Toxicology

A special contribution from the American Association of Poison Control Centers.

1999 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System

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Toxic Exposure Surveillance System (TESS) data are compiled by the American Association of Poison Control Centers (AAPCC) in cooperation with the majority of US poison centers. These data are used to identify hazards early, focus prevention education, guide clinical research, and direct training. TESS data have prompted product reformulations, repackaging, recalls, and bans; are used to support regulatory actions; and form the basis of postmarketing surveillance of newly released drugs and products.

From its inception in 1983, TESS has grown dramatically, with increases in the number of participating poison centers, population served by those centers, and reported human exposures (Table 1).[1-16]

The cumulative AAPCC database now contains 27.0 million human poison exposure cases. This report includes 2,201,156 human exposure cases reported by 64 participating poison centers during 1999, a decrease of 1.8% compared with 1998 poisoning reports.

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Centers participating in this report include Children's Hospital of Alabama Regional Poison Control Center, Birmingham, AL; Alabama Poison Center, Tuscaloosa, AL; Arizona Poison and Drug Information Center, Tucson, AZ; Samaritan Regional Poison Center, Phoenix, AZ; Arkansas Poison and Drug Information Center, Little Rock, AR; 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 Control Center, Chicago, IL; Indiana Poison Center, Indianapolis, IN; Iowa Poison Center, Sioux City, IA; Mid-America Poison Control Center, Kansas City, KS; Kentucky Regional Poison Center, Louisville, KY; Louisiana Drug and Poison Information Center, Monroe, LA; Maryland Poison Center, Baltimore, MD; Regional Center for Poison Control and Prevention Services for Massachusetts and Rhode Island, Boston, MA; Children's Hospital of Michigan Regional Poison Control Center, Detroit, MI; Spectrum Health Regional Poison Center, Grand Rapids, MI; Hennepin Regional Poison Center, Minneapolis, MN; Cardinal Glennon Children's Hospital Regional Poison Center, St. Louis, MO; The Poison Center, Omaha, NE; New Hampshire Poison Information Center, Lebanon, NH; 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; Hudson Valley Regional Poison Center, Sleepy Hollow, NY; Long Island Regional Poison Control Center, Mineola, NY; Finger Lakes Regional Poison and Drug Information Center, Rochester, NY; Central New York Poison Control Center, Syracuse, NY; Western New York Regional Poison Control Center, Buffalo, NY; Carolinas Poison Center, Charlotte, NC; North Dakota Poison Information Center, Fargo, ND; 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; Central Pennsylvania Poison Center, Hershey, PA; Lifespan Poison Center, Providence, RI; Middle Tennessee Poison Center, Nashville, TN; Southern Poison Center, Memphis, TN; Central Texas Poison Center, Temple, TX; North Texas Poison Center, Dallas, TX; Southeast Texas Poison Center, Galveston, TX; 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; University of Wisconsin Hospital Clinics Poison Control Center, Madison, WI; Children's Hospital of Wisconsin Poison Center, Milwaukee, WI.

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TABLE 1. Growth of the AAPCC Toxic Exposure Surveillance System

Year	No. of Participating Centers	Population Served (Millions)	Human Exposures Reported	Exposures/ 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
Total			27,004,741	

CHARACTERIZATION OF PARTICIPATING CENTERS

Of the 64 reporting centers, 60 submitted data for the entire year. Fifty-one of the 64 participating centers were certified as regional poison centers by the AAPCC in 1999. Annual center call volumes (human exposure cases only) ranged from 3,539 to 92,890 (mean 35,259) for centers participating for the entire year. Penetrance, calculated only for states that were completely served by centers participating in TESS, ranged from 4.9 to 18.5 per 1,000 population with a mean of 8.4 reported exposures per 1,000 population. Penetrance is defined as the number of human poison exposure cases reported per 1,000 individuals in the population served.

A total population of 260.9 million was served by the participating centers, including 43 entire states, portions of 2 states, and the District of Columbia (Figure 1). Noting the 272.7 million 1999 United States population, the data presented represent an estimated 95.7% of the human poison exposures that precipitated poison center contacts in the US during 1999. Extrapolating from the 2,201,156 human poison exposures reported in this database, 2.3 million human poison exposures are estimated to have been reported to all US poison centers in 1999. However, extrapolations from the number of reported poisonings to the number of actual poisonings occurring annually in the US cannot be made from these data alone, as considerable variations in poison center penetrance were noted. Indeed, assuming all centers reached the penetrance level of 18.5 poisonings/ 1,000 population reported for one state, 5.0 million poisonings would have been reported to poison centers in 1999.

TABLE 2. Site of Caller and Site of Exposure, Human Poison Exposure Cases

	Site of Caller (%)	Site of Exposure (%)
Residence		
Own	77.2	88.8
Other	2.3	3.2
Health care facility	13.3	0.3
Workplace	1.7	2.7
School	0.7	1.4
Public area	0.5	1.2
Restaurant/food service	0.1	0.5
Other	4.1	1.0
Unknown	0.2	1.0

The data do not directly identify a trend in the overall incidence of poisonings in the US because of changing center participation from year to year and changes in center use. An analysis of data from 59 centers that participated for the entirety of both 1998 and 1999 shows no significant change (a decrease of only 0.005%) in the number of reported poison exposures from 1998 to 1999 within the regions served by these 59 centers.

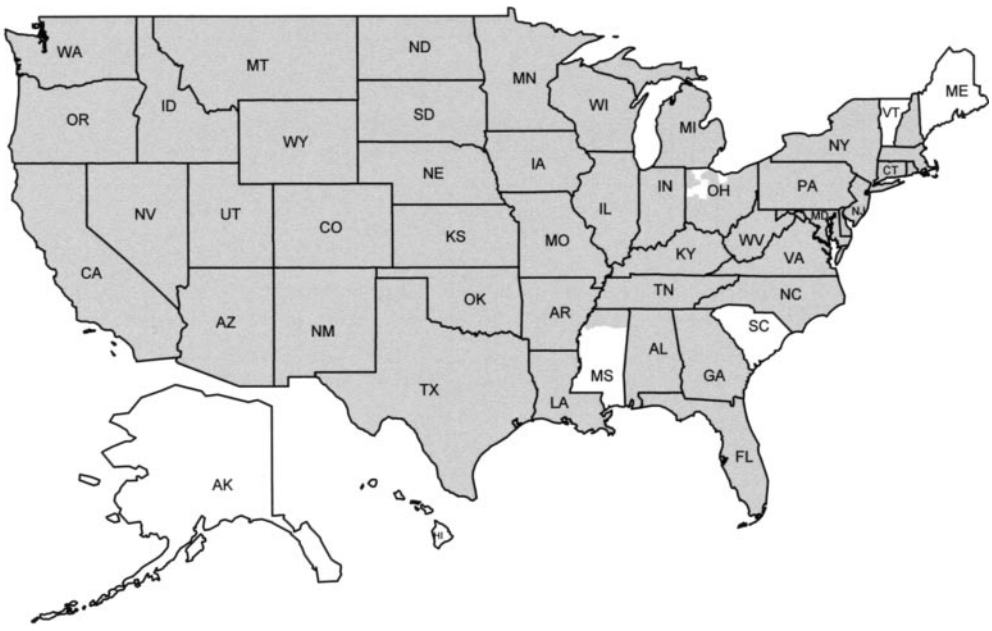

FIGURE 1. Sixty-four poison centers participated in the Toxic Exposure Surveillance System in 1999. The shaded areas denote regions served by reporting centers.

