
Toothpaste without fluoride	1,629	1,408	66	149	1,564	16	7	42	31	289	85	5	0	0
Other	2,125	817	395	898	1,819	40	8	249	204	328	334	37	0	0
Deodorant	21,115	18,555	1,329	1,171	20,246	298	125	433	639	3,121	1,545	91	1	0
Depilatory	1,712	424	336	944	1,139	74	15	481	381	148	518	142	3	1
Douche	124	91	8	23	115	1	0	7	8	37	8	1	0	0
Eye product	1,274	1,079	56	132	1,236	4	3	29	74	205	86	11	1	0
Hair care products														
Coloring agent	2,374	862	256	1,235	1,995	36	4	338	529	336	622	139	2	0
Curl activator	53	40	6	7	53	0	0	0	13	16	11	3	0	0
Oil	284	247	16	20	277	5	0	2	36	73	41	7	0	0

Permanent wave solution	371	191	25	154	340	1	0	30	127	66	116	35	2	0
Relaxer: sodium hydroxide	823	568	46	206	783	7	0	33	392	145	296	97	1	0
Relaxer: other alkaline	774	601	38	132	748	0	0	25	355	180	262	74	6	0
Relaxer: other non-alkaline	59	43	7	9	58	0	0	1	12	7	9	3	0	0
Rinse/conditioner/ relaxer	2,339	1,889	160	283	2,233	71	4	29	199	482	222	26	2	0
Shampoo	6,444	4,982	572	873	6,096	278	13	48	476	969	1,018	44	1	0
Spray	1,994	1,251	243	489	1,670	295	12	14	395	412	376	60	12	1
Other	3,051	2,143	274	615	2,871	63	9	103	443	559	489	77	4	0
Lipstick/balm: with camphor	1,118	996	82	38	1,081	26	5	6	29	207	89	4	0	0
Lipstick/balm: without camphor	4,389	4,087	172	118	4,307	35	6	38	80	566	140	10	1	0
Mouthwash														
Ethanol	14,947	4,036	2,772	8,066	13,303	1,506	47	48	1,613	2,597	1,268	271	30	2
Non-ethanol	1,176	515	198	462	1,088	68	0	19	107	249	101	13	2	0
Fluoride	4,413	3,220	931	249	4,345	37	3	25	68	912	115	1	1	0
Unknown	147	38	39	70	130	12	4	1	22	21	32	5	0	0
Nail products														
Acrylic nail adhesive	1,342	538	374	423	1,316	17	5	4	544	154	393	96	3	0
Acrylic nail primer	272	224	10	36	263	2	0	7	98	71	79	24	1	0
Acrylic nail remover	41	19	5	17	37	1	0	3	9	8	16	2	0	0
Polish	10,523	9,559	494	446	10,416	78	14	13	533	2,063	1,361	49	1	0
Polish remover: acetone	2,444	1,868	191	378	2,356	69	9	8	273	728	412	22	1	0
Polish remover: other	1,885	1,398	200	283	1,819	51	3	11	199	510	319	20	0	0
Polish remover: unknown	7,304	5,187	764	1,321	7,018	229	34	12	848	1,697	1,161	64	7	0
Other	1,582	918	77	573	1,542	12	4	22	401	339	361	74	0	0
Perfume/cologne/ aftershave	16,495	13,725	1,526	1,196	15,797	511	121	44	1,296	3,621	3,468	141	11	1
Peroxide	16,651	6,988	1,494	8,075	15,828	421	60	323	1,297	2,532	2,806	247	11	0
Powder: talc	2,922	2,559	158	195	2,855	41	17	6	322	610	620	58	1	0

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Powder: without talc	2,089	1,931	69	83	2,065	15	3	4	118	362	382	22	0	0
Soap	17,725	13,586	1,367	2,690	16,847	395	138	329	970	2,557	2,099	142	5	0
Suntan/sunscreen	11,642	10,416	612	573	11,389	38	19	192	413	1,675	1,600	69	2	0
Category total	221,935	165,329	17,975	37,834	211,641	5,472	837	3,766	15,316	39,428	26,155	2,358	119	6
Deodorizers														
Air fresheners														
Aerosol	2,972	2,143	446	369	2,826	107	23	13	297	566	657	45	2	1
Liquid	4,936	4,261	312	348	4,849	59	20	5	420	1,142	934	35	1	1
Solid	4,410	3,987	150	261	4,371	22	11	4	212	945	547	22	1	0
Other/unknown	1,776	1,409	148	209	1,710	37	15	10	157	427	354	23	1	0
Diaper pail deodorizer	29	24	3	2	27	2	0	0	2	7	1	1	0	0
Toilet bowl deodorizer	676	588	30	55	661	6	8	1	93	204	46	4	0	0
Other	5,461	4,034	387	1,019	5,265	105	31	55	623	1,254	951	99	3	1
Unknown	79	51	5	22	75	2	0	1	15	12	16	1	0	0
Category total	20,339	16,497	1,481	2,285	19,784	340	108	89	1,819	4,557	3,506	230	8	3
Dyes														
Chlorate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fabric	404	289	45	54	394	4	2	4	21	93	19	2	0	0
Food	1,153	970	110	64	1,107	20	8	16	39	222	60	5	0	0
Leather	139	102	16	21	134	2	1	2	4	30	10	0	0	0
Other	528	237	190	100	490	10	2	23	71	83	47	16	1	0
Unknown	53	29	10	14	47	1	0	5	8	10	3	2	0	0
Category total	2,277	1,627	371	253	2,172	37	13	50	143	438	139	25	1	0
Essential oils														
Clove oil	446	277	34	133	416	6	1	22	101	109	123	10	0	0
Cinnamon oil	599	380	144	58	510	55	4	29	48	41	243	13	0	0
Eucalyptus oil	522	336	39	143	501	12	3	5	99	130	108	12	3	0
Pennyroyal oil	36	7	2	27	20	10	1	5	14	6	4	5	0	0
Tea tree oil	951	615	70	259	900	12	1	35	151	251	171	17	2	0
Other/unknown	4,728	3,807	278	619	4,608	45	15	53	406	1,162	813	53	1	0
Category total	7,282	5,422	567	1,239	6,955	140	25	149	819	1,699	1,462	110	6	0
Fertilizers														
Household plant food	2,361	1,468	246	634	2,317	26	8	6	92	461	101	7	0	0

Outdoor fertilizer	4,029	2,661	416	932	3,932	42	21	30	233	905	243	34	0	0
Plant hormone	38	13	5	12	34	2	0	1	5	6	4	0	0	0
Other	1,890	1,183	221	466	1,842	17	13	16	153	418	137	20	0	0
Unknown	143	76	20	46	134	2	3	4	25	25	12	4	0	0
Category total	8,461	5,401	908	2,090	8,259	89	45	57	508	1,815	497	65	0	0
Fire extinguishers														
Fire extinguisher	4,000	300	1,009	2,583	3,652	125	180	28	877	484	1,012	181	0	0
Food products/food poisoning														
Bacterial food poisoning (documented)														
Botulism	242	56	19	166	224	5	3	8	58	43	25	5	12	2
Other	889	267	168	446	860	4	13	12	94	108	134	55	0	1
Unknown	14,664	2,320	2,413	9,762	13,840	30	164	599	1,617	1,130	3,313	650	6	0
Capsicum/peppers	5,305	875	1,071	3,303	4,360	160	52	718	333	71	2,327	168	4	0
Ichthyosarcotoxins														
Ciguatera	177	8	21	147	164	1	1	11	93	3	49	64	2	0
Clupeotoxic	14	0	1	12	13	0	0	1	1	1	4	0	0	0
Paralytic shellfish	981	62	108	806	943	0	2	35	159	75	443	63	4	1
Scombroid	192	11	16	164	156	0	0	36	65	5	74	49	0	0
Tetrodotoxin	205	40	71	90	200	3	0	1	38	28	31	13	0	0
Other	168	12	12	143	120	4	0	44	43	12	42	13	1	0
Monosodium glutamate	159	10	16	131	57	1	1	99	40	6	39	16	0	0
Question: spoiled food	17,216	5,122	2,931	8,939	16,363	51	322	459	981	1,798	1,081	188	0	0
Question: food/ additive	10,957	6,398	1,538	2,909	9,317	626	207	767	1,196	1,358	1,267	269	22	2
Suspected food poisoning	10,768	1,412	1,586	7,612	10,482	14	89	164	1,173	352	1,842	566	5	0
Other adverse rxn to food	2,527	616	484	1,375	1,099	54	92	1,258	625	147	682	208	10	0
Category total	64,464	17,209	10,455	36,005	58,198	953	946	4,212	6,516	5,137	11,353	2,327	66	6
Foreign bodies/toys/miscellaneous														
Ash	447	366	23	57	440	4	0	2	21	64	39	2	0	0
Bubble blowing solution	5,066	4,693	266	93	5,006	29	19	8	157	634	961	28	0	0
Charcoal	512	382	29	96	474	29	2	6	57	74	31	13	2	5
Christmas ornament	798	660	43	91	795	1	0	2	39	151	50	1	0	0
Coin	3,596	2,892	580	109	3,530	54	5	4	1,303	939	348	39	3	0

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Desiccant	45,324	40,638	2,885	1,505	44,839	345	103	18	1,385	6,260	273	16	0	0
Feces/urine	6,251	5,091	318	799	6,082	51	101	9	190	840	243	15	0	0
Glass	2,382	822	284	1,251	2,265	24	78	13	309	381	211	26	1	0
Glow product	10,964	6,560	4,046	280	10,816	119	20	6	515	1,210	2,559	63	0	0
Incense, punk	290	246	19	24	284	2	1	3	17	68	26	3	0	1
Soil	2,563	2,193	155	208	2,518	25	6	12	73	323	111	10	0	0
Thermometers														
Mercury	6,513	2,457	1,796	2,122	6,438	44	20	4	447	1,189	77	4	0	0
Other	1,823	754	527	516	1,763	22	27	11	66	376	70	3	0	0
Unknown	870	331	226	294	866	2	1	1	42	49	1	0	0	0
Toy	14,171	9,848	3,877	392	13,952	143	35	33	765	1,770	1,845	52	2	0
Other	20,153	12,989	3,319	3,650	19,400	408	143	154	2,147	3,363	1,170	181	10	0
Unknown	720	500	103	112	667	25	22	3	88	148	35	8	0	0
Category total	122,443	91,422	18,496	11,599	120,135	1,327	583	289	7,621	17,839	8,050	464	18	6
Fumes/gases/vapors														
Carbon dioxide	618	48	224	333	572	28	5	10	138	83	145	45	1	0
Carbon monoxide	16,449	2,031	2,552	10,955	15,841	464	20	64	7,300	3,139	4,365	1,374	176	66
Chloramine	809	20	58	718	768	40	1	0	250	51	266	151	2	0
Chlorine: acid mixed with hypochlorite	1,310	48	120	1,115	1,242	66	0	2	446	109	564	247	4	0
Chlorine: other	6,333	460	1,136	4,618	6,068	162	8	93	2,135	300	2,521	902	23	1
Hydrogen sulfide	1,396	103	139	1,102	1,385	1	3	6	397	162	355	119	12	6
Methane and natural gas	5,453	904	816	3,189	5,389	38	11	9	1,143	1,559	1,063	146	9	1
Polymer fume fever	10	1	1	8	10	0	0	0	0	4	2	0	0	0
Propane/simple asphyxiant	2,835	311	600	1,882	2,541	245	19	19	1,031	364	728	284	26	4
Other	1,740	185	323	1,203	1,656	52	7	22	518	233	418	129	10	0
Unknown	2,041	146	266	1,556	1,944	29	38	16	536	224	577	105	4	0
Category total	38,994	4,257	6,235	26,679	37,416	1,125	112	241	13,894	6,228	11,004	3,502	267	78
Heavy metals														
Aluminum	1,016	497	101	408	951	21	17	17	127	150	60	27	2	0
Arsenic (excluding pesticide)	969	142	71	738	616	28	178	10	524	142	83	64	9	0

Barium	29	0	15	14	24	3	0	1	11	2	7	2	1	0
Cadmium	65	3	10	49	54	1	1	3	35	5	10	5	0	0
Copper	938	152	304	460	839	43	20	28	304	126	283	40	1	0
Fireplace flame colors	38	31	2	5	38	0	0	0	2	7	2	1	0	0
Gold	3	2	0	1	2	0	0	1	0	1	1	0	0	0
Lead	3,075	1,438	407	1,184	2,888	48	53	22	1,213	700	189	92	7	0
Manganese	88	9	19	59	76	4	0	2	46	9	18	10	1	0
Mercury: elemental	2,786	350	687	1,590	2,509	95	67	67	707	747	99	55	6	2
Mercury: other/ unknown	290	51	28	206	241	7	13	20	108	58	46	17	2	0
Metal fume fever	670	14	55	598	641	8	0	19	223	3	188	97	1	0
Selenium	113	47	10	56	93	7	1	11	33	23	12	3	0	0
Thallium	30	3	0	27	17	1	5	3	18	2	4	6	0	0
Other	2,594	843	316	1,399	2,250	176	28	125	777	497	337	130	21	1
Unknown	77	15	7	52	59	4	8	3	35	8	10	6	0	0
Category total	12,781	3,597	2,032	6,846	11,298	446	391	332	4,163	2,480	1,349	555	51	3
Hydrocarbons														
Benzene	166	4	7	134	161	1	1	1	117	25	55	19	3	0
Carbon tetrachloride	28	3	1	24	26	2	0	0	13	6	9	1	1	0
Diesel fuel	2,048	268	280	1,476	1,950	75	11	7	513	228	722	111	2	0
Fluorochlorocarbon/ propellant	6,896	519	1,277	5,010	6,044	700	77	53	1,819	1,118	1,540	496	26	8
Gasoline	20,410	4,723	3,453	12,039	18,931	1,270	104	60	3,488	2,951	7,179	611	18	1
Halogenated hydrocarbon: other	573	110	63	398	525	27	4	13	228	61	180	54	3	0
Kerosene	1,894	979	186	710	1,801	52	29	5	640	390	493	136	9	2
Lamp oil	2,374	1,959	92	310	2,337	28	6	3	793	673	623	201	24	0
Lighter fluid/ naphtha	3,389	1,711	329	1,312	3,151	153	47	26	1,126	732	942	197	27	1
Lubricating oil/ motor oil	5,890	3,633	480	1,753	5,695	126	50	6	1,012	1,842	1,018	127	2	0
Mineral seal oil	37	18	5	14	35	1	0	1	6	9	6	0	0	0
Mineral spirits/ varsol	2,638	897	294	1,426	2,430	144	22	29	867	443	772	186	11	0
Toluene/xylene	1,431	218	145	1,047	1,294	100	14	14	696	184	483	134	13	0
Turpentine	663	189	92	373	546	95	3	11	222	122	159	42	6	0
Other	4,583	2,146	554	1,843	4,315	124	67	66	1,436	970	1,019	376	26	2
Unknown	869	308	140	412	777	73	5	9	326	176	233	77	5	0
Category total	53,889	17,685	7,398	28,281	50,018	2,971	440	304	13,302	9,930	15,433	2,768	176	14

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Information calls														
Administrative information	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Drug information	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Poison information	1	0	0	1	1	0	0	0	1	0	1	0	0	0
Medical information	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Category total	1	0	0	1	1	0	0	0	1	0	1	0	0	0
Lacrimators														
Capsicum defense spray	4,377	730	1,662	1,872	3,300	161	729	59	857	117	1,950	266	2	0
Lacrimator: CN	1,437	221	460	706	1,006	65	283	21	277	30	602	72	1	0
Lacrimator: CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimator: CS	62	14	16	32	56	0	1	5	26	1	32	6	0	0
Lacrimator: DM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	78	5	9	60	77	1	0	0	13	2	9	9	0	0
Unknown	158	20	44	93	123	3	27	1	35	3	56	13	1	0
Category total	6,112	990	2,191	2,763	4,562	230	1,040	86	1,208	153	2,649	366	4	0
Matches/fireworks/explosives														
Explosive	306	132	91	80	259	28	13	3	80	63	50	21	0	0
Firework	574	466	61	45	550	11	6	7	61	166	55	7	0	0
Match	862	775	43	42	841	16	3	1	27	217	17	1	0	0
Other	19	14	3	2	18	1	0	0	3	4	2	0	0	0
Unknown	13	9	1	3	12	0	1	0	3	3	1	0	0	0
Category total	1,774	1,396	199	172	1,680	56	23	11	174	453	125	29	0	0
Mushrooms														
Coprine	10	4	3	3	5	2	0	3	6	3	6	1	0	0
Cyclopeptide	40	7	5	28	27	9	1	2	33	7	6	7	3	4
Gastrointestinal irritant	151	61	26	64	115	24	0	11	70	41	50	17	0	0
Hallucinogenic	849	23	467	343	114	717	5	9	692	39	171	330	23	0
Ibotenic acid	36	4	9	21	17	18	0	1	31	5	10	14	1	0
Miscellaneous, nontoxic	192	77	26	87	158	5	0	29	55	36	42	7	0	0
Monomethylhydrazine	25	2	1	22	18	1	0	6	14	6	11	3	1	0

Muscarine	19	1	3	15	11	5	0	2	10	1	9	2	1	0
Orellanine	1	0	0	1	1	0	0	0	0	1	0	0	0	0
Other potentially toxic	17	9	0	8	13	3	0	1	10	4	4	2	1	0
Unknown	5,806	3,968	881	907	5,045	662	12	72	2,441	2,780	659	252	16	2
Category total	7,146	4,156	1,421	1,499	5,524	1,446	18	136	3,362	2,923	968	635	46	6
Paints and stripping agents														
Paints														
Anti-algae	37	2	2	32	35	0	0	2	11	5	5	3	0	0
Anti-corrosion	54	11	6	36	50	2	0	1	15	6	12	4	0	0
Oil-base	3,289	929	671	1,664	3,005	189	21	70	760	410	842	173	6	0
Water-base	6,471	4,786	447	1,210	6,338	60	16	52	486	998	505	63	2	0
Stains	892	374	79	433	865	10	3	13	146	177	185	32	2	0
Stripping agents														
Methylene chloride	994	147	109	731	951	22	4	15	342	61	358	90	0	0
Other	728	168	53	503	693	20	2	13	284	82	226	107	3	0
Unknown	111	11	6	91	100	6	1	2	49	8	35	10	1	0
Varnish, lacquer	1,668	466	169	1,016	1,593	26	13	34	348	204	380	81	3	1
Other paint/varnish/ lacquer	642	229	68	340	617	10	0	14	160	113	139	48	0	0
Unknown paint/ varnish/lacquer	6,987	4,311	533	2,073	6,740	128	19	85	977	1,188	671	139	7	0
Category total	21,873	11,434	2,143	8,129	20,987	473	79	301	3,578	3,252	3,358	750	24	1
Pesticides														
Fungicides (non-medicinal)														
Carbamate	160	36	9	112	147	11	1	1	52	38	22	17	1	1
Copper compound	64	11	1	52	62	1	1	0	10	11	10	6	0	0
Mercurial	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-mercurial	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phthalimide	67	32	7	26	65	1	0	1	16	13	9	4	0	0
Wood preservative	268	48	24	194	254	4	0	10	68	35	63	8	0	0
Other/ unknown	10	4	1	5	9	1	0	0	3	3	1	0	0	0
Other	798	178	66	537	765	6	3	22	184	133	182	31	2	0
Unknown	49	16	10	23	44	4	0	1	9	6	9	0	1	0
Fumigants														
Aluminum phosphide	79	2	8	68	71	3	1	2	60	4	22	13	2	2

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Metam sodium	1	1	0	0	1	0	0	0	0	1	0	0	0	0
Methyl bromide	5	0	0	5	5	0	0	0	4	0	1	1	0	0
Sulfuryl fluoride	295	39	39	209	285	4	2	3	48	37	32	7	0	1
Other	43	4	3	33	41	0	1	0	20	2	7	5	1	0
Unknown	98	16	10	70	89	2	4	3	42	9	24	6	2	0
Herbicides (includes algicides, defoli														
Carbamate	21	2	2	17	11	10	0	0	16	7	4	4	4	0
2,4-D or 2,4,5-T	70	29	2	37	67	0	0	2	12	13	11	4	0	0
Chlorophenoxy	2,391	629	227	1,521	2,291	33	10	54	514	451	491	82	1	0
Diquat	297	47	28	218	282	8	1	6	80	69	71	12	1	1
Glyphosate	4,679	1,245	378	3,017	4,380	62	24	200	925	1,085	1,159	126	8	2
Paraquat	59	3	5	51	54	3	0	2	34	9	19	8	0	2
Paraquat/diquat	1	0	1	0	1	0	0	0	0	1	0	0	0	0
Triazine	487	114	35	331	462	7	5	12	134	67	118	25	1	0
Urea	87	26	4	53	81	2	0	3	23	15	19	4	0	0
Other	1,786	406	179	1,187	1,701	27	5	49	442	313	373	75	7	2
Unknown	418	114	62	232	391	9	10	7	96	40	81	12	0	0
Insecticides (includes insect growth r														
Arsenic pesticide	371	269	11	88	362	7	1	1	43	138	17	4	1	1
Borate/boric acid	4,103	3,364	158	565	4,004	47	28	22	323	1,068	150	30	3	0
Carbamate only	2,844	1,081	247	1,475	2,653	120	24	43	710	554	412	139	14	3
Carbamate with other insecticide	760	131	60	537	709	24	8	14	99	129	149	22	1	3
Chlorinated hydrocarbon only	771	275	94	395	682	26	3	51	283	185	125	41	1	0
Chlorinated hydrocarbon with other i	394	163	56	174	381	8	2	3	65	63	91	9	0	0
Insect growth regulator	92	37	11	42	87	3	0	2	20	9	8	2	0	0
Metaldehyde	354	139	20	195	345	5	0	4	53	80	36	7	1	0
Nicotine	4	2	0	2	2	2	0	0	2	1	0	1	0	0
Organophosphate	5,133	1,416	479	3,166	4,787	190	30	104	1,464	1,066	1,078	273	43	3
Organophosphate/ carbamate	137	40	14	82	130	4	0	3	29	25	15	7	1	0

Organophosphate/ chlorinated hydrocar	1	0	1	0	1	0	0	0	0	0	0	0	0	0
Organophosphate/ other insecticide	1,075	247	88	733	1,010	30	13	22	245	180	272	51	1	3
Organophosphate/ carbamate/ chlorinate	4	1	0	3	4	0	0	0	1	1	0	0	0	0
Piperonyl butoxide only	1	1	0	0	1	0	0	0	0	1	0	0	0	0
Piperonyl butoxide/ pyrethrin	309	93	48	165	285	11	1	12	81	35	85	19	1	0
Pyrethrins only	118	29	10	77	116	1	0	1	15	20	9	1	0	0
Pyrethrin	5,500	1,920	628	2,899	5,089	143	27	232	1,038	833	1,197	223	8	0
Pyrethroid	20,022	5,631	2,134	12,070	18,599	528	126	731	3,800	3,005	4,877	847	40	4
Rotenone	95	21	12	61	91	0	2	2	16	12	28	3	0	0
Veterinary insecticide	252	80	34	136	230	11	2	7	42	36	47	9	3	0
Other	9,107	4,498	814	3,681	8,764	93	26	208	1,004	1,556	1,083	147	11	1
Unknown	4,302	1,101	425	2,701	3,838	172	101	157	1,304	563	785	214	9	0
Repellents														
Bird, dog, deer or other mammal repe	371	124	52	194	347	4	12	8	47	40	86	8	0	0
Insect repellent with DEET	9,151	6,210	1,424	1,460	8,608	94	62	377	874	1,490	2,773	147	5	0
Insect repellent without DEET	1,878	1,476	189	205	1,811	19	10	36	113	367	324	24	0	0
Insect repellent: unknown	97	42	18	30	85	3	0	8	12	14	32	2	0	0
Naphthalene	1,792	1,242	118	421	1,753	23	6	9	401	679	138	27	1	0
Paradichlorobe nzene	156	92	7	55	150	1	1	4	25	29	18	2	0	0
Other moth repellent	11	9	0	2	10	0	0	1	3	8	0	0	0	0
Unknown moth repellent	2,296	1,280	180	806	2,183	58	39	13	455	607	221	37	1	0
Rodenticides														

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
ANTU	8	1	6	1	7	1	0	0	2	2	1	0	0	0
Anticoagulant: warfarin-type	400	324	12	60	368	26	6	0	158	177	8	7	1	0
Anticoagulant: long-acting, superwar	14,740	13,042	398	1,221	14,087	502	107	15	4,430	4,772	175	88	26	1
Barium carbonate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bromethalin	541	388	18	122	489	40	8	4	169	178	15	12	0	2
Cholecalciferol	10	8	0	2	9	0	1	0	2	2	0	0	0	0
Cyanide	6	0	2	4	6	0	0	0	2	4	2	0	0	0
Monofluoroacetate	5	2	1	2	5	0	0	0	1	3	2	0	0	0
Strychnine	88	14	6	66	45	18	17	2	49	18	10	7	1	0
Vacor	3	2	0	1	2	0	1	0	2	2	0	1	0	0
Zinc phosphide	101	36	4	58	89	8	0	3	39	24	11	8	0	0
Other	747	529	70	144	715	22	3	3	68	176	36	4	4	1
Unknown	1,362	870	82	372	1,125	138	86	2	640	363	81	31	17	0
Category total	101,745	49,232	9,032	42,471	95,623	2,580	821	2,482	20,921	20,877	17,125	2,904	225	33
Photographic products														
Developer/fixing/ stop bath	379	30	159	186	367	3	1	7	126	33	136	20	0	0
Photographic coating fluid	3	1	0	2	3	0	0	0	1	0	0	1	0	0
Other	935	528	90	307	897	22	1	15	130	202	174	54	0	0
Unknown	9	4	1	4	9	0	0	0	3	3	1	0	0	0
Category total	1,326	563	250	499	1,276	25	2	22	260	238	311	75	0	0
Plants														
Amygdalin/ cyanogenic glycoside	2,617	1,744	465	390	2,475	88	3	44	133	544	97	14	1	0
Anticholinergic	975	352	437	176	495	465	4	4	566	175	98	316	37	0
Cardiac glycoside	1,430	822	237	362	1,323	82	3	22	263	426	107	23	3	0
Colchicine	8	6	0	2	8	0	0	0	0	3	0	0	0	0
Depressant	315	191	44	78	252	43	1	15	49	65	28	13	1	0
Dermatitis	9,266	5,028	1,289	2,858	8,557	211	57	417	922	1,089	1,156	275	5	0

Gastrointestinal irritant	12,311	9,286	1,298	1,664	11,663	345	27	264	925	2,574	1,018	164	5	0
Hallucinogenic	355	104	143	104	171	161	11	10	161	49	58	68	0	0
Nicotine	156	49	37	67	149	2	1	2	74	20	59	26	0	0
Non-toxic	11,927	9,426	1,305	1,107	11,336	231	7	340	461	1,551	589	90	6	0
Oxalate	8,780	7,386	793	567	8,521	207	8	35	378	2,164	1,190	60	1	0
Solanine	1,166	839	131	191	1,103	33	2	26	147	357	80	13	2	0
Stimulant	143	43	22	77	116	16	1	6	45	36	21	10	0	0
Toxalbumin	171	60	36	71	150	10	4	5	74	51	35	10	0	0
Other toxic	4,870	3,506	743	590	4,561	169	6	128	487	1,198	358	90	9	1
Unknown toxic or unknown if toxic	14,357	10,568	1,959	1,730	13,715	388	20	217	1,122	2,899	1,124	157	6	1
Category total	68,847	49,410	8,939	10,034	64,595	2,451	155	1,535	5,807	13,201	6,018	1,329	76	2
Polishes and waxes														
Floor wax/polish/ sealer	770	376	37	339	749	9	0	11	179	161	180	48	0	0
Furniture polish	2,892	2,507	133	246	2,838	39	9	5	303	966	385	30	2	0
Polish/wax: other	4,094	3,148	247	678	3,962	78	24	27	534	1,167	569	103	6	2
Category total	7,756	6,031	417	1,263	7,549	126	33	43	1,016	2,294	1,134	181	8	2
Radioisotopes														
Radioisotope (nonmedicinal)	282	26	30	216	245	9	12	8	91	39	21	17	0	0
Sporting equipment														
Fishing bait	75	36	32	7	74	0	0	1	4	29	8	0	0	0
Fishing product: other	25	17	4	3	24	0	0	1	2	5	5	0	0	0
Golf ball	23	1	12	10	20	2	0	0	1	8	8	0	0	0
Golf product: other	1	1	0	0	1	0	0	0	0	0	1	0	0	0
Gun bluing	32	15	1	16	29	2	0	1	11	11	3	3	0	0
Hunting product: other	366	176	82	106	315	28	13	1	118	89	33	8	1	0
Other	22	13	1	8	22	0	0	0	5	6	1	1	0	0
Unknown	3	2	0	1	3	0	0	0	1	1	1	0	0	0
Category total	547	261	132	151	488	32	13	4	142	149	60	12	1	0
Swimming pool/aquarium														
Algicide	2,307	737	429	1,116	2,240	22	4	40	537	276	698	208	1	1
Aquarium product	2,570	2,116	147	297	2,515	33	9	8	249	702	175	23	2	0
Bromine water/shock treatment	138	51	20	66	119	0	1	18	32	21	47	13	0	0
Chlorine water/shock treatment	3,249	587	786	1,828	3,093	31	14	108	903	219	1,256	379	6	0

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Pool/aquarium test kit	318	219	39	58	312	2	1	1	47	84	45	8	1	0
Other	3,178	761	695	1,656	2,858	49	28	237	765	446	1,375	250	4	1
Category total	11,760	4,471	2,116	5,021	11,137	137	57	412	2,533	1,748	3,596	881	14	2
Tobacco products														
Chewing tobacco	726	619	40	65	688	28	4	5	234	220	208	25	1	0
Cigarette	5,310	4,805	120	372	5,127	113	27	31	1,006	1,797	1,034	84	4	0
Cigar	93	73	11	9	88	1	1	3	16	40	17	3	0	0
Filter tip	123	102	4	17	116	3	2	2	19	41	16	2	0	0
Snuff	399	333	22	42	382	11	1	5	119	117	118	23	1	0
Other	110	64	11	33	92	11	1	5	32	20	21	5	0	0
Unknown	637	435	45	154	548	50	5	31	171	145	121	21	5	0
Category total	7,398	6,431	253	692	7,041	217	41	82	1,597	2,380	1,535	163	11	0
Weapons of mass destruction														
Anthrax	25	1	0	22	15	0	10	0	11	4	1	1	0	0
Other biological weapon	59	6	6	44	53	0	5	1	18	6	1	1	0	0
Nerve gas	5	0	0	5	4	0	1	0	2	0	0	2	0	0
Other chemical weapon	89	2	6	81	77	5	6	0	60	17	25	17	2	0
Suspicious powder in envelope/ package	55	3	6	46	18	0	34	0	25	18	10	0	0	0
Other suspicious powder	24	0	1	23	9	0	15	0	6	9	3	0	0	0
Other suspicious substance	8	0	1	7	1	0	7	0	3	0	2	1	1	0
Category total	265	12	20	228	177	5	78	1	125	54	42	22	3	0
Other/unknown nondrug substances														
Other	19,832	10,588	2,670	6,308	18,026	526	592	528	3,045	3,582	2,895	565	27	5
Unknown	6,469	1,720	922	3,679	4,619	214	819	386	2,267	695	1,068	407	58	15
Category total	26,301	12,308	3,592	9,987	22,645	740	1,411	914	5,312	4,277	3,963	972	85	20
Total no. of non-pharmaceuticals	1,352,831	693,463	166,206	480,336	1,241,823	75,494	11,330	19,863	250,596	221,438	238,443	54,635	4,783	464
% of non-pharmaceuticals	–	51.3%	12.3%	35.5%	91.8%	5.6%	0.8%	1.5%	18.5%	16.4%	17.6%	4.0%	0.4%	0.0%
% of all substances	49%	25.1%	6.0%	17.4%	44.9%	2.7%	0.4%	0.7%	9.1%	8.0%	8.6%	2.0%	0.2%	0.0%

Analgesics														
Acetaminophen only														
Adult formulation	35,500	8,543	10,565	16,149	17,489	17,270	40	484	21,761	9,487	5,221	2,911	796	88
Pediatric formulation	24,891	22,581	1,889	367	24,291	410	15	132	3,313	5,940	395	115	33	2
Unknown formulation	7,140	1,698	1,891	3,457	2,947	3,922	2	97	4,811	1,635	1,194	890	358	48
Acetaminophen in combination with:														
Aspirin with other ingredient	6,662	2,188	1,724	2,720	3,448	2,898	2	283	3,627	1,654	1,318	530	31	4
Aspirin without other ingredient	421	126	72	223	212	182	0	26	218	73	57	37	10	1
Codeine	5,287	989	1,075	3,176	2,199	2,591	2	455	3,208	1,149	1,224	529	115	11
Hydrocodone	22,165	2,130	3,070	16,659	7,070	13,351	23	1,290	14,931	4,226	5,320	2,832	808	100
Oxycodone	7,353	880	857	5,533	2,602	3,989	13	587	4,325	1,533	1,497	898	246	22
Propoxyphene	5,831	645	730	4,392	2,060	3,409	1	280	4,006	1,228	1,404	741	225	22
Other opioid	1,363	105	172	1,076	396	880	0	74	1,049	182	304	190	76	6
Other drug: adult formulation	21,938	3,191	5,078	13,466	7,021	14,104	16	616	15,772	4,583	5,337	3,119	612	29
Other drug: pediatric formulation	51	46	4	1	51	0	0	0	4	12	3	0	0	0
Aspirin alone														
Adult formulation	6,550	2,119	1,570	2,826	3,416	2,922	0	174	3,805	1,837	1,039	829	89	16
Pediatric formulation	997	669	162	164	849	128	2	16	307	355	70	40	2	0
Unknown formulation	10,175	2,023	2,814	5,232	3,740	6,093	8	196	7,526	2,316	1,972	1,947	284	42
Aspirin in combination with:														
Carisoprodol	276	10	33	229	51	211	0	5	237	42	92	57	22	0
Codeine	180	19	21	138	52	116	0	8	134	27	47	35	8	0
Oxycodone	119	20	7	90	45	62	0	9	77	22	24	16	5	0
Propoxyphene	25	6	0	19	12	12	0	1	15	8	4	2	0	0
Other opioid	52	4	5	42	21	29	0	2	44	7	15	6	2	0
Other drug: adult formulation	1,512	332	219	944	754	649	1	91	833	320	298	186	39	1
Other drug: pediatric formulation	3	2	1	0	2	1	0	0	2	1	0	1	0	0

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Nonaspirin salicylate	929	502	116	307	732	145	0	47	306	245	122	64	5	1
Opioids														
Codeine	1,280	444	255	567	821	346	2	97	476	233	214	87	19	3
Meperidine	419	36	37	342	154	182	0	74	270	54	83	83	16	5
Methadone	4,311	298	419	3,532	1,089	2,742	22	252	3,388	414	794	1,097	535	84
Morphine	3,351	296	309	2,682	1,306	1,646	7	279	2,201	522	643	522	227	42
Oxycodone	5,719	461	676	4,495	1,927	3,246	9	339	3,678	992	1,137	902	308	56
Pentazocine	153	25	14	111	63	62	0	27	92	28	36	24	4	0
Propoxyphene	378	32	37	303	117	216	2	31	273	60	86	60	24	11
Tramadol	4,740	512	583	3,610	1,515	2,712	4	409	3,391	925	1,198	812	196	13
Other/unknown	8,024	945	828	6,155	2,561	4,179	17	931	5,529	1,019	1,712	1,549	572	94
Other nonsteroidal antiinflammatory dr														
Colchicine	312	56	20	234	197	58	0	57	183	68	67	41	10	4
Cox-2 inhibitor	2,207	826	248	1,116	1,433	660	1	102	966	630	261	187	40	2
Ibuprofen	71,109	41,628	13,762	15,363	51,738	17,817	41	1,304	21,377	17,249	6,366	2,222	348	25
Ibuprofen with hydrocodone	64	8	6	49	28	21	0	14	29	13	11	7	2	0
Indomethacin	708	153	74	471	338	272	1	91	358	148	126	61	17	0
Ketoprofen	300	127	40	132	193	91	0	13	111	98	32	21	3	0
Naproxen	12,480	2,805	3,191	6,384	5,945	5,658	11	783	6,284	3,066	2,139	800	118	15
Other	6,257	1,855	737	3,613	4,060	1,777	3	358	2,509	1,553	818	459	107	9
Unknown	20	5	0	15	12	7	0	1	10	8	5	1	0	0
Phenacetin	5	2	0	3	4	1	0	0	3	2	0	1	0	0
Phenazopyridine	1,493	1,118	107	262	1,296	113	1	80	381	536	160	41	9	0
Salicylamide	15	8	2	5	12	2	0	1	3	7	2	0	0	0
Other	252	101	36	113	168	53	0	28	92	77	38	16	1	0
Unknown	225	26	72	123	53	150	0	17	173	29	54	20	5	1
Category total	283,242	100,595	53,528	126,890	154,490	115,385	246	10,161	142,088	64,613	42,939	24,988	6,327	757
Anesthetics														
Inhalation anesthetics														
Nitrous oxide	173	19	47	107	93	52	1	26	72	15	24	30	5	1
Other	150	7	27	115	113	31	4	0	78	18	47	19	2	0
Unknown	1	0	0	1	0	0	0	1	1	0	1	0	0	0
Ketamine and analogs	161	8	25	127	31	99	14	11	146	11	34	54	18	1