TABLE 3. Age and Gender Distribution of Human Poison Exposure Cases

	Male		Female		Unknown		Total		Cumulative Total	
Age (yr)	No.	Row %	No.	Row %	No.	Row %	No.	Col %	No.	Col %
< 1	74,287	52.4	67,019	47.3	429	0.3	141,735	6.4	141,735	6.4
1	194,783	53.1	171,756	46.8	579	0.2	367,118	16.7	508,853	23.1
2	191,664	53.3	167,401	46.5	621	0.2	359,686	16.3	868,539	39.5
3	89,370	55.0	72,889	44.8	263	0.2	162,522	7.4	1,031,061	46.8
4	42,446	55.9	33,273	43.8	176	0.2	75,895	3.4	1,106,956	50.3
5	24,834	56.3	19,147	43.4	123	0.3	44,104	2.0	1,151,060	52.3
Unknown child ≤ 5	1,706	45.6	1,447	38.7	586	15.7	3,739	0.2	1,154,799	52.5
6-12	87,177	56.4	66,677	43.1	752	0.5	154,606	7.0	1,309,405	59.5
13-19	70,453	44.6	87,114	55.1	426	0.3	157,993	7.2	1,467,398	66.7
Unknown child	944	39.0	923	38.2	551	22.8	2,418	0.1	1,469,816	66.8
Total children (<20)	777,664	52.9	687,646	46.8	4,506	0.3	1,469,816	66.8	1,469,816	66.8
20-29	79,707	44.7	98,332	55.2	210	0.1	178,249	8.1	1,648,065	74.9
30-39	77,801	42.7	104,085	57.2	131	0.1	182,017	8.3	1,830,082	83.1
40-49	54,853	42.0	75,679	57.9	101	0.1	130,633	5.9	1,960,715	89.1
50-59	28,050	39.0	43,848	61.0	37	0.1	71,935	3.3	2,032,650	92.3
60-69	14,933	37.7	24,716	62.3	13	0.0	39,662	1.8	2,072,312	94.1
70-79	10,591	35.0	19,619	64.9	15	0.0	30,225	1.4	2,102,537	95.5
80-89	5,051	31.6	10,903	68.3	12	0.1	15,966	0.7	2,118,503	96.2
90-99	828	26.9	2,248	73.0	3	0.1	3,079	0.1	2,121,582	96.4
Unknown adult	27,072	38.4	41,334	58.6	2,071	2.9	70,477	3.2	2,192,059	99.6
Total adults	298,886	41.4	420,764	58.3	2,593	0.4	722,243	32.8	2,192,059	99.6
Unknown age	3,114	34.2	3,996	43.9	1,987	21.8	9,097	0.4	2,201,156	100.0
Total	1,079,664	49.1	1,112,406	50.5	9,086	0.4	2,201,156	100.0	2,201,156	100.0

REVIEW OF THE DATA

Of the 2,201,156 human exposures reported in 1999, 92.0% occurred at a residence (Table 2). Exposures occurred in the workplace in 2.7% of cases, in schools (1.4%), health care facilities (0.3%), and restaurants or food services (0.5%). Poison center peak call volumes were noted from 4 to 10 PM, although call frequency remained consistently high between 8 AM and midnight, with 91% of calls logged during this 16-hour period. Although the average number of poison center consultations handled per day by all participating U.S. poison centers was 6,031, higher volumes were observed in the warmer months (up to 6,464/day in July) compared to 5,331 consultations per day in December. On average, ignoring time of day and seasonal fluctuations, U.S. poison centers handled one poison exposure every 14 seconds.

The age and gender distribution of human poison exposure victims is outlined in Table 3. Children younger than 3 years of age were involved in 39.5% of cases, and 52.5% occurred in children younger than 6 years. A male predominance is found among poison exposure victims younger than 13 years of age, but the gender distribution is reversed in teenagers and adults. Of all poison exposures captured, 8,980 occurred in pregnant women. Of those with known pregnancy duration, 32% occurred in the first trimester, 38% in the second trimester, and 30% in the third trimester. In 4.4% of cases (95,690 cases) multiple patients were impli-

TABLE 4. Distribution of Age and Gender for 873 Fatalities

Age (yr)	Male	Female	Unknown	Total	%	Cumulative Total	Cumulative %
<1	1	2	0	3	0.3	3	0.3
1	6	2	0	8	0.9	11	1.3
2	3	2	0	5	0.6	16	1.8
3	3	0	0	3	0.3	19	2.2
4	2	1	0	3	0.3	22	2.5
5	1	1	0	2	0.2	24	2.7
6-12	4	4	0	8	0.9	32	3.7
13-19	28	25	0	53	6.1	85	9.7
20-29	72	52	0	124	14.2	209	23.9
30-39	94	92	0	186	21.3	395	45.2
40-49	123	96	0	219	25.1	614	70.3
50-59	50	34	1	85	9.7	699	80.1
60-69	39	34	0	73	8.4	772	88.4
70-79	18	30	0	48	5.5	820	93.9
80-89	14	14	0	28	3.2	848	97.1
90-99	3	6	0	9	1.0	857	98.2
Unknown adult	14	2	0	16	1.8	873	100.0
Total	475	397	1	873	100.0	873	100.0

TABLE 5. Number of Substances Involved in Human Poison Exposure Cases

No. of Substances	No. of Cases	% of Cases
1	2,033,490	92.4
2	135,340	6.1
3	17,597	0.8
4	7,281	0.3
5	3,082	0.1
6	1,492	0.1
7	644	0.0
8	343	0.0
≥9	1,887	0.1
Total	2,201,156	100.0

TABLE 6. Reason for Human Poison Exposure Cases

Reason	No.	%
Unintentional		
General	1,460,073	66.3
Therapeutic error	154,422	7.0
Bite/sting	78,697	3.6
Misuse	72,083	3.3
Environmental	51,751	2.4
Food poisoning	46,054	2.1
Occupational	42,088	1.9
Unknown	2,897	0.1
Total	1,908,065	86.7
Intentional		
Suicidal	154,355	7.0
Misuse	35,261	1.6
Abuse	31,157	1.4
Unknown	9,147	0.4
Total	229,920	10.4
Other		
Malicious	7,046	0.3
Contaminant/tampering	5,010	0.2
Total	12,056	0.5
Adverse Reaction		
Drug	32,742	1.5
Other	8,139	0.4
Food	4,328	0.2
Total	45,209	2.1
Unknown	5,906	0.3
Total	2,201,156	100.0

cated in the poison exposure episode (eg, siblings ''shared'' a household product, multiple patients inhaled vapors at a hazardous materials spill).

Fatalities differed from the total exposure data set in several ways. Table 4 presents the age and gender distribution for the 873 reported fatalities. Although responsible for the majority of poisoning reports, children younger than 6 years of age comprised just 2.7% (24) of the fatalities. Sixty-one percent of poisoning fatalities occurred in 20- to 49-year-old individuals.

A single substance was implicated in 92.4% of reports, and 1.5% of patients were exposed to more than two possibly poisonous drugs or products (Table 5). In contrast, 45% of fatal cases involved two or more drugs or products. The overwhelming majority of human exposures were acute (93.2%) compared to only 51.9% of poison-related fatal exposures. Chronic exposures comprised 2.1% of all poison exposure reports, and acute-on-chronic exposures comprised 4.0%. (Chronic exposures were defined as continuous or repeated exposures occurring in a period exceeding 8 hours.)

Reason for exposure was coded according to the following definitions: *Unintentional general:* All unintentional exposures not specifically defined below. Most unintentional exposures in children are captured here. *Environmental:* Any passive, nonoccupational exposure that results from contamination of air, water, or soil. Environmental exposures are usually caused by man-made 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 substituted for 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. *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 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. *Adverse reaction:* An adverse event occurring with normal, prescribed, labeled or recommended use of the product, as opposed to overdose, misuse or abuse. Included are cases with an unwanted effect caused by an allergic, hypersensitive, or idiosyncratic re-

TABLE 7. Distribution of Reason for Exposure by Age

	<6 Years		6-12 Years		13-19 Years		>19 Years		Unknown*		Total	
Reason	No.	Row %	No.	Row %	No.	Row %	No.	Row %	No.	Row %	No.	Col %
Unintentional	1,148,693	60.2	142,085	7.4	86,757	4.5	522,985	27.4	7,545	0.4	1,908,065	86.7
Intentional	688	0.3	7,661	3.3	64,574	28.1	153,867	66.9	3,130	1.4	229,920	10.4
Other	1,059	8.8	1,743	14.5	2,114	17.5	6,983	57.9	157	1.3	12,056	0.5
Adverse Reaction	3,888	8.6	2,626	5.8	3,663	8.1	34,638	76.6	394	0.9	45,209	2.1
Unknown	471	8.0	491	8.3	885	15.0	3,770	63.8	289	4.9	5,906	0.3
Total	1,154,799	52.5	154,606	7.0	157,993	7.2	722,243	32.8	11,515	0.5	2,201,156	100.0

*Unknown child plus unknown age (excludes unknown adult)

TABLE 8. Distribution of Reason for Exposure and Age for 873 Fatalities

Reason	<6 Years	6-12 Years	13-19 Years	>19 Years	Total
Unintentional					
General	9	0	0	1	10
Therapeutic error	3	0	0	50	53
Bite/sting	0	1	0	6	7
Misuse	0	0	0	11	11
Environmental	8	2	2	11	23
Food poisoning	0	0	0	0	0
Occupational	0	0	0	11	11
Unknown	0	0	0	0	0
Total	20	3	2	90	115
Intentional					
Suicide	0	0	23	449	472
Misuse	1	1	1	57	60
Abuse	0	1	19	117	137
Unknown	0	0	2	38	40
Total	1	2	45	661	709
Other	3	0	1	1	5
Adverse Reaction	0	3	1	7	11
Unknown	0	0	4	29	33
Total	24	8	53	788	873

sponse 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 (86.7%) of poison exposures were unintentional; suicidal intent was present in 7.0% of cases (Table 6). Therapeutic errors comprised 7.0% of exposures (154,422 cases), with unintentional nonpharmaceutical product misuse comprising another 3.3% of exposures (72,083 cases). Unintentional poisonings outnumbered intentional poisonings in all age groups (Table 7). In contrast, of the 873 human poisoning fatalities reported, 85% of adolescent deaths and 84% of adult deaths (older than 19 years of age) were intentional (Table 8).