Local/topical anesthetics														
Dibucaine	39	29	2	8	36	2	0	1	3	16	3	0	0	0
Lidocaine	1,796	774	245	770	1,532	95	8	143	483	421	315	92	18	3
Other/unknown	6,293	4,365	521	1,375	5,772	155	20	330	873	1,891	607	118	22	2
Other	39	16	2	19	30	5	0	4	20	11	9	2	2	0
Unknown	9	3	1	5	4	0	0	5	5	2	0	4	0	0
Category total	8,661	5,221	870	2,527	7,611	439	47	521	1,681	2,385	1,040	319	67	7
Anticholinergic drugs														
Anticholinergic drug	7,013	472	346	6,133	5,523	1,179	9	254	1,916	1,210	595	603	121	11
Anticoagulants														
Glycoprotein IIA/IIB inhibitor	10	1	0	8	7	0	0	3	8	2	0	1	2	1
Heparin	210	37	9	159	134	20	0	51	116	35	16	38	11	2
Warfarin (excluding rodenticide)	3,050	871	111	2,052	2,425	440	1	161	1,310	779	202	297	87	6
Other antiplatelet	2,104	493	45	1,562	1,828	199	0	70	635	574	124	129	32	5
Other	68	37	3	28	59	5	0	4	44	44	5	3	0	0
Unknown	46	28	1	16	36	7	2	0	27	7	3	1	1	0
Category total	5,488	1,467	169	3,825	4,489	671	3	289	2,140	1,441	350	469	133	14
Anticonvulsants														
Carbamazepine	4,383	967	783	2,605	2,464	1,586	2	249	2,818	871	1,072	782	181	9
Phenytoin	3,955	477	222	3,227	1,939	1,377	4	508	2,802	782	896	758	119	11
Primidone	298	33	14	250	199	82	1	13	156	52	84	30	8	0
Succinimide	96	47	28	21	87	6	0	3	26	25	15	2	1	0
Valproic acid	8,705	866	1,812	5,965	3,574	4,557	8	419	6,108	1,882	2,024	1,515	404	26
Other	22,182	3,381	4,381	14,298	10,236	10,476	19	1,159	14,345	4,571	5,267	3,655	1,004	44
Unknown	18	7	2	7	9	8	0	0	11	4	1	1	0	0
Category total	39,637	5,778	7,242	26,373	18,508	18,092	34	2,351	26,266	8,187	9,359	6,743	1,717	90
Antidepressants														
Cyclic antidepressants														
Amitriptyline	6,788	799	788	5,151	1,992	4,450	8	198	5,609	940	1,494	1,866	782	48
Amoxapine	20	3	1	16	9	11	0	0	15	3	2	9	1	0
Desipramine	159	23	10	124	68	77	0	10	114	24	31	31	11	4
Doxepin	1,173	75	97	994	296	830	0	26	983	157	272	322	144	8
Imipramine	662	137	171	351	333	282	0	36	448	169	124	111	53	3
Maprotiline	5	0	0	5	2	3	0	0	4	0	0	1	1	0
Nortriptyline	1,096	114	122	851	397	614	0	60	808	187	230	236	87	20
Protriptyline	19	3	1	15	6	11	0	1	18	3	9	2	2	0
Other cyclic antidepressant	1,110	67	141	892	381	655	0	17	851	131	234	303	153	17

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Unknown cyclic antidepressant	30	0	6	23	0	29	1	0	30	0	2	11	7	1
Cyclic antidepressant formulated wit	50	6	5	38	19	28	0	2	38	9	10	9	4	0
Cyclic antidepressant formulated wit	86	15	6	65	32	50	0	1	67	23	14	20	11	0
Lithium	5,559	299	905	4,318	1,762	2,797	11	804	4,536	943	1,323	1,486	312	5
MAO inhibitor	275	18	8	248	133	86	1	46	181	50	34	76	31	2
SSRI	48,279	8,584	10,356	28,962	19,127	26,682	25	1,876	33,166	12,150	10,579	6,975	1,607	118
Trazodone	12,133	754	1,825	9,438	2,752	8,892	18	316	10,004	2,129	3,967	2,300	438	22
Other	20,678	2,903	3,617	14,023	8,160	11,323	8	915	15,440	4,595	4,461	4,070	1,339	91
Unknown	71	4	14	50	12	56	0	1	59	13	12	13	6	1
Category total	98,193	13,804	18,073	65,564	35,481	56,876	72	4,309	72,371	21,526	22,798	17,841	4,989	340
Antihistamines														
Diphenhydramine	29,771	12,928	5,624	11,029	18,636	10,129	28	793	12,871	5,900	5,263	3,382	461	35
Diphenhydramine: Rx	8	4	1	2	6	2	0	0	3	0	1	0	1	0
Diphenhydramine: OTC	1,503	513	237	745	742	730	0	26	869	278	294	220	19	2
H2 receptor antagonist	8,644	5,705	699	2,206	7,361	1,028	3	223	1,853	2,381	643	261	48	5
Other	35,538	16,616	7,992	10,760	26,553	7,652	16	1,132	11,713	8,921	4,437	2,486	399	35
Category total	75,464	35,766	14,553	24,742	53,298	19,541	47	2,174	27,309	17,480	10,638	6,349	928	77
Antimicrobials														
Antibiotics														
Systemic	40,714	18,354	6,369	15,702	30,190	4,704	23	5,659	8,879	7,243	4,074	1,529	207	22
Topical	7,450	5,521	500	1,379	7,206	65	6	166	277	1,210	372	36	1	0
Unknown	553	139	118	293	308	124	1	117	196	92	95	31	1	0
Antifungals														
Systemic	1,649	767	213	653	1,292	134	2	220	387	339	149	64	7	0
Topical	8,648	6,579	373	1,670	8,331	93	9	204	548	1,541	598	53	4	0
Unknown	21	8	1	12	20	0	0	1	7	4	5	2	0	0

Anthelmintics														
Diethylcarbamazine	68	33	3	32	68	0	0	0	4	14	3	0	0	0
Piperazine	414	326	26	62	395	10	6	1	62	150	16	5	1	0
Other	1,455	881	137	424	1,372	33	5	43	158	378	115	20	1	0
Unknown	11	6	2	3	11	0	0	0	3	5	0	1	0	0
Antiparasitics														
Antimalarial	990	229	133	623	683	182	1	116	481	257	123	122	21	5
Metronidazole	1,567	337	189	1,027	958	264	1	334	400	248	202	72	8	0
Other	27	12	3	12	23	0	0	4	8	9	2	2	0	0
Antituberculars														
Isoniazid	354	76	127	149	154	149	0	44	254	80	29	51	74	2
Rifampin	109	29	9	69	65	13	0	31	39	18	15	10	3	0
Other	29	4	2	22	17	1	0	11	12	3	0	4	2	0
Unknown	1	0	0	0	0	1	0	0	1	0	0	0	0	0
Antivirals														
Amantadine	322	79	70	173	199	73	1	39	145	80	38	49	11	1
Anti-influenza agent: other	198	58	44	95	155	10	0	32	41	44	18	8	0	0
Antiretroviral	725	127	47	544	413	233	2	68	395	146	115	71	25	0
Systemic	1,443	511	173	739	1,104	208	2	119	395	327	127	67	20	1
Topical	225	93	32	98	203	6	0	16	17	49	15	2	0	0
Unknown	217	64	20	133	144	52	0	20	85	42	22	10	9	0
Other	78	53	4	21	72	3	0	3	18	21	6	1	0	0
Unknown	28	10	3	15	22	1	0	5	9	5	5	0	0	0
Category total	67,296	34,296	8,598	23,950	53,405	6,359	59	7,253	12,821	12,305	6,144	2,210	395	31
Antineoplastics														
Antineoplastic	1,649	356	100	1,154	1,260	130	2	249	631	368	188	150	24	4
Asthma therapies														
Albuterol	6,989	5,084	1,029	827	6,241	371	37	320	1,203	1,637	907	379	20	1
Aminophylline/ theophylline	636	93	43	500	440	122	1	64	348	136	95	123	30	8
Terbutaline and other beta-2 agonist	3,421	1,411	651	1,340	3,082	175	4	155	388	730	244	132	11	0
Other beta agonist	864	177	289	393	809	39	2	12	349	79	387	120	4	0
Leukotriene antagonist/ inhibitor	11,215	8,389	1,865	923	10,619	469	3	106	1,310	2,802	305	126	27	1
Other	429	183	48	196	345	54	0	27	159	171	46	32	5	0
Unknown	17	6	6	5	10	4	1	2	7	6	2	0	0	0
Category total	23,571	15,343	3,931	4,184	21,546	1,234	48	686	3,764	5,561	1,986	912	97	10
Cardiovascular drugs														
ACE inhibitor	12,629	4,111	717	7,766	10,040	2,172	6	351	5,009	4,414	914	1,080	241	23
Alpha blocker	1,755	387	50	1,309	1,411	233	0	99	750	540	171	187	30	3

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Angiotensin receptor blocker	6,083	1,699	320	4,047	5,102	804	1	153	2,236	2,116	483	446	74	7
Antiarrhythmic: other	1,178	216	30	924	1,059	71	0	42	477	416	86	83	31	8
Antihyperlipidemic	10,591	4,017	502	6,030	8,976	1,116	3	454	2,923	2,869	671	531	148	19
Antihypertensive	1,869	553	466	842	1,505	303	1	51	908	785	244	188	25	1
Beta blocker	18,207	4,436	1,149	12,569	13,817	3,719	8	546	9,078	6,430	1,483	2,048	525	60
Calcium antagonist	10,500	2,348	482	7,632	8,203	1,886	11	340	5,622	3,642	882	1,266	384	75
Cardiac glycoside	2,828	550	95	2,173	2,097	247	2	408	1,580	708	208	576	176	32
Clonidine	6,101	1,894	1,845	2,338	4,149	1,679	14	180	4,079	1,357	1,272	1,351	231	9
Hydralazine	316	80	16	219	257	40	0	16	158	105	30	39	9	1
Long-acting nitrate	1,164	263	34	860	991	142	0	24	481	395	105	116	23	4
Nitroglycerin	1,445	773	88	579	1,155	243	4	37	556	588	114	88	18	1
Nitroprusside	37	3	2	31	15	1	0	20	33	10	5	6	2	0
Vasodilator: other	1,147	373	96	666	790	222	20	104	540	332	138	100	31	7
Vasodilator: unknown	7	4	0	3	6	1	0	0	4	4	0	0	1	0
Vasopressor	1,761	262	595	885	1,698	41	0	19	944	101	815	256	8	0
Other	292	98	20	174	242	34	0	16	94	146	23	10	1	1
Unknown	76	15	15	46	38	34	0	2	56	20	8	6	0	0
Category total	77,986	22,082	6,522	49,093	61,551	12,988	70	2,862	35,528	24,978	7,652	8,377	1,958	251
Cold and cough preparations														
APAP/ASA with decongestant/antihistami														
Dextromethorphan	60	35	7	16	50	6	0	3	13	17	14	2	0	0
Other opioid	5	2	1	2	3	2	0	0	2	0	1	0	0	0
Without opioid	24	9	6	8	15	8	0	1	8	8	2	2	0	0
APAP/ASA with decongestant/antihistami														
Dextromethorphan	110	68	24	18	93	13	0	4	25	19	19	1	0	0
Other opioid	6	3	1	2	4	2	0	0	3	2	2	0	0	0
Without opioid	147	69	31	46	112	27	0	7	38	27	16	3	0	0

APAP with decongestant/antihistamine,														
Codeine	4	2	1	1	1	1	0	2	1	1	1	1	0	0
Dextromethorphan	264	153	61	48	213	38	0	13	64	63	45	7	0	0
Other opioid	9	3	2	4	6	2	0	1	4	2	4	1	0	0
Without opioid	202	87	68	39	123	75	0	4	85	43	28	19	3	0
APAP with decongestant/antihistamine,														
Codeine	46	30	6	10	38	6	0	2	18	12	9	0	0	0
Dextromethorphan	19,305	8,980	4,576	5,669	14,120	4,333	21	729	6,075	3,984	2,937	1,071	93	5
Other opioid	34	20	4	10	29	4	0	1	10	6	3	2	0	0
Without opioid	7,322	3,815	1,779	1,694	5,529	1,471	6	292	2,111	1,510	964	416	30	2
APAP dextromethorphan	231	102	74	53	183	39	0	9	63	55	34	8	1	0
Antihistamine/decongestant, with pheny														
Codeine	24	18	2	4	22	1	0	1	7	8	4	0	0	0
Dextromethorphan	787	614	103	70	708	58	0	18	151	210	124	26	2	0
Other opioid	56	39	6	11	48	4	0	4	22	18	11	2	0	0
Without opioid	864	648	135	77	775	67	0	21	178	227	108	31	3	0
Antihistamine/decongestant, without ph														
Codeine	1,524	865	323	331	1,297	158	2	63	358	410	233	42	3	0
Dextromethorphan	30,439	22,181	6,068	2,122	25,485	4,312	22	554	6,917	6,557	4,724	1,775	78	3
Other opioid	3,632	2,170	643	809	3,112	309	1	197	1,054	1,025	694	155	16	1
Without opioid	28,810	18,125	5,171	5,437	25,170	2,671	15	878	5,650	6,838	3,435	926	80	4
ASA with decongestant/antihistamine, w														
Codeine	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dextromethorphan	23	9	4	10	21	1	0	1	6	8	3	0	0	0
Other opioid	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Without opioid	39	10	15	14	23	13	0	3	14	8	4	5	1	0
ASA with decongestant/antihistamine, w														
Codeine	2	0	1	1	1	1	0	0	2	0	0	0	1	0
Dextromethorphan	10	9	0	1	9	0	0	1	3	2	1	0	0	0
Other opioid	1	1	0	0	1	0	0	0	0	0	0	0	0	0
Without opioid	80	20	35	25	32	40	0	7	49	18	19	13	3	0
ASA/ dextromethorphan	7	3	1	3	6	1	0	0	2	3	1	0	0	0
Expectorant/ antitussive	2,590	1,012	472	1,097	1,930	463	1	188	795	639	326	120	29	1
Non-ASA salicylates with antihistamine														

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Dextromethorphan	6	3	1	2	5	0	0	1	1	0	0	0	0	0
Other opioid	2	0	0	2	1	1	0	0	1	1	0	0	0	0
Without opioid	7	4	1	2	5	1	0	1	3	3	1	0	0	0
Non-ASA salicylates with antihistamine														
Dextromethorphan	8	7	1	0	7	1	0	0	2	1	0	1	0	0
Other opioid	6	2	1	3	1	5	0	0	4	0	2	0	0	0
Without opioid	13	6	3	4	7	3	0	3	5	2	2	0	0	0
Non-ASA salicylate/ dextromethorphan	18	15	0	3	17	0	0	1	2	5	3	0	0	0
Other dextromethorphan	13,227	7,269	3,304	2,621	10,505	2,272	12	396	3,080	2,427	1,675	798	43	4
Other phenylpropanolamine	277	119	14	138	263	11	0	3	34	70	17	7	1	0
Other	4,759	3,510	699	536	4,333	270	2	143	743	1,262	520	101	10	1
Unknown	1,104	361	411	314	508	510	7	57	676	176	248	134	12	0
Category total	116,084	70,398	24,055	21,257	94,811	17,200	89	3,609	28,279	25,667	16,234	5,669	409	21
Diagnostic agents														
Clinitest/acetest	1	0	0	1	0	0	0	1	0	0	1	0	0	0
Other	597	127	40	417	492	8	0	96	255	87	125	44	6	2
Unknown	20	4	3	12	15	2	0	2	7	1	4	0	0	0
Category total	618	131	43	430	507	10	0	99	262	88	130	44	6	2
Dietary supplements/herbals/homeopathic														
Amino acids														
Creatine	232	81	50	97	132	44	1	51	92	41	35	29	4	0
Other amino acid dietary supplement	514	244	70	197	364	59	0	86	150	93	58	26	3	0
Cultural medicines														
Ayurvedic	16	4	2	10	7	0	0	1	11	11	1	1	0	0
Asian	110	53	8	49	81	7	1	20	57	26	18	19	2	1
Hispanic	12	7	0	5	7	3	0	2	8	5	0	4	0	0
Other	30	9	4	17	16	7	0	6	18	6	9	3	0	0
Botanical products														
Blue cohosh	2	2	0	0	2	0	0	0	0	0	0	0	0	0
Ginkgo biloba	185	100	23	61	137	26	0	21	64	50	21	10	1	0

Echinacea	483	346	68	67	431	16	0	33	55	121	23	8	1	0
Ginseng	248	106	45	94	153	52	0	41	102	50	43	19	1	0
Kava kava	66	14	11	41	27	29	0	9	36	19	11	7	2	1
Ma huang/ ephedra (single ingredient)	701	278	106	308	367	248	1	73	411	189	116	102	7	1
Citrus aurantium (single ingredient)	14	1	5	8	8	1	0	5	6	0	3	5	0	0
St. John’s wort	203	95	37	70	135	39	3	25	79	56	24	10	1	1
Valerian	218	51	24	140	109	76	0	29	102	48	29	20	3	1
Yohimbe	201	24	24	153	79	49	3	68	130	29	37	49	3	0
Multi-botanical with ma huang	2,118	711	470	913	1,022	786	2	287	1,208	442	469	311	14	0
Multi-botanical without ma huang or	2,735	1,127	495	1,102	1,538	642	9	522	1,212	547	541	302	17	0
Multi-botanical with citrus aurantiu	299	70	69	157	104	135	0	58	193	56	75	59	6	0
Other single ingredient botanical	2,179	1,140	202	819	1,641	182	6	332	513	402	238	93	9	0
Homeopathic	7,049	6,332	245	451	6,686	178	1	178	564	1,930	192	66	7	2
Hormonal products														
Androgen/ precursor (dietary suppleme	99	39	18	42	58	18	1	21	41	25	6	15	1	0
Phytoestrogen	133	57	10	65	89	15	0	28	45	19	23	10	2	0
Glandular	62	38	7	17	49	3	0	10	13	11	4	2	0	0
Melatonin	2,001	1,109	419	458	1,488	439	7	53	535	468	253	54	9	4
Other dietary supplements														
Blue-green algae	102	30	17	55	98	0	0	4	11	6	24	5	0	1
Glucosamine (with or without chondro	813	518	35	259	705	38	0	65	108	205	45	15	1	1
Other single ingredient non-botanica	646	367	49	228	487	61	3	85	144	130	59	34	3	0