Ingestions accounted for 75.0% of exposure routes (Table 9), followed in frequency by dermal, inhalation, and ocular exposures. For the 873 fatalities, ingestion, inhalation, and parenteral were the predominant exposure routes.

TABLE 9. Distribution of Route of Exposure for Human Poison Exposure Cases and 873 Fatalities

	All Exposure Cases		Fatal Exposure Cases	
Route	No.	%	No.	%
Ingestion	1,731,553	75.0	712	75.9
Dermal	185,509	8.0	12	1.3
Inhalation	146,717	6.4	93	9.9
Ocular	134,669	5.8	1	0.1
Bites and stings	85,102	3.7	7	0.7
Parenteral	8,740	0.4	42	4.5
Aspiration	2,935	0.1	10	1.1
Other	5,916	0.3	3	0.3
Unknown	7,843	0.3	58	6.2
Total	2,308,984	100.0	938	100.0

NOTE: Multiple routes of exposure were observed in many poison exposure victims. Percentage is based on the total number of exposure routes (2,308,984 for all patients, 938 for fatal cases) rather than the total number of human exposures (2,201,156) or fatalities (873).

TABLE 10. Management Site of Human Poison Exposure Cases

Site	No.	%
Managed on-site, non-health care facility	1,654,942	75.2
Managed in health care facility		
Treated and released	270,279	12.3
Admitted to critical care	61,723	2.8
Admitted to noncritical care	33,358	1.5
Admitted to psychiatry	32,235	1.5
Lost to follow-up; left AMA	76,017	3.4
Subtotal	473,612	21.5
Other	20,341	0.9
Refused referral	42,827	1.9
Unknown	9,434	0.4
Total	2,201,156	100.0

ABBREVIATION: AMA, against medical advice.

Clinical effects (signs, symptoms, or laboratory abnormalities) were coded in 30.5% of cases (17.4% had one effect, 7.8% had two effects, 3.3% had three effects, 1.3% had four effects, 0.4% had five effects, and 0.3% had more than five effects). Of 1,455,796 clinical effects coded, 79.3% were deemed related, 8.1% were considered not related, and 12.6% were coded as ''unknown if related.''

The majority of cases reported to poison centers were managed in a nonhealth care facility (78%), usually at the site of exposure, the patient's own home (Table 10). Treatment in a health care facility was rendered in 21.5% of cases and recommended in another 1.9% of patients who refused the referral. The percentage of patients treated in a health care facility varied considerably with age. Only 10.6% of children under 6 years and only 13.7% of children between 6 and 12 years were managed in a health care facility compared to 44.5% of teenagers (13 to 19 years of age) and 35.4% of adults (older than 19 years of age). Of cases managed in a health care facility, 57.1% were treated and released without admission, 13.0% were admitted for critical care, and 7.0% were admitted for noncritical care. Where treatment was provided in a health care facility, 36.6% of the patients were referred in by the poison center and 63.4% were already in or en route to the health care facility when the poison center was contacted. Health care facilities included acute care hospitals (86.1%), physician offices or clinics (11.3%), and freestanding emergency centers (2.6%).

Table 11 displays the medical outcome of the human poison exposure cases distributed by age, showing more 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 shows an increasing duration of the clinical effects observed with more severe outcomes. Medical outcome categories were as follows: *No effect:* The patient developed no 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 mucous membranes (eg, self-limited gastrointestinal symptoms, drowsiness, skin irritation, first degree

TABLE 11. Medical Outcome of Human Poison Exposure Cases by Patient Age

Outcome	<6 Years		6-12 Years		13-19 Years		>19 Years		Unknown		Total	
	No.	Col %	No.	Col %	No.	Col %	No.	Col %	No.	Col %	No.	%
No effect	352,271	30.5	28,500	18.4	27,684	17.5	85,118	11.8	1,249	10.8	494,822	22.5
Minor effect	116,766	10.1	29,578	19.1	40,638	25.7	171,098	23.7	1,630	14.2	359,710	16.3
Moderate effect	9,241	0.8	3,906	2.5	13,967	8.8	64,467	8.9	427	3.7	92,008	4.2
Major effect	728	0.1	261	0.2	1,705	1.1	10,742	1.5	64	0.6	13,500	0.6
Death	24	0.0	8	0.0	53	0.0	788	0.1	0	0.0	873	0.0
No follow-up, nontoxic	276,608	24.0	28,172	18.2	12,077	7.6	58,591	8.1	1,014	8.8	376,462	17.1
No follow-up, minimal toxicity	364,720	31.6	56,096	36.3	43,257	27.4	238,782	33.1	3,253	28.3	706,108	32.1
No follow-up, potentially toxic	13,972	1.2	3,207	2.1	13,178	8.3	51,639	7.2	3,465	30.1	85,461	3.9
Unrelated effect	20,469	1.8	4,878	3.2	5,434	3.4	41,018	5.7	413	3.6	72,212	3.3
Total	1,154,799	52.5	154,606	7.0	157,993	7.2	722,243	32.8	11,515	0.5	2,201,156	100.0

TABLE 12. Distribution of Medical Outcome by Reason for Exposure for Human Poison Exposure Cases

Outcome	Unintentional		Intentional		Other		Adverse Reaction		Unknown		Total	
	No.	Col %	No.	Col %	No.	Col %	No.	Col %	No.	Col %	No.	Col %
No effect	447,577	23.5	44,880	19.5	1,254	10.4	650	1.4	461	7.8	494,822	22.5
Minor effect	283,633	14.9	62,768	27.3	2,967	24.6	9,553	21.1	789	13.4	359,710	16.3
Moderate effect	50,865	2.7	34,713	15.1	718	6.0	4,902	10.8	810	13.7	92,008	4.2
Major effect	3,272	0.2	9,245	4.0	92	0.8	485	1.1	406	6.9	13,500	0.6
Death	115	0.0	709	0.3	5	0.0	11	0.0	33	0.6	873	0.0
No follow-up, nontoxic	369,664	19.4	4,331	1.9	1,064	8.8	1,183	2.6	220	3.7	376,462	17.1
No follow-up, minimal toxicity	653,192	34.2	29,767	12.9	3,941	32.7	18,070	40.0	1,138	19.3	706,108	32.1
No follow-up, potentially toxic	42,281	2.2	38,335	16.7	1,030	8.5	2,568	5.7	1,247	21.1	85,461	3.9
Unrelated effect	57,466	3.0	5,172	2.2	985	8.2	7,787	17.2	802	13.6	72,212	3.3
Total	1,908,065	86.7	229,920	10.4	12,056	0.5	45,209	2.1	5,906	0.3	2,201,156	100.0

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 disfigurement (eg, 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 (eg, 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 patient's outcome 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

TABLE 13. Duration of Clinical Effects by Medical Outcome

Duration of Effect	Minor Effect (Col %)	Moderate Effect (Col %)	Major Effect (Col %)
≤2 hours	43.5	8.0	3.2
>2 hours, ≤8 hours	24.4	22.1	10.7
>8 hours, ≤24 hours	17.7	30.8	29.1
>24 hours, ≤3 days	6.0	17.1	28.5
>3 days, ≤1 week	2.1	7.9	13.1
>1 week, ≤1 month	0.5	2.7	4.6
>1 month	0.2	0.7	1.4
Anticipated permanent	0.0	0.2	2.5
Unknown	5.5	10.6	6.9

TABLE 14. Decontamination and Therapeutic Intervention

Therapy	No. of Patients	%
Decontamination only	1,269,005	57.7
Observation only	295,301	13.4
No therapy provided	259,634	11.8
Decontamination and other therapy	140,888	6.4
Other therapy only (no decontamination)	103,196	4.7
Unknown if therapy provided/patient refused	133,132	6.0

TABLE 15. Therapy Provided in Human Exposure Cases

Therapy	No.
Decontamination	
Dilution/irrigation	1,129,656
Activated charcoal, single dose	136,151
Cathartic	69,039
Gastric lavage	37,084
Ipecac syrup	21,942
Activated charcoal, multidose	9,702
Other emetic	6,667
Whole bowel irrigation	2,064
Measures to Enhance Elimination	
Hemodialysis	1,049
Hemoperfusion	33
Other extracorporeal procedure	25
Specific Antidote Administration	
N-acetylcysteine (oral)	10,893
Naloxone	8,195
Flumazenil	1,952
Antivenin	910
Atropine	815
N-acetylcysteine (IV)	785
Ethanol	602
Phytonadione	370
Fab fragments	334
Hyperbaric oxygen	293
Pyridoxine	253
Folate	235
Physostigmine	180
Pralidoxime (2-PAM)	178
Deferoxamine	149
Succimer	139
Methylene blue	105
EDTA	88
Dimercaprol (BAL)	79
Sodium thiosulfate	59
Amyl nitrite	44
Sodium nitrite	44
Penicillamine	33
Hydroxocobalamin	5
Other intervention	
Alkalinization	6,247
Transplantation	23
ECMO	13