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Dietary supplement/ homeopathic: unknow	2,298	1,184	363	736	1,554	362	3	352	797	463	264	198	14	0
Category total	23,769	14,137	2,876	6,619	17,574	3,515	41	2,465	6,705	5,448	2,621	1,476	111	13
Diuretics														
Furosemide	3,313	1,118	185	2,001	2,791	405	0	92	1,347	1,002	348	300	68	3
Thiazide	4,617	1,427	350	2,830	3,589	845	3	149	1,691	1,291	415	392	66	11
Other	1,833	568	111	1,147	1,442	285	1	95	708	570	148	166	35	5
Unknown	90	32	9	48	58	24	1	5	46	23	15	8	1	0
Category total	9,853	3,145	655	6,026	7,880	1,559	5	341	3,792	2,886	926	866	170	19
Electrolytes and minerals														
Calcium	16,541	14,759	728	1,014	16,111	271	15	128	757	3,058	306	63	12	1
Chromium, trivalent	537	246	45	239	474	29	4	26	140	100	51	22	1	1
Colloidal silver	78	29	10	39	49	8	0	21	25	8	11	3	0	0
Fluoride	3,591	3,133	294	158	3,509	26	3	49	188	778	250	12	0	0
Geranium	1	1	0	0	1	0	0	0	0	0	0	0	0	0
Iron	3,638	1,952	456	1,207	2,866	586	2	169	1,276	982	436	177	27	3
Magnesium	1,286	475	149	648	1,024	148	13	94	273	241	179	48	4	2
Potassium	1,397	425	59	910	1,177	164	0	46	500	426	104	93	16	4
Selenium	19	5	2	12	16	1	0	1	5	3	5	0	0	0
Sodium	3,181	1,701	574	868	2,810	255	37	76	526	567	559	58	6	2
Vanadium	3	1	0	2	2	1	0	0	2	0	1	1	0	0
Zinc	1,110	634	118	349	977	49	1	81	98	200	112	14	1	0
Multi-mineral dietary supplement	210	144	19	44	177	9	1	21	33	37	19	4	0	0
Multi-mineral, multi-herbal dietary su	423	225	49	147	293	66	0	61	138	99	64	15	3	0
Other	64	20	10	34	55	2	0	7	15	8	11	5	0	0
Unknown	19	5	2	11	16	1	0	2	11	4	9	0	0	0
Category total	32,098	23,755	2,515	5,682	29,557	1,616	76	782	3,987	6,511	2,117	515	70	13

Eye/ear/nose/throat preparations														
Nasal preparations														
Tetrahydrozoline	65	47	4	13	57	0	4	3	26	29	8	5	1	0
Other decongestant	2,383	1,126	260	991	2,190	68	6	114	320	657	310	46	3	0
Other	582	354	31	193	557	7	0	17	36	105	75	8	0	0
Unknown	10	3	1	6	8	0	0	2	5	2	1	1	0	0
Ophthalmic preparations														
Contact lens product	3,344	1,583	334	1,414	3,269	28	9	35	648	377	796	156	1	0
Glaucoma therapy	255	92	9	153	220	5	0	27	59	58	27	13	3	0
Tetrahydrozoline	1,669	1,090	176	392	1,441	95	105	20	457	701	131	36	3	0
Other sympathomimetic	889	444	140	295	710	50	58	58	245	286	115	11	4	0
Other	1,546	829	153	552	1,424	27	7	83	162	226	156	34	5	1
Unknown	53	13	11	29	40	3	4	4	17	7	15	3	0	0
Otic preparations														
Combination product	2,454	1,186	310	941	2,421	6	3	23	250	429	759	36	0	0
Other	2,130	770	228	1,111	2,100	7	1	22	260	256	644	50	0	0
Unknown	71	21	18	30	70	0	1	0	10	12	24	1	0	0
Steroid, topical for eye/nose/throat	2,638	1,470	467	685	2,390	60	2	177	168	422	268	37	1	2
Throat preparations														
Lozenge without local anesthetic	1,039	856	90	91	987	32	1	18	38	182	41	3	0	0
Lozenge with local anesthetic	267	142	61	62	229	24	2	11	25	63	23	6	2	1
Other	459	201	94	160	405	46	1	6	82	132	69	9	0	0
Unknown	7	2	1	4	6	1	0	0	1	1	1	0	0	0
Category total	19,861	10,229	2,388	7,122	18,524	459	204	620	2,809	3,945	3,463	455	23	4
Gastrointestinal preparations														
Antacids														
Salicylate-containing	2,698	2,038	258	397	2,396	137	2	156	297	641	144	31	2	0
Proton pump inhibitor	8,333	3,613	608	4,080	6,718	1,175	7	383	2,197	2,084	714	431	107	11
Other	7,266	6,541	265	454	7,054	125	10	74	230	1,136	127	18	3	0
Antidiarrheals														

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Diphenoxylate/ atropine	441	158	49	230	258	145	0	28	310	138	83	62	20	2
Loperamide	1,191	711	86	390	947	161	1	71	407	440	111	57	11	2
Non-opioid	138	92	16	30	120	9	0	9	17	29	7	0	2	0
Paregoric	17	8	3	6	14	2	0	1	3	6	2	0	0	0
Other opioid	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Antispasmodics														
Anticholinergic	3,565	1,363	453	1,728	2,546	775	2	201	1,634	1,041	555	374	68	4
Other	99	35	13	51	56	34	1	5	61	33	13	15	4	1
Laxative	14,279	9,697	1,258	3,270	12,866	811	168	406	1,784	2,323	1,552	241	20	3
Other	10,920	8,428	511	1,943	9,858	656	4	367	1,573	2,286	549	371	58	6
Unknown	24	10	4	10	15	5	0	4	12	7	1	2	0	0
Category total	48,971	32,694	3,524	12,589	42,848	4,035	195	1,705	8,525	10,164	3,858	1,602	295	29
Hormones and hormone antagonists														
Androgen	384	101	42	238	216	117	2	43	167	53	54	47	7	1
Corticosteroid	9,254	4,621	1,046	3,533	7,781	609	5	820	1,441	1,552	612	266	39	5
Estrogen	2,063	1,215	127	713	1,784	188	1	73	409	488	112	69	18	3
Insulin	3,934	172	163	3,578	3,188	616	14	102	1,773	1,379	244	716	93	5
Oral contraceptive	8,883	7,331	762	757	8,180	520	14	160	792	1,629	296	47	6	1
Oral hypoglycemics														
Biguanide	4,680	1,093	344	3,223	3,540	947	1	161	2,060	1,563	418	431	102	17
Sulfonylurea	4,285	1,563	221	2,491	3,323	752	1	167	3,062	1,722	298	894	142	11
Thiazolidinedione	2,050	805	107	1,129	1,692	285	0	56	956	891	149	175	32	2
Other/unknown	506	212	28	264	427	55	1	20	308	237	39	60	12	1
Progestin	1,304	731	127	443	1,109	90	1	102	220	253	69	30	4	0
Selective estrogen receptor modulator	514	176	22	314	469	36	0	9	122	162	26	15	10	0
Thyroid preparation	11,149	5,300	761	5,037	9,872	1,038	3	201	2,506	2,503	535	428	107	11
Other hormone	820	260	214	344	670	79	1	64	247	234	94	44	3	3
Other hormone antagonist	609	219	53	331	505	72	0	29	134	150	35	17	2	0
Unknown hormone or antagonist	25	9	6	10	15	8	0	2	15	7	4	3	1	0

Category total	50,460	23,808	4,023	22,405	42,771	5,412	44	2,009	14,212	12,823	2,985	3,242	578	60
Miscellaneous drugs														
Allopurinol	575	230	23	321	487	60	0	24	188	180	37	41	4	1
Disulfiram	318	11	7	297	79	177	5	54	221	29	70	57	14	1
L-dopa and related drug	978	252	20	703	816	104	0	50	370	245	166	66	13	0
Ergot alkaloid	309	163	32	112	226	52	0	28	205	124	42	28	1	0
Methysergide	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuromuscular blocking agent	29	5	5	16	17	4	0	6	21	7	5	3	3	0
Nicotine pharmaceutical	1,024	437	91	493	727	109	3	178	279	262	175	51	1	0
Other	19,456	6,976	2,981	9,374	15,525	2,340	49	1,430	5,838	4,657	2,791	1,254	178	21
Category total	22,689	8,074	3,159	11,316	17,877	2,846	57	1,770	7,122	5,504	3,286	1,500	214	23
Muscle relaxants														
Carisoprodol (formulated alone)	8,337	347	795	7,097	1,475	6,519	10	153	7,264	921	2,757	1,896	503	18
Cyclobenzaprine	7,743	1,455	984	5,232	2,685	4,733	4	219	5,847	1,532	2,081	1,477	335	33
Methocarbamol	1,544	182	221	1,127	596	850	0	66	1,014	293	395	161	44	4
Other	5,708	888	674	4,097	2,309	2,973	4	292	3,986	1,107	1,220	1,158	330	20
Unknown	180	13	28	132	25	142	1	8	153	25	43	34	2	1
Category total	23,512	2,885	2,702	17,685	7,090	15,217	19	738	18,264	3,878	6,496	4,726	1,214	76
Narcotic antagonists														
Opioid antagonist	282	14	34	230	86	128	0	49	221	33	64	79	12	1
Radiopharmaceuticals														
Radiopharmaceutical	38	6	4	25	24	1	0	13	15	5	2	6	0	0
Sedative/hypnotics/antipsychotics														
Atypical antipsychotic	40,102	3,453	8,403	27,950	11,856	26,062	50	1,593	32,159	6,394	11,269	9,457	2,310	103
Barbiturates														
Long-acting	2,560	509	175	1,861	1,429	986	5	82	1,428	456	473	431	152	6
Short/ intermediate-acting	349	11	45	290	125	205	1	11	274	41	94	78	33	3
Unknown type	77	3	7	65	9	62	1	1	74	5	21	23	1	0
Benzodiazepine	67,593	6,831	6,881	53,121	15,971	48,766	325	1,404	54,953	10,781	21,538	11,907	3,018	243
Buspirone	1,844	206	247	1,380	717	1,019	0	79	1,246	431	411	280	77	3
Chloral hydrate	206	41	22	142	76	106	2	16	169	18	59	41	29	2
Ethchlorvynol	2	0	0	2	0	2	0	0	2	0	2	0	0	0
Glutethimide	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meprobamate	86	6	12	66	37	47	0	0	68	19	13	21	5	1

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Methaqualone	15	1	2	11	3	12	0	0	13	1	4	4	1	1
Phenothiazine	4,480	659	543	3,232	1,898	2,081	10	403	3,072	825	964	989	180	23
Sleep aid (OTC)	912	91	134	679	204	684	2	13	725	142	224	214	31	1
Other	16,585	1,220	2,361	12,830	4,356	11,293	18	671	12,827	2,282	5,605	2,835	608	28
Unknown	276	14	32	221	31	218	14	10	258	40	55	54	9	1
Category total	135,087	13,045	18,864	101,850	36,712	91,543	428	4,283	107,268	21,435	40,732	26,334	6,454	415
Serums, toxoids, vaccines														
Serum, toxoid, vaccine	2,426	619	286	1,475	1,791	11	2	613	731	222	503	115	11	0
Stimulants and street drugs														
Amphetamine	10,921	3,001	4,176	3,666	6,447	3,814	48	430	6,406	2,517	2,004	1,800	259	16
Amyl/butyl nitrite	76	6	4	66	35	37	0	3	40	7	17	16	4	2
Caffeine	4,656	992	1,691	1,933	1,929	2,246	19	419	2,345	575	1,175	723	22	0
Cocaine	7,077	110	761	6,101	519	6,307	63	34	6,682	757	1,499	2,214	701	124
Diet aids														
Phenylpropanolamine	47	22	5	20	38	7	0	1	18	13	5	4	1	0
Phenylpropanol amine and caffeine	12	5	2	5	8	2	0	2	2	4	1	0	0	0
Other: OTC	231	107	35	88	139	56	0	34	120	55	34	31	2	0
Other: Rx	133	51	17	63	81	39	0	13	70	50	16	16	3	0
Unknown	99	30	17	52	48	37	0	13	60	22	23	13	1	0
Ephedrine	1,134	356	148	619	511	560	3	42	706	228	233	212	14	1
GHB and analog/ precursor	554	1	90	450	74	276	165	9	469	17	97	173	81	1
Hallucinogenic amphetamine	1,842	30	693	1,061	180	1,498	116	10	1,605	90	357	546	89	6
Heroin	1,902	16	165	1,670	160	1,640	14	18	1,759	178	324	610	253	45
LSD	271	6	109	146	34	216	13	1	225	15	43	103	9	0
Marijuana	3,850	141	1,591	2,062	426	3,206	75	70	3,291	370	1,040	1,120	208	30
Mescaline/peyote	102	19	25	54	58	42	0	1	48	6	24	17	3	1
Methamphetamine	3,456	145	542	2,683	467	2,784	69	39	3,066	218	635	1,062	207	37
Methylphenidate	8,534	1,683	5,051	1,769	6,157	2,028	13	264	3,661	2,054	1,419	937	88	0
Phencyclidine	662	22	123	507	103	516	18	4	607	43	150	225	60	2
Phenylpropanola mine look-alike drug	1	0	0	1	1	0	0	0	0	0	0	0	0	0
Other stimulant	61	8	9	39	25	28	1	6	38	8	12	12	4	0

Other hallucinogen	36	1	16	18	3	30	1	1	33	2	5	17	3	0
Unknown hallucinogen	17	0	9	8	3	11	3	0	15	0	5	9	0	0
Other stimulant/ street drug	29	2	8	18	6	22	0	0	20	4	9	11	0	0
Unknown stimulant/street drug	213	7	67	132	30	146	20	9	179	9	39	52	8	2
Category total	45,916	6,761	15,354	23,231	17,482	25,548	641	1,423	31,465	7,242	9,166	9,923	2,020	267
Topical preparations														
Acne preparation	3,400	2,000	649	734	3,154	60	4	180	241	633	403	33	1	0
Boric acid/borate	78	42	4	32	75	1	0	2	9	27	0	2	0	0
Calamine	3,413	2,547	141	713	3,376	20	1	13	137	570	152	7	0	0
Camphor	10,502	8,326	550	1,589	10,246	161	15	70	1,104	2,990	1,385	89	8	0
Camphor/methyl salicylate	2,130	1,882	72	174	2,103	10	1	15	231	682	289	12	0	0
Diaper care/rash product	49,080	47,288	682	979	48,994	38	8	30	521	6,651	788	21	1	0
Hexachlorophene antiseptic	54	25	4	25	51	2	0	1	11	9	10	0	0	0
Hydrogen peroxide	6,638	2,531	576	3,501	6,478	116	20	21	365	640	681	25	0	1
Iodine or iodide antiseptic	1,515	468	276	741	1,232	181	11	75	416	339	288	59	7	1
Mercury antiseptic	185	128	8	48	163	9	0	10	33	44	19	1	1	0
Methyl salicylate	9,603	7,500	602	1,457	9,388	73	31	101	776	2,179	1,639	71	1	1
Minoxidil	162	71	5	85	152	2	0	8	36	56	21	7	0	0
Podophyllin	60	15	13	30	46	6	1	7	23	10	9	7	0	0
Silver nitrate	311	69	132	104	287	7	2	13	45	36	52	14	0	0
Topical steroid	9,770	7,273	515	1,957	9,619	34	3	109	221	1,373	350	19	0	0
Wart preparation	1,523	933	195	389	1,423	28	8	61	212	328	245	55	2	0
Topical steroid with antibiotic	1,623	972	165	478	1,578	12	0	33	92	257	243	19	0	0
Other liniment	2,360	1,187	173	989	2,045	24	2	287	176	338	557	29	1	0
Other topical antiseptic	7,424	5,602	782	1,017	7,155	153	67	42	429	1,736	692	57	1	0
Category total	109,831	88,859	5,544	15,042	107,565	937	174	1,078	5,078	18,898	7,823	527	23	3
Veterinary drugs														
Veterinary drug	3,275	1,185	253	1,816	3,139	72	11	50	458	839	508	77	6	0

Continued

TABLE 22
(Continued)

	No. of exposures	Age			Reason				Treated in health care facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Vitamins														
Multiple vitamin Tablets: adult formul														
No iron, no fluoride	2,700	1,711	230	751	2,312	237	2	137	446	631	169	59	8	0
With iron, no fluoride	7,458	5,228	530	1,675	6,755	542	4	148	1,153	1,970	359	86	5	0
With iron carbonyl (no fluoride)	166	121	15	30	157	4	0	4	19	50	6	1	0	0
With iron, with fluoride	66	46	4	16	58	5	0	3	9	21	4	0	0	0
No iron, with fluoride	48	34	2	12	43	3	1	1	6	6	2	2	0	0
Multiple vitamin Tablets: pediatric fo														
No iron, no fluoride	14,454	12,120	2,208	92	14,138	284	6	15	432	2,750	203	3	0	0
With iron, no fluoride	18,308	16,559	1,604	126	18,020	242	5	30	1,391	4,387	683	29	6	0
With iron carbonyl (no fluoride)	51	44	5	2	48	2	0	1	7	13	2	1	0	0
With iron, with fluoride	113	105	7	0	113	0	0	0	7	16	4	1	0	0
No iron, with fluoride	1,378	1,299	68	7	1,366	9	1	0	45	242	20	1	0	0
Multiple vitamin liquids: adult formul														
No iron, no fluoride	152	80	22	50	126	18	0	8	27	35	11	3	0	0
With iron, no fluoride	186	103	24	59	157	19	1	9	37	37	12	5	1	0
With iron, with fluoride	3	1	1	1	2	0	0	1	1	1	0	0	0	0
No iron, with fluoride	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Multiple vitamin liquids: pediatric fo														
No iron, no fluoride	439	416	13	7	429	3	0	7	19	64	24	3	1	0
With iron, no fluoride	706	672	26	6	693	5	0	8	60	172	30	1	0	0
With iron, with fluoride	32	32	0	0	30	1	0	1	2	1	2	0	0	0
No iron, with fluoride	443	439	3	1	443	0	0	0	14	72	5	0	0	0
Multiple vitamins, unspecified adult f														
No iron, no fluoride	60	31	6	21	54	5	0	1	13	15	1	0	0	0
With iron, no fluoride	2,143	1,492	162	480	1,930	169	1	41	386	593	121	36	6	0
With iron, with fluoride	12	8	0	4	9	2	0	1	4	2	0	0	0	0
No iron, with fluoride	8	7	0	1	7	1	0	0	1	0	1	0	0	0
Multiple vitamins, unspecified pediatr														
No iron, no fluoride	234	180	54	0	220	11	0	3	12	37	4	0	0	0
With iron, no fluoride	192	169	21	2	188	1	0	3	19	44	9	0	0	0
With iron, with fluoride	18	17	1	0	18	0	0	0	2	9	0	0	0	0
No iron, with fluoride	49	45	4	0	49	0	0	0	1	12	2	0	0	0
Other vitamins														
Vitamin A	641	471	51	114	597	23	2	17	73	129	21	13	1	0
Niacin (B3)	3,109	731	439	1,915	1,584	393	10	1,114	627	202	971	117	12	0
Pyridoxine (B6)	391	238	44	106	303	62	0	25	101	97	23	9	10	0
Other B complex vitamins	3,343	2,327	168	837	2,949	257	0	129	564	736	174	91	18	0
Vitamin C	2,324	1,727	242	349	2,101	149	1	68	220	485	130	19	2	0
Vitamin D	369	173	21	172	305	15	0	46	86	78	28	12	0	0
Vitamin E	1,292	984	78	227	1,196	51	2	41	151	324	56	9	1	0
Other	621	386	69	163	518	52	1	47	154	145	51	19	0	0
Unknown	937	608	118	202	776	126	1	29	233	278	58	20	2	1
Category total	62,446	48,604	6,240	7,428	57,694	2,691	38	1,938	6,322	13,654	3,186	540	73	1

Continued

TABLE 22
(Continued)

		Age			Reason				Treated in health care facility	Outcome				
	No. of exposures	<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Unknown drug														
Unknown drug	17,418	4,445	3,659	8,822	7,647	6,538	1,092	905	12,585	3,123	2,706	2,369	726	72
Total no. of pharmaceuticals	1,412,834	587,974	210,110	605,485	928,741	412,232	3,753	55,599	584,615	302,419	210,495	129,026	29,171	2,598
% of pharmaceuticals	–	41.6%	14.9%	42.9%	65.7%	29.2%	0.3%	3.9%	41.4%	21.4%	14.9%	9.1%	2.1%	0.2%
% of all substances	51%	21.3%	7.6%	21.9%	33.6%	14.9%	0.1%	2.0%	21.1%	10.9%	7.6%	4.7%	1.1%	0.1%

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APPENDIX A

AAPCC's 2005 fatality verification process involved the preparation and review of abstracts on 1,589 fatalities reported to poison centers, 328 of which were eventually determined to be either unrelated to a poison exposure or coded incorrectly as a death. The review process requires the dedication and commitment of hundreds of poison center staff members; more than could possibly be listed here. The following fatality abstract authors were identified by their poison centers as having made a major contribution to this effort. These individuals are acknowledged for their commitment to toxicosurveillance through the careful verification and preparation of clinical abstracts of poisoning cases. Without the dedicated contributions of these individuals, this report would not be possible.