TABLE 16. Decontamination Trends

Year	Human Exposures Reported	% of Exposures Involving Children <6 Years	Ipecac Administered (% of Exposures)	Activated Charcoal Administered (% of Exposures)
1983	251,012	64.0	13.4	4.0
1984	730,224	64.1	12.9	4.0
1985	900,513	63.4	15.0	4.6
1986	1,098,894	63.0	13.3	5.2
1987	1,166,940	62.3	10.1	5.2
1988	1,368,748	61.8	8.4	6.5
1989	1,581,540	61.1	7.0	6.4
1990	1,713,462	60.8	6.1	6.7
1991	1,837,939	59.9	5.2	7.0
1992	1,864,188	58.8	4.3	7.3
1993	1,751,476	56.0	3.7	7.3
1994	1,926,438	54.1	2.7	6.8
1995	2,023,089	52.9	2.3	7.7
1996	2,155,952	52.8	1.8	7.3
1997	2,192,088	52.5	1.5	7.1
1998	2,241,082	52.7	1.2	6.8
1999	2,201,156	52.5	1.0	6.6

TABLE 17A. Substances Most Frequently Involved in Human Exposures

Substance	No.	%*
Cleaning substances	217,476	9.9
Analgesics	214,066	9.7
Cosmetics and personal care products	205,242	9.3
Plants	113,864	5.2
Foreign bodies	105,837	4.8
Cough and cold preparations	99,873	4.5
Bites/envenomations	92,137	4.2
Topicals	84,922	3.9
Insecticides/pesticides (includes rodenticides)	78,853	3.6
Food products, food poisoning	74,980	3.4
Sedatives/hypnotics/antipsychotics	71,809	3.3
Antidepressants	70,060	3.2
Hydrocarbons	62,772	2.9
Antimicrobials	59,933	2.7
Chemicals	59,312	2.7
Alcohols	54,282	2.5

NOTE: Despite a high frequency of involvement, these substances are not necessarily the most toxic, but rather may only be the most readily accessible.
*Percentages are based on the total number of human exposures rather than the total number of substances.

and objective evidence that an exposure initially believed to have occurred actually never occurred (eg, all missing pills are later located). All cases coded as confirmed nonexposure are excluded from this report. In 1999 there were 6,954 such cases reported nationally.

Tables 14 and 15 outline the use of decontamination procedures, specific antidotes, and measures to enhance elimination in the treatment of patients reported in this database. These must be interpreted as minimum frequencies because of the limitations of telephone data gathering. Ipecac syrup was administered in 1.0% of cases. In children under 6 years of age, ipecac syrup was most often administered outside a health care facility. This pattern was reversed

TABLE 17B. Substances Most Frequently Involved in Pediatric Exposures (Children Under 6 Years)

Substance	No.	%*
Cosmetics and personal care products	153,057	13.3
Cleaning substances	123,575	10.7
Analgesics	87,471	7.6
Plants	79,287	6.9
Foreign bodies	76,268	6.6
Topicals	65,561	5.7
Cough and cold preparations	63,951	5.5
Insecticides/pesticides (includes rodenticides)	43,107	3.7
Vitamins	38,651	3.3
Gastrointestinal preparations	36,133	3.1
Antimicrobials	34,940	3.0
Arts/crafts/office supplies	29,225	2.5
Antihistamines	24,981	2.2
Hydrocarbons	24,468	2.1
Hormones and hormone antagonists	23,661	2.0

NOTE: Despite a high frequency of involvement, these substances are not necessarily the most toxic, but rather may only be the most readily accessible.
*Percentages are based on the total number of exposures in children under six years, rather than the total number of substances.

TABLE 17C. Substances Most Frequently Involved in Adult Exposures (>19 years)

Substance	No.	%*
Analgesics	74,602	10.3
Cleaning substances	64,691	9.0
Bites/envenomations	52,349	7.2
Sedatives/hypnotics/antipsychotics	50,311	7.0
Antidepressants	42,983	6.0
Food products, food poisoning	36,924	5.1
Cosmetics and personal care products	30,029	4.2
Chemicals	29,441	4.1
Alcohols	28,020	3.9
Hydrocarbons	25,676	3.6
Fumes/gases/vapors	25,056	3.5
Insecticides/pesticides (includes rodenticides)	24,510	3.4
Cardiovascular drugs	22,947	3.2
Plants	16,764	2.3
Cough and cold preparations	15,868	2.2
Antihistamines	15,294	2.1

NOTE: Despite a high frequency of involvement, these substances are not necessarily the most toxic, but rather may only be the most readily accessible.
*Percentages are based on the total number of exposures in adults (over 19 years), rather than the total number of substances.

in teenagers and adults, likely reflecting the greater proportion of these patients treated in emergency departments. Ipecac was used most frequently in children under 6 years of age (83.4% of all ipecac use). Table 16 shows a continuing decline in the use of ipecac-induced emesis in the treatment of poisoning.

Table 17A presents the most common substance categories 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 with the largest number of reported deaths; analgesics and antidepressants lead this list. Table 19 shows little variation over the past 17 years in the percentage of cases reported to TESS that are fatal poisonings and in the percentage of reported fatalities due to suicide. In contrast, the percentage of reported fatalities involving children younger than 6 years has declined. A breakdown of plant exposures is provided for those most commonly implicated (Table 20).

TABLE 18. Categories with Largest Numbers of Deaths

Category	No.	% of All Exposures in Category
Analgesics	340	0.159
Antidepressants	153	0.218
Cardiovascular drugs	127	0.290
Stimulants and street drugs	121	0.346
Sedative/hypnotics/antipsychotics	110	0.153
Alcohols	97	0.179
Gases and fumes	45	0.109
Chemicals	43	0.072
Antihistamines	28	0.054
Muscle relaxants	18	0.137
Automotive products	15	0.103
Insecticides/pesticides (includes rodenticides)	15	0.019
Anticonvulsants	14	0.060
Hormones/hormone antagonists	13	0.033
Cleaning substances	13	0.006

NOTE: Tables 18, 22A and 22B are based on a total of up to two substances coded per exposure, while Table 21 has up to three substances coded.

TABLE 19. 17-Year Comparisons of Fatality Data

	Total Fatalities		Suicides		Pediatric Deaths (<6 years)	
Year	No.	% of Cases	No.	% of Deaths	No.	% of Deaths
1983	95	0.038	60	63.2	10	10.5
1984	293	0.040	165	56.3	21	7.2
1985	328	0.036	178	54.3	20	6.1
1986	406	0.037	223	54.9	15	3.7
1987	397	0.034	226	56.9	22	5.5
1988	545	0.040	297	54.5	28	5.1
1989	590	0.037	323	54.7	24	4.1
1990	612	0.036	350	57.2	25	4.1
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

A summary of the 873 fatal exposures is presented in Table 21. Each of these cases was abstracted and verified by the reporting center, with only those exposures deemed ''probably'' or ''undoubtedly'' responsible for the fatality included in this compendium. The highest blood concentration of implicated substances is provided when available to the reporting poison center. Prehospital cardiac and/or respiratory arrests occurred in 34% of all fatalities, and these are indicated in Table 21.

All fatality abstracts from participating centers were reviewed in detail. Selected representative, interesting or unusual cases are presented in the Appendix. After extensive review, 873 fatalities reported in 1999 were deemed related to the exposure. Although the overall number of deaths increased by over 10% compared to 1998, much of this increase is attributed to an increase in the number of indirect reports obtained from medical examiners. Analgesics, antidepressant, cardiovascular drugs and stimulant and street drugs were the primary substances involved in 64% of the fatalities. The majority of analgesic fatalities (71%) were caused by acetaminophen, aspirin, and other salicylates. Although nontricyclic antidepressants accounted for 80% of antidepressant exposures, tricyclic antidepressants were the primary substances implicated in 75% of antidepressant fatalities. Of the 92 deaths in which cardiovascular drugs were the primary substances, calcium channel blockers accounted for 55%. Cocaine and heroin were responsible for 55% and 29%, respectively, of the 91 deaths for which stimulants and street drugs were the primary substances. Remarkably, 75% of fatalities involving digoxin were therapeutic errors.

TABLE 20. Frequency of Plant Exposures by Plant Type

Botanical Name	Common Name	Frequency
Capsicum annuum	Pepper	4,721
Philodendron spp.	Philodendron	3,790
Spathiphyllum spp.	Peace lily	3,429
Euphorbia pulcherrima	Poinsettia	3,236
Ilex spp.	Holly	3,197
Phytolacca americana	Pokeweed, inkberry	2,839
Ficus spp.	Rubber tree, weeping fig	1,975
Dieffenbachia spp.	Dumbcane	1,870
Toxicodendron radicans	Poison ivy	1,617
Crassula spp.	Jade plant	1,458
Epipremnum aureum	Pothos, devil's ivy	1,227
Malus spp.	Apple, crabapple (plant parts)	1,120
Eucalyptus spp.	Eucalyptus	1,009
Hedera helix	English ivy	1,000
Rhododendron spp.	Rhododendron, azalea	942
Taraxacum officinale	Dandelion	919
Chrysanthemum spp.	Chrysanthemum	883
Saintpaulia ionantha	African violet	877
Schlumbergera Bridgesii	Christmas cactus	859
Pyracantha spp.	Pyracantha	781

NOTE: This table provides the frequency of involvement of plants in exposures reported to poison centers with no correlation with severity of toxicity. Several of the plants on the list pose little, if any, ingestion hazard.

Among nonpharmaceuticals, the largest single category responsible for fatalities was fumes and gases, which included 32 carbon monoxide exposures. Interestingly, there were eight deaths from mushrooms and plants in adults. All of the mushroom deaths resulted from mistaking a poisonous mushroom for an edible nonpoisonous one. All three of the plant exposures were intentional.

There were 10 deaths associated with gamma hydroxybutyrate (GHB) or a GHB analog in 1999 compared with only one to two deaths each year between 1995 and 1998. For eight of the deaths, GHB or a GHB analog was the primary substance. Nine of the deaths occurred in adults and were intentional. One additional death in an 18-year-old involved ethanol as the primary substance and was malicious. As federal and state restrictions on GHB and its analogs become more stringent, it will be interesting to look for trends in GHB related exposures and fatalities.

In children under 6 years of age, 83% of the 24 deaths were unintentional. Three of the remaining deaths were the result of malicious intent by a parent or caretaker and the fourth infant died from methadone intentionally added to formula by the infant's mother for sedation. Two of the three therapeutic errors occurred in hospitals. Fourteen (58%) deaths in children younger than 6 years of age were caused by nonpharmaceuticals; this contrasts sharply with the observation that pharmaceuticals were involved in 78% of all deaths in this report. One-third of deaths in children under 6 years of age were environmental, with all but one of these deaths caused by carbon monoxide. Three deaths in children 2 years of age and under resulted from aspiration of an oil or hydrocarbon.

In adolescents (13 to 19 years of age), 85% of deaths were intentional and for 66% of these deaths, pharmaceuticals were the primary substance responsible. Many adolescent fatalities were caused by substances which are relatively inexpensive and easily accessible to adolescents such as nonprescription analgesics and volatile inhalants. Analgesics, primarily products containing acetaminophen and aspirin, were involved in 30% of deaths. Volatile inhalant abuse is a persistent problem in adolescents. Of 53 fatalities in adolescents, 23% resulted from intentional inhalation abuse of air fresheners and hydrocarbons. An additional death in a 14-year-old resulted from chronic inhalation of a xylene/methanol containing solvent for an unknown reason. Stimulants and street drugs were involved in 10 (19%) adolescent deaths.

Tables 22A and 22B provide comprehensive demographic data on patient age, reason for exposure, medical outcome, and use of a health care facility for all 2,201,156 exposures, presented by category. Table 22A focuses on nonpharmaceuticals; Table 22B presents drugs. Of the 2,368,496 substances logged in Tables 22A and 22B, 56.9% were nonpharmaceuticals and 43.1% were pharmaceuticals. The reason for the exposure was intentional for 25.0% of pharmaceutical substances implicated compared with only 3.9% of nonpharmaceutical substances. Correspondingly, treatment in a health care facility was provided in a higher percentage of exposures to pharmaceutical substances (34.4%) compared with nonpharmaceutical substances (16.2%). Pharmaceutical exposures also had more severe outcomes. Of substances implicated in fatal cases, 78.0% were pharmaceuticals, compared with only 43.1% in nonfatal cases. Similarly, 79.0% of substances implicated in major outcomes were pharmaceuticals.

In closing, we gratefully acknowledge the extensive contributions of each participating poison center and the assistance of the many health care providers who provided comprehensive data to the poison centers for inclusion in this database.

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
NONPHARMACEUTICALS							
Adhesives/glue							
1[a]	42 yr	Methylmethacrylate	A	Parenteral	Adv rxn		
2[a]	78 yr	Methylmethacrylate	A	Parenteral	Adv rxn		
3[a]	41 yr	Tetrahydrofuran/methyl ethyl ketone cement methyl ethyl ketone cleaner	A	Ingestion	Int suicide		

See also case 185 (glue).

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
Alcohols							
4[ipm]	21 yr	Ethanol	A	Ingestion	Int abuse		
5[ipm]	42 yr	Ethanol	U	Ingestion	Int abuse		
6[ipm]	45 yr	Ethanol	U	Ingestion	Int abuse		
7[ipm]	45 yr	Ethanol	U	Ingestion	Int abuse		
8[ipm]	46 yr	Ethanol	A/C	Ingestion	Unknown		
9	51 yr	Ethanol	C	Ingestion	Int abuse		
10[ipm]	57 yr	Ethanol	U	Ingestion	Int abuse		
11	60 yr	Ethanol	A/C	Ingestion	Int suicide		
12	62 yr	Ethanol	C	Ingestion	Int abuse	207 mg/dL	
13	62 yr	Ethanol	U	Ingestion	Unknown	400 mg/dL	
14	43 yr	Ethanol	C	Ingestion	Int abuse		
		acetaminophen					
15[p]	32 yr	Ethanol	A	Ingestion	Int abuse	220 mg/dL	
		acetaminophen/hydrocodone				16 µg/mL¥	
						hydrocodone 150 ng/mL	
		diazepam				240 ng/mL	
16	43 yr	Ethanol	A/C	Ingestion	Int abuse	533 mg/dL	
		benzodiazepine					
		marijuana					
17[p]	42 yr	Ethanol	A	Ingestion	Int suicide	100 mg/dL§	
		carisoprodol				15.8 µg/mL§	
						meprobamate 21 µg/mL§	
		propoxyphene				0.17 µg/mL§	
						norpropoxyphene 0.86 µg/mL§	
18	44 yr	Ethanol	A/C	Ing/Inh	Int abuse		
		cocaine					
19[p]	36 yr	Ethanol	A	Ingestion	Int abuse	337 mg/dL	
		diazepam					
		propoxyphene					
20	51 yr	Ethanol	A/C	Ingestion	Int suicide	360 mg/dL	
		doxepin					
		acetaminophen/codeine					
21[ap]	18 yr	Ethanol	A	Ingestion	Malicious	367 mg/dL	
		gamma hydroxybutyrate				17 µg/mL	
22[ip]	>19 yr	Ethanol	A/C	Ingestion	Int suicide	380 mg/dL§	
		paroxetine				970 ng/mL§	
		chlordiazepoxide					
23[p]	47 yr	Ethanol	A/C	Ingestion	Int abuse	600 mg/dL	
		trifluoperazine					
		trazodone					
24	69 yr	Isopropanol	A	Ingestion	Int abuse	184 mg/dL	
25	47 yr	Methanol	A	Ingestion	Unknown	70 mg/dL	
26	50 yr	Methanol	A	Ingestion	Int suicide	252 mg/dL	
27	62 yr	Methanol	A	Ingestion	Int suicide	90 mg/dL	
28	68 yr	Methanol	U	Ingestion	Int unk	126 mg/dL	
29	41 yr	Methanol	A	Ingestion	Int unk		
		cocaine					
30	46 yr	Methanol	A	Ingestion	Int suicide		
		cocaine					
		opiate					

See also cases 46, 53, 71, 74, 82, 140, 141, 162, 173, 244 thru 252, 261, 271 thru 273, 293, 297, 300 thru 302, 306, 327, 328, 361, 362, 385, 386, 390, 401, 409, 420, 422-429, 438, 447, 448, 453, 482, 490, 493-498, 502, 507, 517, 518, 541, 549, 554, 573, 578, 584, 585, 612, 617, 649, 659, 665, 670, 683, 718, 721, 749, 750, 757, 774, 779, 818 thru 820, 826, 854 thru 856, 862, 863, 867 (ethanol).