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APPENDIX B

Abstracts of select cases from 1,261 human fatalities thought to be related to a poisoning exposure as reported to U.S. Poison Control Centers in 2005. Drug and chemical concentrations provided in these abstracts were measured in blood, serum or plasma unless otherwise indicated.

Case 35. A 51-year-old man was arrested for driving "under the influence" and indecent exposure and jailed. He reported that he had ingested antifreeze (ethylene glycol). The patient became short of breath and obtunded while in jail. Upon arrival in the ED, the patient was comatose and being bag ventilated. His vital signs were: heart rate, 90 beats/min; blood pressure, 70/50 mm HG; temperature, 94.5 °F rectally. He was intubated. An initial arterial pH was 6.7. The patient received warm intravenous fluids, sodium bicarbonate, and calcium gluconate. His blood pressure rose to 105/50 mm Hg. His initial laboratory values were: glucose, 170 mg/dL; BUN, 19 mg/dL; creatinine, 2.3 mg/dL; sodium, 147 mEq/L; potassium, 6.9 mEq/L; chloride, 101 mEq/L; bicarbonate, <5 mEq/L; AST, 22 U/L; ALT, 15 U/L; and blood alcohol, undetected. He received thiamine, folate, pyridoxine, vasopressors, and was hemodialyzed. The patient's metabolic acidosis and hypotension resolved following hemodialysis; however his neurologic status never improved and life support was withdrawn.

Case 53. An 18-month-old boy ingested two button cell disc batteries that he found in the trash. He vomited for one day, but his symptoms were attributed to a respiratory illness in the family who were unaware of the battery ingestion. When he was seen in the ED for persistent symptoms, an x-ray showed one battery in the esophagus and one battery in the stomach. After a delay of several hours, the child was transferred to another hospital where both batteries were removed. The child was admitted for four days and a barium swallow done during the admission showed no perforation but an undefined esophageal deviation. On discharge the child had a fever and was sent home on an antibiotic and medication for acid reflux. On the fourth home day the child woke cyanotic. On readmission he had a high white blood cell count and was in shock. He died later that day. The death certificate listed the cause of death as aortoesophageal corrosive ulcer.

Case 54. A 55-year-old man was bitten on the hand by an Eastern diamondback rattlesnake (*Crotalus adamanteus*). He immediately began experiencing shortness of breath. His son described his father having trouble breathing and unable to talk. Upon presentation in the ED he was hypotensive, diaphoretic, and had ectopy on his monitor. The swelling was onto his forearm. He was given 4 vials of antivenom (Crotalidae polyvalent immune Fab), as well as amiodarone, with reported clinical improvement. Laboratory values were: PT, 17 sec; INR, 1.7; and platelet count, 109, 000 /μL At followup, approximately 27 hours after presentation, 16 vials of antivenom had been given. Laboratory values at that time showed a PT of 20 sec with an INR of 2, and a fibrinogen level of 195 mg/dL. On the 6th hospitalized day, he showed signs of recurrent coagulopathy with the following laboratory values: platelet count, 93,000 /μL; fibrinogen, < 35 mg/dL; and PT and PTT both > 150 sec. It was unclear whether blood products or additional antivenom were given. He was transferred back to the ICU, but later that day he developed neurological deficits and subsequently became unresponsive. A head CT showed a hemorrhage. He died the following day.

Case 55. A 25-year-old man reportedly told his family that he had been bitten by a rattlesnake (*Crotalus horridus horridus*). He was being driven to a rural hospital when the car had a flat tire. The patient reportedly became unconscious and was taken on to the hospital by a passing motorist. By the time he got to the ED he was dead. An autopsy revealed an apparent bite mark on the back of the right hand, associated with hemorrhagic necrosis of the underlying soft tissue. A heart blood ethanol level was 290 mg/dL. It was the opinion of the pathologist that the probable cause of death was a snake bite.

Case 56. The poison center was informed about a 44-year-old man who was stung on the temple by an unknown hymenoptera. He reportedly waited several hours to seek medical attention. He was eventually declared brain dead. The medical examiner confirmed that death was due to an anaphylactic reaction to the sting.

Case 57. A 32-year-old man presented in the ED following a rattlesnake bite. He reportedly had a respiratory arrest about 10 minutes after the bite and arrived in the ED 10 minutes later. In the ED his pupils were fixed and dilated. Antivenom was administered after initial fluid resuscitative measures were taken. Oxygen saturation returned to 98% and blood pressure stabilized. He was transferred to a tertiary-care facility where his PT and PTT were slightly prolonged and his platelet count was 120,000/μL. Additional antivenom was administered. His neurologic status throughout hospitalization suggested anoxic brain injury, confirmed by head CT and EEG. The patient died on the 4th hospital day, apparently of anoxic brain injury following an anaphylactic reaction to a snakebite. Further history revealed that he had been bitten several times in the past.

Case 60. A 44-year-old man saw a 4-foot long snake (presumed Crotaline) and chased it into a wooded ravine in an attempt to catch it. His body was found two days later. Autopsy examination showed four puncture marks on the first dorsal web space of his right hand with swelling, discoloration, and cellular/tissue lysis of the surrounding muscle and tissue. Marked edema of the larynx, epiglottis, and surrounding upper airway tissues was noted as well. A blood ethanol level was 120 mg/dL.

Case 62. A 19-year-old woman with a history of depression was found slumped over a bathtub after a suspected ammonia and bleach ingestion, followed by aspiration. EMS performed cardioversion and endotracheal intubation prior to arrival in the ED. A urine drug screen was negative for drugs of abuse. The patient was supported on the ventilator and high dose vasopressors, but remained hemodynamically unstable and unresponsive. She suffered a cardiac arrest on hospital day 2 and did not respond to resuscitation attempts.

Case 63. A 23-year-old college student dropped out of class, acquired some sodium cyanide, e-mailed a suicide note to a relative, mixed the cyanide with a liquid and drank it. He was found dead three days later, shortly after the e-mail message was read. The postmortem blood cyanide level was reported as >10 μg/mL.

Case 66. A 55-year-old man ingested a white powdery substance while being arrested. He stated that it was potassium cyanide and that he was going to die. He was transported to a small rural hospital, where he presented in respiratory distress 15 minutes after ingestion. He had palpable pulses but no detectable blood pressure. He was intubated, started on vasopressors and given sodium bicarbonate. He then went into PEA and CPR was started. The hospital did not have a cyanide antidote kit in stock. They had called a flight evacuation service which arrived with a cyanide antidote kit 45 minutes postingestion. Aggressive supportive care and the delayed cyanide antidote were unsuccessful and the patient was declared dead.

Case 85. A 24-year-old man was found unresponsive after reportedly ingesting 6 ounces of an embalming fluid containing formaldehyde and methanol. In the ED the patient was asystolic and could not be resuscitated. Postmortem examination revealed complete tissue fixation of the upper gastrointestinal tract up to the pylorus and mesenteric areas adjacent to stomach. Postmortem methanol levels were 43 mg/dL in the blood and 36 mg/dL in vitreous fluid.

Case 87. A 58-year-old man with a past history of morbid obesity and extensive coronary artery disease presented in the ED after unintentionally ingesting a mouthful of a "truck cleaner" inappropriately stored in a drinking water bottle. Hydrofluoric acid ingestion was suspected. He presented with extensive retching and intense burning in his throat, chest, and abdomen. Initial calcium was 9.0 mg/dL. About 2 hours later he went into torsade de pointes followed by ventricular fibrillation. Calcium was then 5.2 mg/dL. Calcium and magnesium were administered and he was defibrillated. He did not respond and died approximately 4.5 hours later. Postmortem examination revealed that this combination product contained unknown concentrations of hydrofluoric, sulfuric, and phosphoric acids in a container labeled as a commercial brand of drinking water. No gross evidence of acid-related injury to the gastric mucosa was present. However, microscopic examination revealed patchy mucosal erosions and areas of hemorrhage in the stomach.

Case 88. Fifteen people became ill after coming to work at a plant that stores cylinders of methyl bromide gas. The employees were all attending a meeting when they developed vomiting, diarrhea, and eye irritation. All were seen at an ED and fourteen of the fifteen were discharged. All of the employees had methyl bromide present in blood samples taken in the ED. One adult with a history of unspecified underlying medical conditions came to work 2.5 hours before the meeting and was already feeling ill at the time the meeting started. About 30 minutes later, he became paralyzed although he remained awake and alert. On arrival in the ED, he had a seizure that was controlled with medication. He was admitted to the hospital and died about 10 hours later. Later on the day of the meeting, the canisters of methyl bromide stored at the plant were examined and three of them were found empty or partially empty. No air levels of bromine were measurable. A water cooler that pulls air into the inverted container as water is used was in the area of the meeting and was used to make coffee about an hour before the meeting, pulling room air into the inverted large bottle. The bottle was sealed and tested, and the air in the bottle was found to contain methyl bromide. The fatality was believed to have been caused by a combination of effects from the methyl bromide and the man's underlying medical condition(s).

Case 97. An 83-year-old woman with Alzheimer's disease ingested an estimated 8 ounces of a liquid dishwashing detergent (anionic/nonionic). She was lavaged and given intravenous fluids in the ED. The patient aspirated and, within 4–5 hours of ingestion, was intubated and transferred to the ICU for respiratory failure. The patient experienced renal failure, elevated liver enzymes, and at least one seizure. The patient continued to require ventilatory support and dopamine. She had a cardiac arrest approximately 16 hours after exposure and could not be resuscitated.

Case 98. An 85-year-old man with a medical history of "confusion" reportedly ingested 400 mL of a liquid dishwashing detergent (anionic/nonionic). The patient developed profuse watery diarrhea with hourly stools. Initial laboratory values were normal. Over the next 24 hours he reportedly had approximately 10 liters of stool. He also apparently developed a bowel obstruction with vomiting of fecal-like material. In spite of fluid replacement and supportive care the patient died about 30 hours after presentation.

Case 111. A 90-year-old woman with a history of dementia was witnessed to drink a few swallows of a cleaner containing pine oil/isopropyl alcohol cleaner, thinking it was Gatorade™.

She began vomiting. EMS was called. She became asystolic en route to the hospital. In the ED she underwent a prolonged resuscitation. Supportive care was withdrawn later that day by the family and she died.

Case 112. A 102-year-old woman with do not resuscitate orders presented to an ED smelling of a pine oil/isopropyl alcohol cleaning product, which she had reportedly ingested. She was responsive only to pain. Her vital signs were: heart rate, 84 beats/min; blood pressure, 110/54 mm Hg; respiratory rate, 24 breaths/min; oral temperature, 97.8 °F; pulse oximetry, 100% on 2L of oxygen. Her initial chest x-ray was clear. Seventeen hours after her exposure she was awake and alert with stable vital signs and scattered rhonchi on her pulmonary examination. Her respiratory status continued to decline and she died due to respiratory failure at 37 hours after her exposure.

Case 117. A 48-year-old man presented in the ED after unintentionally ingesting a wheel cleaner containing hydrofluoric acid. The wheel cleaner had been placed in a drink container. Presenting symptoms included vomiting, drooling and pharnygeal erythema. The patient was intubated, sedated and received intravenous calcium, magnesium, sodium bicarbonate, and fluids. Laboratory values approximately 2 hours post ingestion included: potassium, 3.1mEq/L; calcium, 6.3 mg/dL; magnesium, 1.6 mg/dL; hemoglobin, 4 g/dL (decreased from an initial value of 14.4 g/dL); pH, 7.24; and creatinine, 1.3 mg/dL. Despite supportive care, the patient developed refractory hypotension and then cardiac arrest approximately 5 hours after the ingestion. Resuscitation was unsuccessful.

Case 123. A 26-year-old woman was found in Pulseless Electrical Activity (PEA) with a bottle of holding tank sealer and deodorant, approximately half of which was gone. Unfortunately, during the course of case management, the exact identity of what the patient ingested was unclear. The bottle from which the chemical was ingested was lost within the hospital. She was treated with supportive care and 4-methylpyrazole because of the possibility that the product contained methanol. The patient remained acidotic and developed a coagulopathy and bleeding diathesis. Less than 24 hours into the hospitalization, she coded and could not be resuscitated. The pathologist determined that the product the patient ingested was 10–15% methanol and 20–25% formaldehyde.

Case 124. A 27-year-old man presented in the ED with altered mental status. The patient was intubated and sedated. Initial vital signs were: blood pressure, 150/90 mm Hg; heart rate, 91beats/min; respiratory rate, 18 breaths/min; temperature, 98.2°F; and oxygen saturation of 100% on a ventilator. Initial laboratory values were: sodium, 104 mEq/L; potassium, 2.8 mEq/L; chloride, 65 mEq/L; bicarbonate, 26 mEq/L; glucose, 111mg/dL; AST, 150 U/L; ALT, 114 U/L; creatine kinase, 2632 U/L. EKG, chest X-ray and CT of the head were all normal. The patient was started on 3% saline. The history obtained from the patient's sister was that he was a recent immigrant from El Salvador who was apparently healthy until three weeks prior when the patient went to see a "Curandera" for abdominal pain. He was given "Aceite de Resina" and one week later was given "Te de Medianoche." One week later, the patient was seen by a primary care physician and was prescribed trimethoprim-sulfamethoxazole. The "Aceite de Resina" container had been disposed of but the "Te de Medianoche" container had been brought in and the active ingredients were Menta – Satureja macrostema, Poleo – Mentha pulegium, Hierva de San Juan – Hypericum perforatum 330 GRF, and Melisa – Citronella mexicana 30 GRF. The morning after the admission Mentha pulegium was identified as pennyroyal. The patient was started on N-acetylcysteine. Liver enzymes returned to normal within four days of admission. The patient remained comatose on pressors and sedation. Two weeks into his course he developed bilateral pneumothoraces requiring chest tube placement. By three weeks after admission the patient was unresponsive to any stimuli. An EEG showed minimal brain activity. Twenty-nine days after admission the patient was removed from life support and died.

Case 125. An 82-year-old man with dementia developed slurred speech and weakness. Four days prior the patient had eaten home-canned food of unknown shelf life. The following day, the patient's speech was slurred. The patient ultimately was taken to the ED where he had minimal movement and was intubated. He was able to wiggle fingers and toes. By hospital day 1, he was only able to wiggle his toes and by the end of the night, the patient was completely paralyzed. On hospital day 4 he had a negative spinal tap and there was concern for botulism. Botulinum immune globulin was sent from the CDC and testing was started for botulism. By hospital day 6, the patient's respiratory rate had increased. On Hospital Day 13, testing came back positive for botulism type B. The patient did receive botulinum immune globulin. The patient started to improve and then decompensated again and ultimately died.

Case 126. A 67-year-old woman was admitted to the hospital with nausea, vomiting, diarrhea and right upper quadrant pain. The patient also had jaundice and hemolysis. Blood cultures grew a heavy growth of Clostridium perfringens the day after the patient died.

Cases 127, 142, and 147. A 3-year-old girl died of carbon monoxide poisoning. A family member committed suicide by running his automobile in an attached garage, killing other family members.

Cases 129, 130, 139, and 140. A family of four, including two 8-year-old children, was found dead in a bedroom. They had been dead for several days. The father had sealed the family in the bedroom and started charcoal fires while they slept. He left a suicide note. The ambient carbon monoxide level was 71 ppm.

Case 131. An 11-year-old boy was found unresponsive and apneic in an idling automobile that was covered in ~2 feet of snow from a recent blizzard. He was last seen 3 hours earlier. He was transported to the nearest ED by EMS, but had a cardiac arrest en route. Carbon monoxide was suspected and a

carboxyhemoglobin level drawn upon ED arrival was 54%. CPR was unsuccessful and the patient died.

Case 186. A 28-year-old train engineer presented to an ED following a train wreck where a chlorine tank car ruptured, releasing a cloud of chlorine gas into the environment. The patient inhaled the chlorine and presented to the hospital in respiratory distress. He was intubated but, despite aggressive pulmonary care, the patient's respiratory status worsened and he died.

Case 188. A 57-year-old man with a history of chronic depression and multiple suicide attempts was found unconscious by his sister with a bag over his head attached to a helium cylinder. A book on "methods of suicide" was lying beside him. Upon EMS arrival, the patient was in full cardiopulmonary arrest. The patient responded to CPR and was admitted to the ICU. Eighteen hours after presentation the family decided to withdraw support, he was declared brain dead and became an organ donor.

Cases 189 and 190. Two men, aged 41 and 56 years, were found unconscious in an underground sewer. They were successfully resuscitated by EMS, admitted to the ICU and treated with hyperbaric oxygen. Initial carboxyhemoglobin and methemoglobin levels were both <1%. Neither patient regained consciousness and both were declared dead within 24 hours of admission. The cause of death was thought to be hydrogen sulfide.

Cases 192, 193, and 194. Three workers on a cruise ship entered a room to clean up a sewage leak. All three were later found in cardiopulmonary arrest and pronounced dead prior to hospital transport. The toxin was subsequently identified as hydrogen sulfide through environmental monitoring by a hazardous materials team. Nineteen other persons were exposed but survived.

Case 198. A 37-year-old man was found dead with a respirator mask connected to tank of chlorofluorocarbon over his face. The man worked for a HVAC company and had easy access to the chlorofluorocarbon. Death was ruled an accident by the coroner.

Case 203. A 15-month-old girl was found in the garage by her father vomiting and in respiratory distress. EMS was called and found the child vomiting, blue and with the odor of gasoline. The child was intubated and transported to the ED. The child's condition rapidly worsened, with evidence on sequential chest X-rays of worsening bilateral infiltrates. Prior to a transport flight to a tertiary healthcare facility, the child suffered a cardiopulmonary arrest and could not be resuscitated.

Case 205. A 61-year-old man was brought to the hospital with burns over approximately 20% of his body. There were conflicting stories as to the cause. It was thought that he had fallen asleep in front of a kerosene stove, but after he had been in the hospital 2 days he passed some kerosene-like fluid from his rectum and it was suggested that he might have ingested kerosene and self-inflicted the burn. He had multiple complications including renal failure and pneumonia with ARDS, requiring intubation and assisted ventilation. He died one week after admission.

Case 206. A 2-year-old boy ingested an unknown amount of cigarette lighter fluid (naptha) with resultant cough. When the poison center was contacted the child was enroute to the hospital and receiving CPR. An x-ray in the ED showed complete opacification of both lungs. The child died shortly after arriving in the ED.

Case 207. A 56-year-old previously healthy man picked and ate mushrooms. Approximately 8 hours later he developed nausea, abdominal cramps, vomiting and diarrhea. Over the next several hours he became progressively worse and finally presented to the ED approximately 19 hours post ingestion. He was treated with IV fluids. Laboratory investigation at that time revealed AST 39 U/L, ALT 59 U/L, INR 0.94, BUN 22 mg/dL, and serum creatinine 1.0 mg/dL. A preliminary description of the mushrooms could not rule out Amanita species so multi-dose activated charcoal was recommended while awaiting definitive identification. By the following morning AST was 201 U/L, ALT 243 U/L and the mushroom was identified as *Amanita bisporigera*. N-acetylcysteine, high dose penicillin, ascorbic acid, and cimetidine were recommended as further therapies that might potentially decrease toxicity. Despite this treatment he developed fulminant hepatic failure and renal failure. He was transferred to a transplant center for possible liver transplantation. He remained encephalopathic, coagulopathic, and anuric and developed atrial fibrillation and hypotension. He died 4 days post ingestion.

Case 208. A 56-year-old Laotian man picked wild mushrooms in the forest and cooked them for himself the day prior to admission. He presented to an urgent care center with nausea, vomiting and diarrhea. He received metoclopromide and promethazine in addition to IV fluids. Laboratory measures of hepatic and renal function were normal but he was admitted to the hospital. The mushroom was identified as an *Amanita bisporigera* on the basis of questioning of the patient by a mycologist. On the second day his liver enzymes were mildly elevated. The patient and his family declined to be listed for an urgent liver transplant. Laboratory values on day 3 were: INR, 5; AST, 6262 U/L; ALT, 4770 U/L; ammonia, 92 μmol/L; and pH, 7.45. The patient remained awake and alert but complained of generalized abdominal pain. By hospital day 6 the patient was delirious. By day 7 the patient was comatose and was intubated. His liver enzymes began to decline but his INR and bilirubin were rising. The patient started to regain consciousness on hospital day 13 but his bilirubin continued to rise, peaking at 28.4 mg/dL on day 15. The patient was extubated and gradually became more responsive, asking for food. He was discharged from the hospital after 21 days with a follow-up visit scheduled for the toxicology clinic in about 3 weeks. He did not come to that appointment and two days later was readmitted to the hospital with the diagnosis of ongoing liver failure and sepsis. The patient died from sepsis (E. coli in

femoral catheter and mold in sputum) about two months after his initial ingestion.

Case 210. A 15-year-old girl ingested approximately 5 pellets (by patient history) of aluminum phosphide in a stated suicide attempt. It is unclear how the patient obtained this product. She presented in the ED approximately 45 minutes post ingestion with confusion, bradycardia, diaphoresis, cyanosis, mydriasis, hypereflexia, and incontinence. The patient was intubated, given activated charcoal and then lavaged. Approximately 2 hours post ingestion she became hypotensive and vasopressors were started. The patient then developed PEA, was coded and died.

Case 211. A 20-year-old man was traveling inside a rice-filled railcar for 6 hours. The patient developed severe respiratory distress within hours of leaving the railcar, which had been fumigated with aluminum phosphide tablets. He was awake, hypotensive, hypothermic, and acidemic upon arrival in the ED. The patient was intubated, started on vasopressors and transferred to the ICU. He developed worsening pulmonary edema and renal failure and received emergent hemodialysis. An echocardiogram revealed an ejection fraction of 10%. The patient suffered two episodes of cardiac arrest roughly 16 hours from admission, the second from which he could not be resuscitated. Autopsy revealed pulmonary congestion, but otherwise normal organs on gross inspection. The cause of death was judged to be sudden cardiac arrest due to phosphine exposure.

Case 212. A local newspaper reported the death of an 81-year-old woman who died one day following exposure to phosphine gas. A phosphide pesticide was apparently added to her apartment building's water softener brine tank. Several other residents also became ill. A follow-up newspaper article reported the conviction, with a 20-year prison sentence, of the assailant who pleaded guilty to first degree manslaughter.

Case 213. A 37-year-old woman was in a building that was being fumigated with sulfuryl fluoride. She stated that she woke up and escaped the building. She was transported to a local ED, where she was hypotensive (74/48 mm Hg), tachycardic (105 beats/min), and tachypneic (22 breaths/min). She was given intravenous fluids and 2 ampules of calcium gluconate with an improvement in her blood pressure. She was complaining of cough, nausea, and eye irritation. Her initial EKG showed a prolonged QTc. Ninety minutes after presentation, she developed torsades de pointes, followed by ventricular fibrillation and finally suffered an asystolic arrest. During the unsuccessful resuscitation attempt, she received 6 ampules of calcium chloride, 4 grams of magnesium sulfate, and 4 ampules of sodium bicarbonate. Her serum calcium at the time of presentation was 5.3 mEq/L, while her serum potassium just prior to her death was 4.5 mEq/L.

Case 214. A 40-year-old man presented with complaints of blurred vision, sore throat, vomiting, abdominal pain, and lightheadedness. He reported that he had ingested half a bottle of diquat dibromide 48 hours earlier. Neither the volume nor concentration of the diquat ingested was known, as he did not bring the bottle with him. He was admitted to the ICU where pertinent laboratory values were: BUN, 68 mg/dL; creatinine, 7.9 mg/dL; white cell count, 25,000/μ L; ALT, 304 U/L; and AST, 558 U/L. He had a nasopharyngeal scope done on day 1, which revealed the presence of posterior pharyngeal, uvular, and epiglottic mucosal injury. That night he developed anuria and severe agitation, which was treated with benzodiazepines and haloperidol. A head CT was normal. He was intubated on day 2 and hemodialysis was started due to his renal failure. N-acetylcysteine was administered orally. He underwent endoscopy later that day which revealed esophagitis with no ulceration. He was continued on hemodialysis. By the evening of day 2 he developed tachycardia and hypertension, with concern for possible sedative hypnotic or ethanol withdrawal. He then became bradycardic and his neurologic exam deteriorated with evidence of herniation, confirmed by head CT. The family withdrew support on day 3 and he died.

Case 215. A 45-year-old woman ingested 10 ounces of a glyphosate herbicide in a suicide attempt. She developed some abdominal pain, hematemesis, and diarrhea. Two days after the ingestion she informed her boyfriend and was brought to the ED, where she was found to be in acute renal failure. Initial examination revealed a blood pressure of 182/82 mm Hg, heart rate of 117 beats/min, and oxygen saturation of 97%. She was alert, had constricted pupils, and her skin appeared flushed. Initial laboratory data included: BUN, 63 mg/dL; creatinine, 7.2 mg/dL; AST, 187 U/L; ALT, 234 U/L; lactate dehydrogenase, 4022 U/L; CK, 345 U/L. Salicylate and acetaminophen levels were not detectable. She was admitted and initially treated with IV fluids. The next day her respiratory status deteriorated and a chest X-ray showed possible ARDS. She was transferred to the ICU, intubated endotracheally, and sedated. She was also noted to have a diffuse erythematous facial and neck rash. Hemodialysis was started. On the fourth hospital day she remained deeply comatose. A head CT showed extensive, diffuse injury to the brain and midbrain, and a pontine hemorrhage. She remained unresponsive and life support measures were withdrawn after 8 days.

Case 216. A 69-year-old man was found sitting in a car, alert and oriented. He reportedly had ingested 240 mL of glyphosate concentrate an hour earlier. He developed vomiting and respiratory distress. The patient was transported to the ED where he rapidly deteriorated with an increased respiratory rate, hypersalivation, and an altered level of consciousness. He was admitted to the ICU where he was hypertensive (210/125 mm Hg). Over the course of two hours, the patient developed hypothermic (93.5 °F), tachypnea, acidosis, anurea, and hypotension. Treatment continued with mechanical ventilation, IV hydration with sodium bicarbonate, hemodialysis, and vasopressors to maintain his blood pressure. The patient died due to severe metabolic acidosis, acute lung injury, and pulmonary aspiration. The medical examiner classified the death as suicide by acute glyphosate poisoning.

Case 219. A 62-year-old man presented in the ED unresponsive after reportedly ingesting unknown amounts of paraquat, "some sort of organophosphate" and ethanol in a suicide attempt. In the ED he was hypertensive (320/120 mm Hg) and tachycardic (120–120 beats/min). He was intubated. Due to the history of paraquat ingestion, attempts were made to keep the Sa02 around 85–90%. His initial laboratory values showed acidosis (pH, 7.0) and hypokalemic (2.4 mEq/L). Liver function tests, as well as acetaminophen and salicylate levels, were reported to be normal. An ethanol level was 59 mg/dL. Additional history indicated that he had had blue-green emesis. A continuous infusion of sodium bicarbonate was started. After stabilization, he was transferred to another HCF. Laboratory assessment showed persistent acidosis and hypokalemia, as well as a lactic acid level of 15.1 mg/dL. Six hours later the patient was still acidotic, and was also hypotensive and tachycardic. Hemodialysis was initiated that afternoon. The family then made him a do not resuscitate and he died later that day. A paraquat level, performed on an antemortem serum specimen, was elevated at 51 μg/mL.

Case 221. A 38-year-old man was seen to drink from a cup reportedly containing aldicarb on a farm where he was employed. EMS was called, but the patient fled. He was chased for some distance across the farm before he was discovered lying unresponsive in a field. When EMS arrived he was unresponsive and they administered activated charcoal in the field. A helicopter arrived to transport him to a tertiary care facility. He had vomited and aspirated charcoal and was nasally intubated. On arrival in the ED he was vomiting and had lacrimation, miosis, diaphoresis, salivation and a GCS of three. The ED staff was suctioning 10–15 mL of charcoal-containing liquid out of his lungs every five minutes. His initial heart rate was 40 beats/min, but increased to 120 beats/min with the administration of atropine. Infusions of atropine and pralidoxime were started and the patient was admitted to the ICU. Shortly after transfer to the ICU, the patient had a seizure and lorazepam was administered. The patient was noted to be tachycardic and hypertensive at this time. Over the next several hours the patient continued to have seizure activity, requiring lorazepam. The seizure activity subsided and no further seizures were reported during the hospital course. The morning after admission the patient was febrile to 102 °F. Antibiotics were started for aspiration pneumonia. On day 2 the atropine infusion rate was reduced (2 mg/hr to 0.75 mg/hr) and the pralidoxime was stopped. On day 3 his atropine was discontinued. The patient self-extubated that day also but had to be reintubated due to respiratory depression. His temperature was 103 °F despite external cooling measures. The patient was reportedly hypertensive requiring a diltiazem infusion. Due to hyperglycemia the patient was placed on an insulin drip. It was unknown if the patient had pre-existing hypertension or diabetes. His white blood cell count was 9,000/μL with no left shift. He was having adequate urine output. That night the patient became hypotensive and required vasopressors. Over the next two days the patient showed no improvement and continued with tachycardia, fever and agitation.. The patient died on hospital day 5.

Case 222. An 18-month-old girl was taken to the local ED by her parents after an apparent ingestion of an insecticide containing allethrin and piperonyl butoxide in 99% mineral spirits. In the ED she was lethargic and vomiting. Emergency interventions included intubation as well as pralidoxime and atropine because of copious secretions. During the resuscitation it became clear that the patient had developed aspiration pneumonia. The child was transferred to a tertiary care PICU where she died a short time later. The cause of death was ruled hydrocarbon aspiration, possibly enhanced by pyrethrin toxicity.

Case 225. A 44-year-old man was brought into a local ED in full cardio-pulmonary arrest. He had been spraying malathion around his yard for approximately one week prior to this event. The previous day the patient had attempted to clean up a malathion spill in his enclosed garage. He became symptomatic that day and was seen at another ED, but removed himself against medical advice from that facility. Shortly after returning home he began to complain of dyspnea, abdominal pain, excessive salivation, and blurry vision. He then arrested. In the ED he was intubated and placed on the ventilator. Atropine and pralidoxime were initiated immediately. He became hypotensive and had seizure activity. Despite aggressive medical treatments, including the use of benzodiazepines and vasopressors, his condition deteriorated and he died 3 days later.

Case 226. A 23-year-old student intentionally ingested an insecticide containing 48.6% sodium sulfur arsenate. He rapidly experienced multiple episodes of emesis and then lost consciousness. Four hours later paramedics were summoned and the patient was transported to the hospital. Upon arrival in the ED the patient was tachycardic with a systolic blood pressure below 90 mm Hg. Pressors had little effect on his systolic blood pressure. He was given approximately 10 liters of fluids which raised his blood pressure. BAL in oil was given IM. An abdominal x-ray revealed an ileus. A haze of arsenic could be seen in the stomach, but no arsenic was seen in the colon. Ultrasound of the kidney showed significant changes. BUN was 28 mg/dL and creatinine was 4.2 mg/dL. He had hypocalcemia, hypomagnesemia, hyperphosphatemia and thrombocytopenia. Calcium gluconate and magnesium sulfate were given. He experienced respiratory difficulty and was intubated but quickly developed pulmonary edema. Despite aggressive treatment the patient had a cardiac arrest and died 5.5 hours after presentation in the ED. A pre-mortem serum arsenic level was 65 μg/mL. At autopsy the cause of death was ruled to be suicide with arsenic.

Case 227. A 22-year-old woman who lived on a hog farm reportedly felt well all day but felt warm in the evening. She took a bath, vomited, became incontinent of stool, seized, and became unresponsive. En route to the hospital, the patient developed asystolic cardiac arrest. After a prolonged but successful resuscitation, the patient was hypothermic (temperature

95 °F), but subsequently became hyperthermic (temperature,104 °F). She was acidotic (pH, 6.4). Reportedly, she had a chemical odor and profound diarrhea. Wheezing, bradycardia, lacrimation, hypersalivation, and fasciculations were not noted. Her pupils were fixed and dilated, and she appeared to have suffered a profound hypoxic brain injury. The patient was admitted to ICU and treated with phenytoin and supportive care. Her pseudocholinesterase level was undetecTable (<0.2, U/mL) She suffered a second cardiac arrest and died approximately 20 hours after hospital presentation. A criminal investigation and autopsy were performed. Toxicology studies eventually reported showing the organophosphate terbufos.

Case 230. A 21-year-old man was transferred from an outside ED to an inpatient psychiatric hospital after being petitioned by his family and social worker. According to the EMS report, the patient was at home stating that he had taken rat poison. According to a signed petition, the patient had ingested a "rat poison" to "kill the rat that was in his stool." There was no specific identification of a rodenticide and the family reported that there were none in the home. There was no family witness to the alleged ingestion. The patient's mother had reported frequent auditory and visual hallucinations at home. He presented with a change in mental status and mild bradycardia. His coagulation profile was normal. The original urine drug screen at the time of admission to the ED was positive for barbiturates. A quantitative analysis was not performed at that time. The family was not aware of any barbiturate or other medication use by the patient. The patient became progressively catatonic with no evidence of muscle rigidity. He was treated with haloperidol 5 mg twice daily while at the inpatient psychiatric facility. His condition continued to decline and he was subsequently transferred to a tertiary care center for further evaluation 2 days after his presentation. A CT of the brain revealed marked cerebral edema. The patient was intubated and admitted to the ICU for further evaluation. Serum phenobarbital level was < 1.1 μg/ml. A comprehensive urine drug screen revealed the presence of promethazine. His coagulation profile remained normal. Laboratory studies revealed: white blood cells, 24,000 /μL; creatinine, 2.5 mg/dL; CK, 61 U/L; and a normal lumbar puncture. The patient continued to decline. Subsequent brain CT imaging revealed worsened cerebral edema and herniation. Life support was withdrawn and the patient died.. At autopsy, the patient had mild brain swelling without evidence of disease or infection. Microsopic evaluation confirmed severe acute lobar pneumonia, and vacuolization of the white matter of the brain. Tissue toxicology of the brain and liver detected demethylated bromethalin. The coroner was able to interview the family and to confirm that bromethalin (eight baits) had been ingested.

Case 231. A 4-year-old girl was discovered to have hepatic failure and was referred for a possible liver transplant. She was diagnosed with viral hepatitis and a transplant was denied. She then developed respiratory problems and was admitted to the PICU where she received bilateral chest tubes for pleural effusions. Her younger brother was also admitted at this time with hepatic failure. It was later discovered that the grandmother had been giving them both a homemade herbal tea for fever and constipation. The family brought a sample of the plant used in the tea and it was identified by two botanists as *Senecio longilobus*, which contains pyrrolizidine alkaloids. A liver biopsy of the patient's brother revealed hepatovenoocclusive disease, consistent with exposure to pyrrolizidine alklaloids. A liver biopsy was never performed on the patient due to her anticoagulated state, but her clinical picture of hepatitis and pulmonary toxicity is well documented with exposure to pyrrolizidine alkaloids. The patient stabilized for a number of weeks but eventually succumbed to irreversible pulmonary disease. The postmortem opinion was that the patient died from pyrrolizidine alkaloid ingestion. It is unknown if the grandmother mistook this plant for a nontoxic one.

Case 294. A 21-year-old man presented in the ED after an admitted ingestion of a "bottle of aspirin, two tablets of clonazepam and alcohol" in a suicide attempt. Activated charcoal was given on presentation. On the initial toxicology screen his blood alcohol level was 48 mg/dL, salicylate, 4.2 mg/dL and acetaminophen, 405 μg/mL. His 4-hour acetaminophen level was 1062 μg/mL. At this time his vital signs were stable. At 17 hours post-ingestion he was awake and alert. He had received and tolerated a PO loading dose and subsequent PO doses of N-acetylcysteine. An acetaminophen level was 900 μg/mL. At 22 hours post-ingestion the patient was intubated due to clinical deterioration. His condition seemed to worsen after intubation. His pH was 7.1 and a sodium bicarbonate drip was started. At 25 hours post-ingestion he suffered a cardiac arrest but was successfully resuscitated. Following the arrest there was difficulty maintaining a good perfusing pressure and he was placed on dopamine and norepinephrine. He apparently suffered further cardiac rhythm and/or blood pressure problems and required multiple resuscitation efforts. At 31 hours post-ingestion the patient developed bradycardia and a falling blood pressure despite support. He then became asystolic and could not be resuscitated.

Case 348. A 37-year-old woman was brought to the ED after being found unconscious by her boyfriend, who had received in the mail a suicide letter from her dated the day before. A note saying "DNR" was found pinned to the patient. Three empty bottles of acetaminophen with diphenhydramine, along with bottles of clonazepam and ziprasidone were next to her. She had vomited. In the ED she was intubated, lavaged and given activated charcoal. Vital signs were: blood pressure, 102/46 mm Hg; heart rate, 96 beats/min. A urine toxicology screen was positive for benzodiazepines and marijuana. An acetaminophen level was 155 μg/mL with an ALT of 107 U/L and AST of 88 U/L. She was started on N-acetylcysteine. A repeat acetaminophen level, 4 hours after the first, was 426 μg/mL, and a third level, 6 hours after the second, was 390 μg/mL. The following day the ALT was 241 U/L and the AST was 138 U/L. A repeat acetaminophen level, now 18 hours after presentation,

was 697 μg/mL. Pupils were now fixed and dilated and the patient suffered a terminal cardiac arrest 36 hours after presentation. An autopsy was remarkable for the finding of acute centrilobular necrosis on liver pathology, and for a jugular venous blood acetaminophen level of 899 μg/mL and diphenhydramine level of 9.2 μg/mL.