Automotive products							
31	23 yr	Antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
32	26 yr	Antifreeze (ethylene glycol)	A	Ingestion	Int suicide	13 mg/dL	
33[p]	30 yr	Antifreeze (ethylene glycol)	A	Ingestion	Int suicide	86 mg/dL§	
34	30 yr	Antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
35	42 yr	Antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
36[p]	50 yr	Antifreeze (ethylene glycol)	A	Ingestion	Int suicide	160 mg/dL	9.5 h
37	51 yr	Antifreeze (ethylene glycol)	A	Ingestion	Int unk		
38	54 yr	Antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
39	56 yr	Antifreeze (ethylene glycol)	A	Unknown	Int suicide	948 mg/dL	
40	37 yr	Antifreeze (ethylene glycol)	A	Ingestion	Int suicide		
		amitriptyline					

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
41	25 yr	Gas line antifreeze (methanol)	A	Ingestion	Int suicide		
42[p]	34 yr	Gas line antifreeze (methanol)	A	Ingestion	Int suicide		
43[p]	44 yr	Gas line antifreeze (methanol)	A	Ingestion	Int suicide		
44	85 yr	Transmission fluid (hydrocarbon) alprazolam	A	Asp/Ing	Int suicide		
45[ap]	40 yr	Windshield washer fluid (methanol)	A	Ingestion	Int abuse	431 mg/dL	16 h
46[p]	36 yr	Windshield washer fluid (methanol) ethanol transmission fluid (hydrocarbon)	A	Ingestion	Int suicide		
47	15 yr	Unknown automotive product	A	Derm/Inh	Env		
See also case 46 (transmission fluid, hydrocarbon).							
Bites and envenomations							
48	41 yr	Hymenoptera	A	Bite/sting	Bite/sting		
49[p]	83 yr	Hymenoptera	A	Bite/sting	Bite/sting		
50	56 yr	Hymenoptera pyrethrins	A	Bite/sting/Inh	Bite/sting		
51[ai]	6 yr	*Loxosceles reclusa*	A	Bite/sting	Bite/sting		
52[a]	42 yr	*Loxosceles reclusa*	A	Bite/sting	Bite/sting		
53[a]	43 yr	Rattlesnake ethanol	A	Bite/sting	Bite/sting		
54[p]	45 yr	Unknown snake	A	Bite/sting	Bite/sting		
Chemicals							
55[ap]	25 yr	Cyanide, potassium	A	Ingestion	Int suicide	150 µg/mL§	
56[p]	32 yr	Cyanide, potassium	A	Ingestion	Int suicide	120 µg/mL§	
57[a]	97 yr	Cyanide	A	Inhalation	Int suicide	>10 µg/mL	
58	>19 yr	Cyanide carbon monoxide/smoke	A	Inhalation	Env	553 µg/mL	
59	29 yr	Dichromated titanium/amorphous boron/ potassium perchlorate/barium chromate	A	Derm/Inh	Occ		
60[a]	15 yr	Ethylene glycol	U	Ingestion	Unknown	77 mg/dL	
61	25 yr	Ethylene glycol	A	Ingestion	Int suicide		
62	27 yr	Ethylene glycol	A	Ingestion	Int suicide	65 µg/mL§	
63	32 yr	Ethylene glycol	A	Ingestion	Int suicide	71 mg/dL	
64	35 yr	Ethylene glycol	A	Ingestion	Int unk	40 mg/dL	
65	39 yr	Ethylene glycol	U	Ingestion	Int unk		
66	42 yr	Ethylene glycol	A	Ingestion	Int suicide	376 mg/dL	
67	44 yr	Ethylene glycol	A	Ingestion	Int suicide		
68	44 yr	Ethylene glycol	A	Ingestion	Int suicide	78 mg/dL	
69	44 yr	Ethylene glycol	A	Ingestion	Int suicide		
70	28 yr	Ethylene glycol diphenhydramine	A	Ingestion	Int suicide	58 mg/dL	
71	25 yr	Ethylene glycol ethanol	A	Ingestion	Int suicide		
72[a]	17 yr	Ethylene glycol flurazepam	A	Ingestion	Int suicide	29 mg/dL	18 h
73[a]	27 yr	Formaldehyde	A	Ingestion	Int suicide	>5,000 µg/mL§	
74	39 yr	Hydrochloric acid ethanol	A	Ingestion	Int suicide	197 mg/dL	
75	68 yr	Hydrochloric acid gasoline	A	Ing/Ocular	Int suicide		
76	70 yr	Hydrochloric acid malathion calcium acid methanearsonate	A	Ingestion	Int suicide		
77	30's yr	Hydrofluoric acid	A	Derm/Inh	Occ		
78	30's yr	Hydrofluoric acid	A	Derm/Inh	Occ		
79	48 yr	Hydrofluoric acid (70%)	A	Dermal	Occ		
80[p]	>19 yr	Hydrofluoric acid	A	Derm/Inh	Occ		
81	63 yr	Lye	A	Ingestion	Int suicide		
82	61 yr	Propylene glycol ethanol	A	Ingestion	Int unk	4 mg/dL§	
83[a]	69 yr	Sodium nitrite	A/C	Ingestion	Int misuse	methemoglobin 38%	
84	72 yr	Sulfuric acid (20%)	A	Ingestion	Int suicide		
See also cases 771 (ammonia); 136 thru 138 (cyanide); 351 (hydrofluoric acid); 145 (phosphoric acid).							

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
Cleaning substances							
85[a]	12 mo	Degreaser (hydrochloric acid 3%/ ammonium bifluoride 14%)	A	Ingestion	Unint gen		
86	65 yr	Disinfectant (diethylene glycol monobutyl ether/alkyl dimethyl benzyl ammonium chlorides)	A	Ingestion	Int abuse		
87	61 yr	Drain opener (hydrochloric acid, 15-18%)	A	Ingestion	Int suicide		
88	43 yr	Drain opener (sodium hydroxide, 50-60%)	A	Ingestion	Int suicide		
89	54 yr	Drain opener (sodium hydroxide)	A	Ingestion	Malicious		
90[ip]	65 yr	Drain opener (sodium hydroxide)	A	Ingestion	Int suicide		
91[a]	66 yr	Drain opener (sulfuric acid, 93-100%)	A	Ingestion	Int suicide		
92[a]	48 yr	Hydrofluoric acid cleaner	A	Ingestion	Int suicide		
93	51 yr	Hydrofluoric acid cleaner	A	Ingestion	Unknown		
94	51 yr	Pine oil/isopropanol cleaner	A	Asp/Ing	Int suicide		
95[a]	82 yr	Pine oil/isopropanol cleaner	A	Asp/Ing	Int suicide		
96	51 yr	Pine oil/isopropanol cleaner cocaine benzodiazepine	A	Ingestion	Int suicide		
97[p]	30's yr	Tape head cleaner (ethylene chloride) air freshener	A	Inhalation	Int abuse		
98[a]	18 mo	Tire cleaner (hydrofluoric acid or ammonium bifluoride)	A	Ingestion	Unint gen		
99	45 yr	Toilet bowl cleaner (hydrochloric acid, 15%)	A	Ingestion	Int suicide		
See also cases 3 (cleaner, methyl ethyl ketone); 872 (cleaner, trichlorocyanuric acid); 771 (fabric spray, zinc chloride); 188 (toilet bowl cleaner, hydrochloric acid).							
Cosmetics and personal care products							
100[a]	12 mo	Hair oil (safflower oil/mineral oil)	A	Asp/Ing	Unint gen		
101[a]	16 yr	Hair spray (hydrofluorocarbon/isobutane/ethanol) amphetamine/dextroamphetamine	A	Ing/Inh	Int abuse	amphetamine 0.12 µg/mL§	
102	64 yr	Mouthwash (ethanol 26.9%/methyl salicylate/eucalyptol)	A/C	Ingestion	Int misuse		
See also case 586 (mouthwash, ethanol).							
Deodorizers							
103	12 yr	Air freshener	A	Inhalation	Int abuse		
104[p]	14 yr	Air freshener (isobutane/propane propellant)	A	Inhalation	Int abuse		
105[p]	16 yr	Air freshener (aerosol)	A	Inhalation	Int abuse		
106[p]	16 yr	Air freshener (butane/isobutane/propane propellant)	A	Inhalation	Int abuse		
107[p]	19 yr	Air freshener (aerosol)	A	Inhalation	Int abuse		
See also case 97 (air freshener).							
Essential Oils							
108[a]	2 yr	Citronella oil	A	Asp/Ing	Unint gen		
109[a]	87 yr	Potpourri oil	A	Asp/Ing	Unint misuse		
Foreign Bodies							
See also cases 458, 460 (activated charcoal).							
Fumes, gases and vapors							
110[ap]	50 yr	Carbon dioxide (dry ice)	A	Inhalation	Occ		
111[p]	18 mo	Carbon monoxide/smoke	A	Inhalation	Env		39%
112[a]	2 yr	Carbon monoxide	A	Inhalation	Env		37%
113	2 yr	Carbon monoxide/smoke	A	Inhalation	Env		
114[p]	3 yr	Carbon monoxide	A	Inhalation	Env		45%
115	4 yr	Carbon monoxide/smoke	A	Inhalation	Env		
116[p]	5 yr	Carbon monoxide/smoke	A	Inhalation	Env		40%
117[p]	5 yr	Carbon monoxide/smoke	A	Inhalation	Env		36%
118[p]	11 yr	Carbon monoxide	A	Inhalation	Env		
119[p]	12 yr	Carbon monoxide	A	Inhalation	Env		55%
120[i]	20 yr	Carbon monoxide	A	Inhalation	Env		
121[p]	27 yr	Carbon monoxide	A	Inhalation	Int suicide		57%
122[p]	30 yr	Carbon monoxide	A	Inhalation	Int suicide		
123[ip]	30's yr	Carbon monoxide	A	Inhalation	Int suicide		52%§
124[p]	36 yr	Carbon monoxide	A	Inhalation	Env		42%
125[p]	37 yr	Carbon monoxide	A	Inhalation	Int suicide		72%§
126[p]	39 yr	Carbon monoxide	A	Inhalation	Int suicide		
127[p]	39 yr	Carbon monoxide	A	Inhalation	Int suicide		