Case 365. A 51-year-old man presented to a rural hospital with some mild drowsiness and a history of taking about 110 tablets of a pain medication containing hydrocodone (5 mg) and acetaminophen (500 mg) about 5 hours earlier. His urine drug screen was only positive for opiates and an initial acetaminophen level was 343 mcg/mL. The patient was given a loading dose of N-acetylcysteine. Liver function tests were: AST, 431 U/L; ALT, 276 U/L; total bilirubin, 2.7 mg/dL. On the morning of the next day his blood glucose was 30 mg/dL, which normalized after a snack. The following day the patient got out of bed in the early morning and, according to the nurse, probably began hemorrhaging internally. He became unresponsive, cyanotic and bradycardic. Cardioversion and resuscitation efforts failed and the patient died.

Case 428. A 30-year-old man was transferred from one HCF to another, with a preliminary diagnosis of pulmonary embolism. In the report from the referring HCF, the receiving physician noted that the salicylate level was 125 mg/dL. Clinically, the patient was described as having altered mental status and tachypneic. Enroute to the second HCF, the patient had a cardiac arrest and was unsuccessfully resuscitated.

Case 434. A 49-year-old woman was brought to an acute care hospital from a psychiatric hospital because of worsening mental status and low oxygen saturation. She had been sent to the psychiatric facility for altered mental status from an acute medical facility earlier in the day, having had a negative urine drug screen. The patient was found to have ARDS and elevated liver enzymes (ALT, 300 U/L and AST, 940 U/L), in addition to altered mental status. She was intubated and ventilated. A salicylate level of 123 mg/dL was obtained, along with an acetaminophen level of zero. The patient died 3 hours after presentation. An autopsy ascribed cause of death to respiratory failure and salicylate toxicity.

Case 443. An 89-year-old man reportedly ingested about 30 aspirin tablets. In the ED the patient complained of difficulty swallowing and was unable to tolerate activated charcoal. A salicylate level, approximately 2.5 hours after the ingestion, was 20 mg/dL. He refused an NG tube. His electrolytes were normal, but an x-ray suggested an esophageal obstruction. A repeat salicylate level 2 hours later was 23.7 mg/dL. Endoscopy in the ED showed an esophageal obstruction by pills. He was admitted to the ICU for eventual surgery for the obstruction. However, the patient refused all interventions after admission and made himself a do not resuscitate. He refused surgery and developed an esophageal perforation and died about 36 hours after admission.

Case 477. A 41-year-old woman was found dead by her family. She had 11 fentanyl patches on her skin.

Case 498. A 49-year-old woman died in the hospital while being treated with meperidine via a PCA pump. The patient's postmortem meperidine level was 2.5 μg/mL.

Case 500. A 5-year-old Mexican boy was transferred to a U.S. hospital for possible bone marrow and liver transplants. He had been treated with metamizol for fever and had developed agranulocytosis (300/μL), thrombocytopenia (34,000/μL) and liver failure (bilirubin, 31 mg/dL). Initially the patient was awake and talking without distress and with stable vital signs. He deteriorated over the next 3 days becoming more agitated and progressing to fulminant liver failure and complete aplastic anemia. Hepatitis C core antigen was found to be positive but no explanation for the patient's aplastic anemia was found on bone marrow biopsy. The transplant teams felt that the presence of both liver failure and bone marrow suppression eliminated the possibility of either a liver or bone marrow transplant. On hospital day four the patient became hypotensive and required ventilatory support for respiratory distress. He died 11 days after admission despite plasmaphoresis, dialysis, and supportive care.

Case 501. A local newspaper reported the death of a 2-month-old girl who was found in cardiac arrest by the police. The child had a history of neonatal withdrawal syndrome from cocaine and opiates. The Medical examiner reported the presence of methadone on autopsy and declared the cause of death methadone intoxication.

Case 502. The local newspaper reported the death of a 15-month-old boy who reportedly ingested methadone from his sippy cup. Methadone was prescribed to the mother. He was found unresponsive and apneic 2 hours later and was pronounced dead in the ED. Analysis of peripheral blood at autopsy revealed 0.3 μg/mL of methadone. The manner of death was homicide and murder charges have been filed.

Case 503. A 6-year-old boy was brought to the ED after having been found in cardiopulmonary arrest at home. Intubation and CPR were performed enroute. It was thought that the patient may have been given clonazepam by his developmentally delayed sister. On arrival in the ED the patient was defibrillated for ventricular fibrillation and regained a sinus heart rate. His initial blood glucose was 498 mg/dL with a pH of 6.9 and base deficit of 20 mEq/L. A urine drug screen was negative and a head CT scan showed global cerebral edema. The patient was transferred to the ICU where his blood glucose was 80 mg/dL, his pupils were fixed and dilated and he was hypotensive, requiring vasopressors. A repeat head CT scan showed basal ganglia infarcts and diffuse edema. The child then developed a pulmonary hemorrhage and was hypercapnic, despite adequate ventilation. Several hours later, he became bradycardic and developed pulseless electrical activity, requiring chest compressions. Several hours after that the patient became bradycardic, developed ventricular tachycardia and could not be resuscitated. Postmortem blood showed a methadone level of 0.07 μg/mL. It is suspected that he accidentally took another family member's medication.

Case 570. A 21-month-old boy became cyanotic during sleep. By-stander CPR was begun and he was transported to the ED by ambulance. There was no history of exposure to drugs. The only drug known to be in the home was metformin. He presented with lethargy, cyanosis, and miosis. He was intubated. Blood pressure and heart rate were normal. A toxicology screen was positive for opiates only. Initial arterial blood gas results showed a pH of 7.23 with a pCO2 of 53 mm Hg. He was transferred to a pediatric specialty hospital, where he developed hypotension requiring vasopressors. Administration of naloxone resulted in decerebrate posturing. Approximately 36 hours after admission he was pronounced brain dead. The initial serum morphine concentration was greater than 5,000 ng/mL.

Case 578. A 59-year-old woman with history of chronic pain had an implantable intrathecal morphine pump. During refilling of the pump the patient experienced severe hypertension and headache. She soon became hypotensive and remained hypotensive despite fluids and vasopressors. She died the next day. It is thought that the morphine was accidentally injected directly into the CSF, rather than into the pump's reservoir. A CSF morphine level was approximately 0.4 mg/mL.

Case 607. A 3-year-old girl was found unresponsive in the morning, after having gone to bed at about midnight. The patient was visiting in her grandmother's home. When paramedics arrived, the patient was found in respiratory arrest with a heart rate of about 130 beats/min. In the ED she was intubated. Her examination was consistent with severe anoxic brain injury. She died later that day. A toxicology screen was positive for opioids and at autopsy a free blood oxycodone level was 280 ng/mL.

Case 652. An 11-year-old boy with muscular dystrophy was undergoing bilateral Achilles tendon lengthening with capsulotomies, bilateral lengthening of the posterior tibial tendons and bilateral lengthening of the hamstrings. After lengthening of the tendons, a total of 40 cc of 0.25% plain bupivacaine was applied to control pain. An undetermined amount of time later, while still in surgery, he had a sudden drop in his blood pressure, heart rate and oxygen saturation. Hypotension responded to vasopressors. Shortly after, his blood pressure dropped again and he again became bradycardic, requiring chest compressions. An echocardiogram showed poor cardiac output. It was thought by the surgeon that he might have an undocumented cardiomyopathy secondary to his muscular dystrophy. Resuscitation was unsuccessfully continued for 2 hours, after which he was pronounced dead. No autopsy was done.

Case 653. A 22-year-old woman with a history of an adrenal disorder and hirsutism was found in a motor vehicle unresponsive and seizing. The patient had applied lidocaine cream from her toes to the waist and wrapped herself in cellophane as instructed by her physician prior to LASIK hair removal. During transport by EMS, she had a respiratory arrest. Initial examination found lidocaine cream covering her bilateral lower extremities and an elevated temperature. The patient was hospitalized but died a week later after herniating. Postmortem evaluation revealed anoxic injury to the brain. A lidocaine blood level drawn approximately 48 hours after presentation to the ED was 7.9 μg/mL.

Case 654. An adult woman was found unresponsive and in cardiac arrest with 10 lidocaine dermal patches on her skin. Resuscitation efforts were unsuccessful.

Case 666. A 59-year-old woman was admitted following an overdose of oxcarbazepine 30 minutes prior to presentation. At presentation she was lethargic without any hemodynamic abnormality. She was given activated charcoal and admitted to the ICU. She progressively deteriorated and became obtunded, requiring intubation and mechanically ventilation. There was evidence of aspiration. She developed seizures, which initially improved with phenytoin and later with lorazepam and propofol. She remained obtunded and suddenly had a cardiac arrest and could not be resuscitated.

Case 667. A 32-year-old woman presented to the emergency room following ingestion of an unknown amount of oxcarbazepine and levetiracetam. She was intubated for respiratory and CNS depression and activated charcoal and cathartic were administered. Her urine drug screen was negative, as were salicylate and acetaminophen levels. Her heart rate fluctuated from 90–110 beats/min. She was sedated with propofol, but when she "surfaced" she became combative. On follow-up, she had been extubated and was alert, oriented, and cooperative. However, on subsequent follow-up, she had had an episode in which she began gritting her teeth, pulling her clothes off, and trying to get out of bed. She was disoriented, asked her own name, and began calling out numbers. This lasted about 5–10 minutes, after which she again became alert and oriented. At the next follow-up, two days after admission, she had died.

Case 670. A 27-year-old man was found unconscious in a hotel room with 2 bottles of valproic acid. In the ICU he was comatose. Vital signs were: heart rate, 150 beats/min (in atrial fibrillation); and systolic blood pressure, 80 mm Hg. Admission laboratory values were: valproic acid level,1,984 μg/mL; bicarbonate, 11 mmol/L; and anion gap, 14.7. He was given intensive supportive care, including pressors. He remained hypotensive despite pressors, antibiotics, and volume support. His valproic acid level peaked at 3,465 μg/ml, the day after admission. Acute renal failure and acute pancreatitis ensued. His acidosis remained intractable and the patient died 4 days after original presentation.

Case 748. A 56-year-old woman, with a remote history of Hodgkin's disease, was admitted with a presumed toxic hepatitis. She had been started on delayed-release duloxetine for depression about 3 months earlier. Her initial dose had been 30 mg/day but this had been increased to 60 mg/day about 6 weeks before admission. Testing at admission ruled out acetaminophen, ethanol, and viral causes of hepatitis. During two weeks of hospitalization, her transaminases rose to 2,000–3,000 U/L, bilirubin to 23 mg/dL, and INR to 2.8. She was then

transferred to a tertiary care institution for possible liver transplant. However, her mental status declined rapidly at the time of transfer, requiring intubation and ventilation. She never improved and died 12 days after transfer without transplant.

Case 765. A 59-year-old woman on dialysis for renal failure was admitted to the hospital for a revascularization procedure because of a clotted fistula. She presented the admitting physician a written list of medications, and verbally confirmed that she took nortriptyline 400 mg at bedtime. This amount was ordered by the admitting physician, dispensed by the pharmacy (8×50 mg) and administered by the nursing staff, who questioned the patient specifically about the dose. The patient underwent clot revision surgery on hospital day 3. Nortriptyline was not reordered postoperatively. On hospital day 5 the patient fell in her hospital room and fractured her hip, which was surgically repaired the following day. Postoperatively the patient's nortriptyline, at the initial dose (400 mg at bedtime), was reordered. On hospital day 6 the patient was noted to be drowsy and a serum nortriptyline concentration was sent, but the medication was not discontinued. On hospital day 8 the patient was transferred to the ICU for increasing agitation and "cardiac symptoms." Her vital signs included a systolic blood pressure of 130 mm Hg with a heart rate of 102 beats/min. At that time her BUN was 70 mg/dL and her creatinine was 9.2 mg/dL. After transfer to the ICU, the nortriptyline level, sent nearly two days earlier, was reported as 1,405 ng/mL, prompting a call to the poison center. The poison center recommended obtaining an ECG and administering hypertonic sodium bicarbonate, if appropriate. Ninety minutes later, her heart rate was 150 beats/min with a QRS duration of 218 msec. There was no response to a bolus of 150 mL of 8.4% sodium bicarbonate. The patient died three hours later.

Case 769. An incarcerated 20-year-old man was brought to the prison clinic after an overdose of what he said was a "cup" of haloperidol pills, 100 tablets of unknown strength nortriptyline and 30 unknown strength aspirin tablets. The prison clinic attempted to perform lavage and give charcoal, but the patient refused. He told the clinic staff that he wanted to be sent straight to the psychiatry unit as they have turkey on Thanksgiving and the prison does not. At that time, his blood pressure was 120/80 mm Hg with a heart rate of 132 beats/min. The patient was transferred to the ED where he arrived in full cardiopulmonary arrest and could not be resuscitated.

Case 820. A 39-year-old woman presented in a clinic with symptoms of generalized weakness. She had been treated at the clinic for at least three days for nausea and right upper quadrant discomfort. The patient was referred to the ED where laboratory studies showed her to be in hepatic failure. She had been treated with isoniazid for a positive tuberculin test without evidence of active tuberculosis, and this was felt to be the cause of her liver failure. A urine drug screen was negative and her acetaminophen level was less than 2.0 μg/mL. The patient was followed for five days in the ICU before being transferred to a liver transplant center with deteriorating liver function. The patient became increasingly encephalopathic with increasing intracranial pressures. She also became more coagulopathic and began to go into renal failure. A liver became available and she was transplanted, although she experienced increased intracranial pressure during the surgery. A head CT revealed brain stem herniation and she died.

Case 827. A 14-year-old boy had been treated with stavudine, lamivudine, zidovudine and fosamprenavir since 2 years of age for vertically acquired HIV. He presented with complaints of nausea, vomiting, and abdominal pain 2 weeks before the poison center was contacted. His work-up included CT imaging which was negative and a lactate level of 19 mg/dL. The patient received intravenous fluids and his lactate decreased to 3 mg/dL but then the lactate began doubling every few days until it got to the level of 33 mg/dL. The poison center was contacted and recommended stopping all of his medications and to consider the diagnosis of NALA (NRTI Associated Lactic Acidosis). He developed renal failure requiring dialysis, thrombocytopenia, and DIC. He died the day the poison center was contacted. All cultures were negative and no autopsy was done.

Case 829. An 89-year-old woman was dispensed a prescription of the incorrect medication two weeks prior to admission. It was intended that she receive meclizine, but she was given methotrexate (2.5 mg three times daily). She arrived in the ED hypotensive with pancytopenia and black tarry stools. Laboratory evaluation revealed: white blood cells, 0.0 /μL; platelets, 1,000/μ L; hemoglobin, 10 g/dL; potassium, 2.5 mEq/L; BUN, 86 mg/dL; creatinine, 1.6 mg/dL; AST, 49 U/L; and ALT, 81 U/L She was treated with platelets, a dopamine infusion, G-CSF, bicarbonate, red cells, and leucovorin. A methotrexate serum level, drawn at admission, was reported on the third hospital day as 0.04 μmol/L, which is below the concentration which requires treatment with leucovorin. The bicarbonate was discontinued along with the leucovorin and the intestinal bleeding improved. However, it was believed that the patient had developed sepsis. Both her blood pressure and respiratory status deteriorated and she died.

Case 850. Two-year-old paternal twins ingested an unknown quantity of clonidine tablets of unknown strength. There were 5 tablets remaining in a 60 tablet bottle. In the ED both children were resuscitated and were intubated and receiving vasopressors. The girl appeared to have aspirated prior to intubation. Over the next 6 hours the boy improved dramatically, was taken off pressors, then extubated a few hours later. The girl initially appeared to improve, then developed very labile blood pressure, requiring continued vasopressors. She was also noted to have worsening respiratory status and pulmonary edema. She then began to have decreased urinary output with worsening acidosis, requiring a bicarbonate infusion. Her condition continued to deteriorate over the next 24 hours and she died approximately 48 hours after admission.

Case 874. A 42-year-old woman was admitted to the ICU for a spontaneous subarachnoid hemorrhage. The time between

the incident and her discovery was uncertain. She was intubated in the ED because of hypoxia and presumed aspiration. The patient developed several episodes of supraventricular tachycardia with hypotension unresponsive to adenosine. A diltiazem infusion (125 mg/250 mL solution) was ordered to infuse at 5 mg/hour. Phenylephrine had also been ordered to infuse at 180 µg/min. The nurse administered the diltiazem at the rate set for the phenylephrine. The patient received approximately 100 mL of the diltiazem solution, for a total dose of 75 mg in 20 minutes, before the error was discovered. The phenylephrine was not administered. The patient developed significant cardiovascular collapse resulting in asystole and death.

Case 914. A 2-year-old boy was found by his mother with her bottle of sustained release nifedipine (90 mg) tablets. The child was asymptomatic and by history could have ingested up to five tablets. On arrival in the ED he was given 20 g of activated charcoal and an IV was started. Vital signs were all unremarkable, as were initial laboratory values except for potassium of 2.8 mEq/L and a glucose of 253 mg/dL. He was transferred to the PICU of a tertiary care hospital. On admission his vital signs were: heart rate,150–170 beats/min; blood pressure, 90–130/30–90 mm Hg; respiratory rate, 36–44 breaths/min; and oxygen saturation 97–100% on room air. He remained clinically stable with a resting tachycardia, normal electrolytes and hyperglycemia. The following morning his heart rate was 170 beats/min; and blood pressure, 93/41 mm Hg. His serum glucose was 201 mg/dL and his potassium had corrected to 4.2 mEq/L. That afternoon the patient suddenly had a decreased heart rate from the 150's to the 120's. He then quickly developed bradycardia to the 50's and rapidly deteriorated into ventricular fibrillation. Cardiopulmonary resuscitation was started. EKG showed asystole. Aggressive resuscitation, including pacing, was unsuccessful. He never regained any organized cardiac activity and was pronounced dead. An autopsy was performed. A liver nifedipine level was 1.1 mg/kg.

Case 915. A 64-year-old man, with a history of hypertension, took an unknown amount of his sustained release nifedipine in a suicide attempt. He presented in the ED complaining of dizziness with a blood pressure of 72/54 mm Hg and "sinus arrhythmias, PACs and PVCs" on EKG. He was given 1 liter of normal saline, resulting in a systolic blood pressure in the 90's mm Hg. Two hours later, after a second liter of IV fluids, his systolic blood pressure was 90–100 mm Hg. Twelve hours later, after calcium gluconate, he was awake and alert, with a systolic blood pressure of 110 mm Hg, and a heart rate of 108 beats/min. Seven hours later his blood pressure was 105/66 mm Hg with a heart rate of 114 beats/min and unifocal PVCs on EKG. His potassium was 3.7 mmol/L, for which he received 20 mEq of potassium chloride. His BUN and creatinine were 40 mg/dL and 3.0 mg/dL, respectively. He was then transferred to a medical / psychiatric unit. It was learned on follow-up the next day that he had experienced a cardiac arrest the evening of his transfer, and could not be resuscitated.

Case 956. A 13-year-old girl presented with mild hepatic encephalopathy. Initial laboratory values were: AST, 10,068 U/L; ALT, 7,724 U/L; INR, 6.1; PTT, 43.9 sec; total bilirubin, 4.1 mg/dL; total CO2, 12 mEq/L; BUN, 47 mg/dL; creatinine, 4.1 mg/dL. An acetaminophen level was 74.6 µg/mL. The patient's medical history included a remote renal transplant, for which she was medicated with mycophenylate and tacrolimus, and a recent URI for which she had been taking two different acetaminophen-containing products (acetaminophen/pseudoephedrine and acetaminophen) for the prior 5 days. She also had a history of CMV infection with periodic interval treatment, with the last episode being several months prior. It was estimated that she had been receiving 6–7 g of acetaminophen per day. The patient was begun on oral N-acetylcysteine and then switched to the IV preparation. She was placed on the national transplant list. Over the next 24 hours, the patient had progressive encephalopathy, declining renal function and output, and died before liver transplant could be accomplished.

Case 958. An 8-year-old girl with cerebral palsy was found dead in bed. Postmortem toxicology tests showed a blood chlorpheniramine concentration of 0.388 µg/mL and an ethanol level of 68 mg/dL. Medications available to her included an allergy syrup containing chlorpheniramine (2 mg/5 ml), phenylephrine (10 mg/5 ml), and methscopolamine (0.625 mg/5 ml) and sodium valproate syrup. Further history revealed that the child had been brought home from the ED the night before, where she had been seen for a respiratory illness, and put to bed. She was found dead 7 hours later. An investigation continues.

Case 960. The poison center was called by the prosecutor's office about a 2-month-old child originally thought to have suffocated, but who was found to have a pseudoephedrine level of 3.4 µg/mL in a postmortem blood sample. Further history showed that the child had supposedly received a dose of an infant decongestant/antihistamine product containing pseudoephedrine and dextromethorphan, as well as a dose of a senna containing laxative, before being put to bed. The child was found dead the next morning. The mother was taking ephedrine in order to stay awake during the day and had had 5 positive hair samples for methamphetamine. The inquest stated that the child's death was a homicide caused by pseudoephedrine toxicity.

Case 961. A 61-year-old man received 140 mL of a contrast agent containing iopromide for an elective abdominal CT scan. Within 2 minutes of the IV administration, he felt hot. Within another minute, he became unresponsive and asystolic. Resuscitation attempts revealed laryngeal edema. CPR was unsuccessful.

Case 963. A 40-year-old woman, with a history of morbid obesity, gastric bypass and depression, ingested ferrous sulfate (iron) tablets (300 mg) in a suicide attempt. The time of ingestion was unknown. She presented in the ED with confusion, hematemesis and bloody diarrhea. She was hypotensive and

had an elevated glucose and white blood cell count. She was intubated and ventilated. Gastric lavage was attempted, but only fresh blood was recovered. She was immediately started on deferoxamine, but continued to have hematemesis and bloody diarrhea. A serum iron level was 16,289 μg/dL with a TIBC of 8,078 μg/dL, PT of >200 sec, PTT of > 200 sec. and hematocrit of 24%. She continued on deferoxamine therapy and also received vitamin K, fresh frozen plasma, packed red blood cells and bicarbonate. She was started on vasopressors and large volumes of fluids for hypotension. Emergency gastrectomy was contemplated, but in view of her prior surgeries was deferred. Deferoxamine was discontinued after 18 hours when her serum iron level reached 304 μg/dL. Her renal function worsened and she died 30 hours after initial presentation.

Case 964. A 5-year-old boy was given 3 tablespoons of baking soda (sodium bicarbonate) to induce vomiting after he told his mother he had a sore throat and had a lozenge stuck in his throat. He vomited but complained of abdominal pain after the bicarbonate. He was taken to the ED where he was described as sedated. An ABG showed a pH of 7.53. Serum sodium was 168 mEq/L. and a total CO2 was 38 mmol/L. Vital signs were normal except for a mild tachycardia. Recommendations were made to give free water and/or dialyze the patient immediately. He never received dialysis and it is not clear what fluids were given. The patient was transferred to another hospital where a venous pH was 7.34 with a serum sodium of 159 mEq/L. The following day the patient was reported to be unresponsive with fixed and dilated pupils. His serum sodium was 163 mEq/L and he was thought to have diabetes insipidus and to have herniated. He was declared brain dead the following day after a flat line EEG and a cerebral blood flow study showing no flow.

Case 967. A 41-year-old man had been injecting 1 mL of dinoprost, a veterinary prostaglandin analog, daily for three weeks, presumably as a body building agent. The patient apparently developed nausea, vomiting, and diarrhea the night before he presented. He presented in the ED with a markedly elevated CK level and fever to 108 °F. He was dialyzed, but developed tetany, seized and arrested. Attempts to resuscitate him failed.

Case 970. An 81-year-old woman presented in the ED with a decreased level of consciousness and a blood sugar of 14 mg/dL. The patient was given IV fluids and her blood glucose rose to 137 mg/dL. Upon investigation, it was discovered that the patient had a prescription inadvertently filled with glyburide, a medicine not prescribed for her. She had been taking this medication twice a day for four days. The patient during this time was also not eating well. She was admitted to the ICU where her blood glucoses ranged from 109–153 mg/dL over the next two days. She also developed massive diarrhea and pneumonia and died on day 4 of her ICU stay.

Case 971. A 29-year-old woman, 5 months pregnant, was found by EMS unresponsive and was intubated for airway support. Her family reported finding her unresponsive 4 hours prior to calling EMS. She was hemodynamically stable but without purposeful movements. A blood glucose level was reported as 20 mg/dL. Her urine drug screen was positive for cyclic antidepressants, but she did not have access to them and her ECG was normal. ED staff later learned that she had intentionally injected herself with 200 units of her own regular insulin while the family watched. Her head CT was normal, but her EEG was abnormal with "generalized slowing." She developed rhabdomyolysis and renal failure. The fetus was aborted and the patient subsequently died on hospital day 18.

Case 974. A 40-year-old man ingested 130–170 tablets of metformin in a suicide attempt after a fight with his wife. When EMS brought him to the ED two hours after the ingestion, he was alert and stable but drowsy. The ED physician noted 15 minutes later that the patient had become disoriented, uncooperative, diaphoretic and unsteady. An hour later, the patient was lavaged without pill fragments. He was also given activated charcoal with a cathartic, but vomited part of the dose. Initial laboratory values were unremarkable except for a glucose of 318 mg/dL and a bicarbonate of 18 mEq/L. After admission to the ICU, the patient's mental status deteriorated further. His heart rate ranged from 30–90 beats/min. Laboratory values, done 11 hours after the initial set, included a creatinine of 4 mg/dL. About 14 hours after admission, while speaking to a nurse, he abruptly became apneic, hypotensive, and asystolic. He was intubated and CPR restored a pulse and blood pressure. Laboratory values during the code showed a: pH of 6.9 with a glucose of 32 mg/dL and a bicarbonate of 5 mEq/L. Urine output decreased significantly and sustained low efficiency dialysis (SLED) was begun for severe lactic acidosis (lactic acid, 25 mg/dL). Pressors were also begun for hypotension. Despite multiple doses of sodium bicarbonate and 12 hours of SLED, he did not improve. Approximately 15 minutes after SLED was discontinued, he experienced a recurrent cardiopulmonary arrest and could not be resuscitated.

Case 983. A 51-year-old woman presented in the ED after ingesting haloperidol, risperidone and benztropine three hours earlier. On initial presentation, she was awake and alert with the following vital signs: blood pressure, 140/60 mm Hg; heart rate, 106 beats/min; temperature, 98 °F; and respiratory rate, 20 breaths/min. In the ED she received IV fluids, orogastric lavage, and activated charcoal with sorbitol. Her ECG was reported as normal. Serum acetaminophen concentration was 278 μg/mL. An oral loading dose of N-acetylcysteine was given before the poison center was contacted. IV N-acetylcysteine was recommended as the patient was becoming lethargic. On follow up it was learned that the patient had been given activated charcoal with sorbitol every four hours, for a total of 11 doses. She had also been given 6 doses of oral N-acetylcysteine by NG tube. The treating physician noted that her abdomen had become increasingly distended over the course of the day and she had had no bowel movements. She had been given two sodium phosphate enemas with little effect. The patient was also noted to be increasingly tachycardic and hypertensive. She was treated with 3 liters of intravenous fluids with no

resultant improvement in her heart rate. Her ECG showed a sinus tachycardia. The treating physician gave captopril and metoprolol for her blood pressure. The patient's blood pressure transiently improved, however, she remained tachycardic. The patient's mental and respiratory status deteriorated and she required intubation. On follow-up, the patient's systolic blood pressure had decreased to 100 mm Hg. While suctioning the stomach, approximately 1 liter of activated charcoal was removed. An abdominal CT scan noted paralytic ileus and no perforation. Chest x-ray was read as ARDS. The patient was placed on a norepinephrine drip for a blood pressure of 90/40 mm Hg with heart rate of 136 beats/min. Despite maximal support, the patient died 3 days after presentation.

Case 984. A 5-year-old autistic boy went into cardiac arrest following chelation therapy with calcium disodium EDTA in a physician office. During the procedure the mother noted that the child was limp. CPR was initiated and the child transported to the ED, where one or two IV bolus doses of calcium chloride were administered. After calcium chloride administration a blood level of calcium was 6.9 mg/dL. The child could be not resuscitated and was declared dead.

Case 985. A 45-year-old woman presented in the ED with abdominal pain. She was observed overnight but developed bright red blood per rectum prior to her planned discharge. She was admitted but later decompensated and was transferred to the ICU. There she had a PEA arrest and was resuscitated. She required vasopressors, antibiotics, and bicarbonate infusions for treatment. Colonoscopy demonstrated sloughing of the mucosa, consistent with ischemic colitis. Surgery was consulted. Due to her deteriorating condition, including DIC, aggressive treatment was withheld and she was given comfort measures only. She died later that day. Further review of her medical history revealed that she had juvenile rheumatoid arthritis and migraines. Her medication list included codeine, NSAIDS, and three triptan drugs (eletriptan, frovatriptan and almotriptan), all prescribed in the last 5 weeks, by three different prescribers.

Case 987. A 49-year-old woman with a history of depression was suspected of having ingested sumatriptan and bupropion 5 hours previously in a suicidal attempt. She was brought to the ED by her husband. In the ED she was lethargic, tachycardic, tachypneic, vomiting and had pin point pupils. Salicylate, acetaminophen and ethanol analyses were negative. Naloxone was administered without any response. She received activated charcoal and was admitted to the ICU. Five hours later she was comatose, bradycardic and had unequal pupils. She was intubated and ventilated. A head CT scan showed extensive bilateral thalamic infarctions. She developed fever, hypertension, and tachycardia. She was declared dead and became an organ donor.

Case 988. A 3-year-old girl with a history of severe nonambulatory cerebral palsy arrived to the ED with a core temp of 107.6 °F, tachycardic and tachypneic. For the previous 2 weeks, the patient had suffered from an upper respiratory infection with mild fevers. Medications included lansoprazole, acetaminophen, laxatives, multi-vitamins, and baclofen by pump. Laboratory values were: sodium, 155 mEq/L; potassium, 3.9 mEq/L; and CK, 12,000 U/L. The patient died in the ED. It was felt by the ED physician and the poison center that death was most likely due to a faulty baclofen pump and baclofen withdrawal. A baclofen level was requested but never received.

Case 1,010. A 12-month-old girl is thought to have ingested an unknown amount of tizanidine, hydrocodone with acetaminophen, tramadol and mirtazapine, while at a babysitter's residence. The child was reportedly a "crack baby." When EMS arrived the child was comatose with periods of apnea. During transport the child experienced a seizure and full cardiopulmonary arrest. Resuscitation efforts by EMS and the ED staff were unsuccessful. An autopsy was done but postmortem toxicology analyses were not available to the poison center.

Case 1,026. A 2-month-old boy was prescribed chloral hydrate (unknown dose) for colic. The mother gave the child 4 doses over an unknown amount of time. The child fell asleep and was later found not breathing. Resuscitation efforts were unsuccessful.

Case 1,034. A 5-year-old boy was found unresponsive at home and transported by EMS to the ED where he was intubated. Evidence of vomitus in the airway suggested anoxic injury. He was tachycardiac and showed some anticholinergic effects. Blood glucose of 32 mg/dL was corrected without effect. Naloxone was given with no response. The mother eventually thought that 3 clozapine and 1 thioridazine were missing, but acetaminophen/hydrocodone and sertraline were also present in the home. The patient had not been seen for 15–30 min before the incident. Questionable seizure activity was seen in the emergency department and treated with midazolam. He remained completely unresponsive on the ventilator. A head CT showed global anoxic injury. A urine drug screen and serum acetaminophen and salicylate levels were all negative. An EEG showed seizure activity and he was loaded with phenobarbital, phenytoin and placed on a pentobarbital infusion. Dopamine and epinephrine were needed to maintain a systolic blood pressure at 100 mm Hg. On the third hospital day the pentobarbital, epinephrine and dopamine were weaned off. His neurologic status never improved and a brain flow study on day 9 showing no perfusion. An EEG on day 10 showed no activity. On day 11 he was pronounced dead.

Case 1,052. A 15-year-old girl presented in the ED claiming to have ingested 2 quetiapine tablets of unknown strength. Her initial heart rate was 150 beats/min, but decreased to 115 beats/min during her ED stay. She was transferred to an inpatient psychiatry unit. No ECG was obtained. She was observed for ~ 6 hours. She was returned to the ED within six hours with fixed and dilated pupils and seizing. CPR was unsuccessful. The poison center was informed about the case at this time.

Case 1,094. A 54-year-old-man with no known past medical history was found in cardiac arrest. The patient reportedly

inhaled a product containing butyl nitrite, cyclohexyl nitrite and isobutyl nitrite prior to arrest. Attempts by EMS and ED staff to resuscitate him were unsuccessful. Autopsy revealed significant atherosclerotic coronary artery disease with chronic ischemic cardiac changes which likely contributed to his death.

Case 1,103. A 25-year-old man, during the course of an arrest, claimed to swallow a quantity of drugs, suspected of being cocaine. During his arrest, he was subdued with a stun gun. Approximately 45 minutes later, he experienced seizures and a cardiac arrest while in custody. Medics were called and he was intubated, CPR was performed and he was transported to the ED, where he was pronounced dead. Postmortem toxicology showed a cocaine blood level of 16.943 μg/mL with a benzoylecgonine level of 9.338 μg/mL. THC was also present. Gastric contents showed a cocaine level of 3,522 μg/mL.

Case 1,163. A 31-year-old woman presented in the ED after taking an unknown amount of ephedrine and ephedra. She had seizures en route to the hospital. In the ED she was comatose and her pupils were dilated. Initial vital signs were: temperature, 108 °F; blood pressure, 50/palpable mm Hg; and heart rate, 160 beats/min. She received fluid resuscitation and cooling procedures with normalization of her temperature and blood pressure. About 12 hours after admission to the ICU, she became hypotensive, requiring multiple vasopressors, and developed DIC. She became anuric and received hemodialysis. She died approximately 24 hours after admission from intractable hypotension and DIC. An autopsy revealed pill fragments in the stomach and cerebral and pulmonary edema. A postmortem ephedrine level was 1.2 μg/mL.

Case 1,208. A 25-year-old woman with no known medical history, except recreational use of methamphetamine, was found by her father unresponsive. He called EMS after observing her for 5 hours, hoping she would awaken on her own. EMS intubated her on arrival and transported her to the ED where her vital signs were: rectal temperature, 103.1 °F; blood pressure, 98/71 mm Hg; heart rate, 178 beats /min; and respiratory rate, 12 breaths/min while maintained on a ventilator. The patient had constant twitching on the right side, and would flex the left side only with significant pain stimulus. Her pupils were 4mm and reactive or the right, and 3mm and non-reactive on the left. She received IV fluids and intravenous boluses of lorazepam for tachycardia and hyperthermia. A CT scan of the head revealed dulling of the grey-white margin in the right hemisphere. An MRI the following morning revealed occlusion of the right carotid artery resulting in wide-spread ischemic injury to the right cerebral hemisphere. The patient was declared brain-dead and withdrawn from life support 2 days after presentation.

Case 1,225. A 24-year-old man was brought to the ED following a seizure witnessed by his mother. He had been increasingly lethargic over the previous 24–48 hours. Paramedics transporting the patient told ED staff that they suspected an overdose, and that there had been access to aripiprazole, trazodone, lithium and sertraline. The patient was also a poly-drug abuser who was said to favor heroin, cocaine, methamphetamine, mushrooms and marijuana. In the ED vital signs were: temperature, 108 °F; heart rate, 150 beats/min; and blood pressure, 70/30 mm Hg. He progressively experienced more and more profound shock and died less than 2 hours after arrival. An autopsy ascribed death to "hypertrophic heart disease", and included methamphetamine intake as a "condition contributing but not related to the immediate cause of death". The autopsy report makes no mention of trazodone or aripiprazole, but documented drug levels (heart) of lithium, 1.0 mEq/L; methamphetamine, 0.45 μg/mL; amphetamine, 0.13 μg/mL;, sertraline, 0.26 μg/mL; and norsertraline, 0.38 μg/mL. The poison center feels that the patient died of drug induced hyperthermia, possibly the serotonin syndrome.

Case 1,235. A 54-year-old woman was found at home unresponsive and in cardiac arrest by EMS. She had reportedly been drinking an iodine-containing antiseptic, bleach (hypochlorite) and fabric softener throughout the previous day for unknown reasons. She had a history of "drinking iodine for years." CPR was begun by EMS and continued in the ED but without success.

Case 1,236. An 84-year-old woman with a history of schizophrenia, confusion, and hypertension was found by her husband agitated and smelling of wintergreen. Her husband had been using oil of wintergreen (methyl salicylate) as a rub. On arrival in the ED she was very agitated and did not respond to questions. Vital signs were: heart rate, 120 beats/min; blood pressure, 160/70 mm Hg; respiratory rate, 40 breaths/min; temperature, 99.6 °F. Laboratory istudies revealed a severe but compensated metabolic acidosis with a pH of 7.4. A salicylate level was 124 mg/dL. She was given bicarbonate, charcoal and lorazepam and sent for a CT scan. When she returned to the ED from CT scan she was unresponsive and "mouth breathing with noticible retractions." At that time her respiratory rate was 44 breaths/min with a blood pressure of 205/116 mm Hg. She was intubated 4 hours after arriving in the ED and received a neuro-muscular blocker. Post intubation she became bradycardic. She was given atropine and became asystolic. Resuscitation efforts were unsuccessfull. A postmortem salicylate level was 94 mg/dL with a methyl salicylate level of 10 mg/dL.