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
128[p]	42 yr	Carbon monoxide	A	Inhalation	Env		
129[p]	44 yr	Carbon monoxide	A	Inhalation	Int suicide		
130[p]	48 yr	Carbon monoxide	A	Inhalation	Env		
131[p]	67 yr	Carbon monoxide/smoke	A	Inhalation	Env	48%	
132[p]	73 yr	Carbon monoxide/smoke	A	Inhalation	Env	43%	
133[p]	76 yr	Carbon monoxide	A	Inhalation	Int suicide		
134	80 yr	Carbon monoxide	U	Inhalation	Env	14%	
135[p]	>19 yr	Carbon monoxide	A	Inhalation	Env	55%	
136	18 yr	Carbon monoxide/smoke cyanide	A	Inhalation	Env	27%	
137[p]	40's yr	Carbon monoxide/smoke cyanide	A	Inhalation	Env	35%	
138[p]	56 yr	Carbon monoxide/smoke cyanide	A	Inhalation	Env	51% 2,900 µg/mL	
139[p]	22 yr	Carbon monoxide diphenhydramine	A	Ing/Inh	Int suicide	40%§ 0.53 µg/mL§	
140[ip]	24 yr	Carbon monoxide ethanol	A	Ing/Inh	Int suicide	85%§ 10 mg/dL§	
141[ip]	53 yr	Carbon monoxide ethanol	A	Ing/Inh	Int suicide	81%§ 60 mg/dL§	
142	50 yr	Carbon monoxide hydroxyzine	A	Ing/Inh	Int suicide	27%	
143[p]	70 yr	Chlorine gas (sulfuric acid and hypochlorite drain opener mixed)	A	Inhalation	Unint misuse		
144[p]	32 yr	Hydrogen sulfide	A	Inhalation	Occ		
145[p]	40 yr	Hydrogen sulfide phosphoric acid	A	Inhalation	Occ		
146[p]	18 yr	Nitrous oxide propellant (whipped cream)	A	Inhalation	Int abuse		
147[p]	20 yr	Nitrous oxide propellant (whipped cream)	A	Inhalation	Int unk		
148[p]	16 yr	Propane	A/C	Inhalation	Int abuse		
149[p]	31 yr	Propane	A	Inhalation	Int abuse		
150	30 yr	Unknown sewer gas	A	Inhalation	Occ		
See also cases 58, 357, 358, 440 (carbon monoxide).							
Heavy metals							
151[a]	72 yr	Lead	C	Ingestion	Unint misuse	302 µg/dL	
152	42 yr	Mercury	U	Inhalation	Unknown	29.5 µg/dL	
See also case 76 (calcium acid methanearsonate).							
Herbicides							
153[ap]	38 yr	Acrolein	A	Derm/Inh	Occ		
154[a]	60 yr	Dinitrobutylphenol	A	Ingestion	Unint misuse	7.7 µg/mL	
155[a]	47 yr	Glyphosate	A	Ingestion	Int unk		
156[a]	44 yr	Monosodium methylarsonate	A	Ingestion	Int suicide		
157	58 yr	Monosodium methylarsonate (35%)	A	Ingestion	Int suicide		
158[a]	16 yr	Paraquat	A	Ingestion	Int suicide		
See also case 830 (herbicide, unknown type).							
Hydrocarbons							
159[p]	14 yr	Butane	A/C	Inhalation	Int abuse		
160[ap]	15 yr	Butane	A	Inhalation	Int abuse		
161[p]	17 yr	Butane	A	Inhalation	Int abuse		
162[p]	18 yr	Butane ethanol marijuana	A	Ing/Inh	Int abuse		
163[ap]	4 yr	Chlorodifluoromethane	A	Inhalation	Malicious		
164[p]	39 yr	Difluoroethane	A	Inhalation	Int abuse		
165[p]	35 yr	Fluorocarbon	A	Inhalation	Occ		
166[a]	2 yr	Lighter fluid	A	Asp/Ing	Unint gen		
167	14 yr	Solvent (xylene/methanol)	C	Inhalation	Unknown		
See also case 75 (gasoline).							

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
Insecticides/pesticides (excluding rodenticides)							
168[p]	16 mo	Aluminum phosphate	C	Ing/Inh	Env		
169[a]	62 yr	Chlordane	A	Ingestion	Int suicide		
170	60 yr	Chlorpyrifos	A	Ingestion	Int suicide		
171	33 yr	Malathion	A	Ingestion	Unint misuse		
172	55 yr	Malathion	A	Ingestion	Unknown		
173	>19 yr	Malathion ethanol	A	Ingestion	Int suicide		
174[a]	27 yr	Nitric acid/lead arsenate	A	Ingestion	Int unk		
175	21 yr	Prolan	A	Ingestion	Unint misuse		
176	11 yr	Unknown insecticide	C	Inhalation	Int misuse		
177	45 yr	Unknown insecticide	A	Ingestion	Unint gen		
See also cases 76 (malathion); 50 (pyrethrins); 828 (unknown pesticide).							
Mushrooms							
178	61 yr	*Amanita* species	A	Ingestion	Unint misuse		
179[a]	63 yr	*Amanita* species	A	Ingestion	Unint misuse		
180[a]	62 yr	*Lepiota josserandii*	A	Ingestion	Unint misuse		
181	70 yr	Mushroom (probably *Amanita* species)	U	Ingestion	Unint misuse		
182	88 yr	Mushroom (probably *Amanita* species)	A	Ingestion	Unint misuse		
See also case 823 (mushroom, hallucinogenic).							
Plants							
183[a]	20 yr	Jimson weed (*Datura stramonium*)	A	Ing/Inh	Int abuse		
184[ap]	21 yr	Jimson weed (*Datura stramonium*)	A	Ing/Inh	Int abuse		
185[a]	48 yr	*Melia azedarach* glue	C	Ing/Inh	Int misuse		
Rodenticides							
186	33 yr	Anticoagulant rodenticide (long acting)	C	Ingestion	Int suicide		
187	38 yr	Anticoagulant rodenticide bromethalin	A	Ingestion	Int suicide		
188	60 yr	Zinc phosphide toilet bowel cleaner (hydrochloric acid, 15-20%)	A	Ingestion	Int suicide		
See also case 187 (bromethalin).							
PHARMACEUTICALS							
Analgesics							
189	12 yr	Acetaminophen	C	Ingestion	Adv rxn	51 µg/mL	
190[a]	17 yr	Acetaminophen	A	Ingestion	Int suicide		
191	20 yr	Acetaminophen	U	Ingestion	Int suicide		
192	20's yr	Acetaminophen	A	Ingestion	Int misuse		
193	22 yr	Acetaminophen	A	Ingestion	Int misuse		
194	22 yr	Acetaminophen	A	Ingestion	Int suicide	69 µg/mL	36 h
195	23 yr	Acetaminophen	A/C	Ingestion	Int misuse	54 µg/mL	
196[a]	24 yr	Acetaminophen	A	Ingestion	Int misuse	465 µg/mL	
197	25 yr	Acetaminophen	A	Ingestion	Int suicide	27 µg/mL	
198	25 yr	Acetaminophen	A	Ingestion	Int suicide		
199	26 yr	Acetaminophen	C	Ingestion	Int suicide	19 µg/mL	
200	26 yr	Acetaminophen	A	Ingestion	Int suicide	126 µg/mL	28 h
201	27 yr	Acetaminophen	A/C	Ingestion	Int suicide	155 µg/mL	
202	30 yr	Acetaminophen	A	Ingestion	Int suicide	173 µg/mL	
203	31 yr	Acetaminophen	C	Ingestion	Int misuse		
204	31 yr	Acetaminophen	A	Ingestion	Int suicide	42 µg/mL	
205	31 yr	Acetaminophen	A	Ingestion	Int suicide		
206	32 yr	Acetaminophen	C	Ingestion	Ther error		
207	33 yr	Acetaminophen	A	Ingestion	Int suicide	352 µg/mL	16.5 h
208	33 yr	Acetaminophen	A	Ingestion	Int suicide		
209	34 yr	Acetaminophen	A	Ingestion	Int suicide	97 µg/mL	72 h

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
210	38 yr	Acetaminophen	C	Ingestion	Int misuse	57 µg/mL	
211	40 yr	Acetaminophen	A	Ingestion	Int suicide	14 µg/mL	72 h
212	40 yr	Acetaminophen	C	Ingestion	Int misuse	154 µg/mL	
213	40's yr	Acetaminophen	C	Ingestion	Ther error	19 µg/mL	
214[a]	41 yr	Acetaminophen	A	Ingestion	Int suicide	180 µg/mL	48 h
215	41 yr	Acetaminophen	C	Ingestion	Ther error	40 µg/mL	
216	41 yr	Acetaminophen	C	Ingestion	Int misuse	157 µg/mL	
217	43 yr	Acetaminophen	A	Ingestion	Int suicide		
218	44 yr	Acetaminophen	A	Ingestion	Int suicide	34 µg/mL	
219	49 yr	Acetaminophen	A	Ingestion	Int suicide		
220	50 yr	Acetaminophen	C	Ingestion	Int misuse	54 µg/mL	
221	51 yr	Acetaminophen	A	Ingestion	Int abuse	631 µg/mL	
222	54 yr	Acetaminophen	U	Ingestion	Unknown	48 µg/mL	
223	56 yr	Acetaminophen	C	Ingestion	Int misuse	200 µg/mL	
224	64 yr	Acetaminophen	A	Ingestion	Unknown	26 µg/mL	
225	65 yr	Acetaminophen	U	Ingestion	Int suicide	145 µg/mL	
226	66 yr	Acetaminophen	C	Ingestion	Int unk	29 µg/mL	
227	68 yr	Acetaminophen	U	Ingestion	Ther error		
228	70 yr	Acetaminophen	C	Ingestion	Ther error	160 µg/mL	
229	70 yr	Acetaminophen	U	Ingestion	Unknown	28 µg/mL	
230	74 yr	Acetaminophen	A	Ingestion	Int unk	619 µg/mL	
231	74 yr	Acetaminophen	U	Ingestion	Int suicide	79 µg/mL	
232	75 yr	Acetaminophen	C	Ingestion	Ther error	36 µg/mL	
233	88 yr	Acetaminophen	C	Ingestion	Ther error	105 µg/mL	
234	97 yr	Acetaminophen	C	Ingestion	Ther error	100 µg/mL	
235	97 yr	Acetaminophen	A	Ingestion	Ther error	90 µg/mL	
236	40 yr	Acetaminophen acetaminophen/diphenhydramine	A/C	Ingestion	Int suicide	205 µg/mL	
237	48 yr	Acetaminophen acetaminophen/hydrocodone	A	Ingestion	Int suicide	479 µg/mL	
238	79 yr	Acetaminophen acetaminophen/oxycodone	A/C	Ingestion	Int misuse	191 µg/mL	
239	57 yr	Acetaminophen aspirin	C	Ingestion	Int misuse	66 µg/mL 43 mg/dL	
240	54 yr	Acetaminophen aspirin ibuprofen	C	Ingestion	Int misuse	75 µg/mL 27 mg/dL	
241	50 yr	Acetaminophen benzodiazepine	A/C	Ingestion	Int suicide	675 µg/mL	12-20 h
242	31 yr	Acetaminophen carisoprodol	U	Ingestion	Int suicide	76 µg/mL	
243	39 yr	Acetaminophen diphenhydramine	A	Ingestion	Int suicide	29 µg/mL	
244	16 yr	Acetaminophen ethanol	A	Ingestion	Int misuse	89 µg/mL	14 h
245	32 yr	Acetaminophen ethanol	U	Ingestion	Int suicide	 100 mg/dL	
246	40 yr	Acetaminophen ethanol	C	Ingestion	Int misuse	63 µg/mL	
247	42 yr	Acetaminophen ethanol	A/C	Ingestion	Int suicide	27 µg/mL	19 h
248	44 yr	Acetaminophen ethanol	C	Ingestion	Int misuse	100 µg/mL	
249	51 yr	Acetaminophen ethanol	C	Ingestion	Int misuse	147 µg/mL	
250	67 yr	Acetaminophen ethanol	C	Ingestion	Int misuse	61 µg/mL	
251	77 yr	Acetaminophen ethanol	A	Ingestion	Int suicide	>400 µg/mL	
252	55 yr	Acetaminophen ethanol aspirin	C	Ingestion	Int misuse	146 µg/mL 32 mg/dL	
253	42 yr	Acetaminophen fluphenazine trihexyphenidyl	A/C	Ingestion	Int suicide		
254	23 yr	Acetaminophen heroin	A	Ing/Inh/Par	Int abuse	153 µg/mL	

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
255	71 yr	Acetaminophen hydrochlorothiazide/lisinopril	A	Ingestion	Int suicide	1283 µg/mL	
256	35 yr	Acetaminophen ketoprofen	A	Ingestion	Int suicide	280 µg/mL	15 h
257	17 yr	Acetaminophen multiple vitamins with iron	A	Ingestion	Int suicide	30 µg/mL iron 219 µg/dL	36 h 36 h
258	54 yr	Acetaminophen oxycodone	A/C	Ingestion	Int suicide	61 µg/mL	
259	72 yr	Acetaminophen quetiapine trazodone	A	Ingestion	Int suicide	1441 µg/mL	
260	27 yr	Acetaminophen/aspirin naproxen	A	Ingestion	Int suicide	359 µg/mL¥ 59 mg/dL¶	
261	36 yr	Acetaminophen/aspirin/caffeine ethanol	A	Ingestion	Int suicide	172 µg/mL¥ 50 mg/dL¶ 228 mg/dL	1.5 h 1.5 h
262	18 yr	Acetaminophen/butalbital/caffeine/codeine	A	Ingestion	Int suicide		
263	30 yr	Acetaminophen/caffeine acetaminophen/oxycodone acetaminophen/propoxyphene	C	Ingestion	Int misuse	13 µg/mL¥	
264	37 yr	Acetaminophen/codeine	A/C	Ingestion	Int suicide		
265	21 yr	Acetaminophen/diphenhydramine	A	Ingestion	Int suicide		
266	29 yr	Acetaminophen/diphenhydramine	A	Ingestion	Int suicide		
267	39 yr	Acetaminophen/diphenhydramine	A	Ingestion	Int suicide	100 µg/mL¥	
268	46 yr	Acetaminophen/diphenhydramine	A	Ingestion	Int suicide	269 µg/mL¥	22 h
269	35 yr	Acetaminophen/diphenhydramine acetaminophen/oxycodone carisoprodol	C	Ingestion	Int misuse	12 µg/mL¥	
270[p]	90 yr	Acetaminophen/diphenhydramine acetaminophen/propoxyphene	A/C	Ingestion	Int suicide	638 µg/mL¥ diphenhydramine 10.4 µg/mL§	
271[p]	33 yr	Acetaminophen/diphenhydramine ethanol	A/C	Ingestion	Int suicide	290 µg/mL¥§ diphenhydramine 19 µg/mL§ 210 mg/dL§	
272	41 yr	Acetaminophen/diphenhydramine ethanol	A	Ingestion	Int suicide	109 µg/mL¥	
273[p]	42 yr	Acetaminophen/diphenhydramine ethanol	U	Ingestion	Int suicide		
274	46 yr	Acetaminophen/diphenhydramine zolpidem	A	Ingestion	Int suicide	161 µg/mL¥	8 h
275	23 yr	Acetaminophen/diphenhydramine unknown drug	U	Ingestion	Int misuse	59 µg/mL¥	19 h
276	28 yr	Acetaminophen/hydrocodone	A	Ingestion	Int suicide	132 µg/mL¥	
277	36 yr	Acetaminophen/hydrocodone	A	Ingestion	Int suicide	53 µg/mL¥	
278	36 yr	Acetaminophen/hydrocodone	C	Ingestion	Int abuse	15 µg/mL¥	
279	36 yr	Acetaminophen/hydrocodone	A	Ingestion	Int unk	14 µg/mL¥	3-4 d
280[i]	38 yr	Acetaminophen/hydrocodone	U	Ingestion	Int suicide	134 µg/mL¥	
281	46 yr	Acetaminophen/hydrocodone	A	Ingestion	Int suicide	77 µg/mL¥	
282[p]	47 yr	Acetaminophen/hydrocodone	A/C	Ingestion	Int misuse	33 µg/mL¥§	
283	47 yr	Acetaminophen/hydrocodone	C	Ingestion	Int misuse		
284	47 yr	Acetaminophen/hydrocodone	U	Ingestion	Unknown	30 µg/mL¥	
285[p]	48 yr	Acetaminophen/hydrocodone	C	Ingestion	Int suicide	22 µg/mL¥	
286	62 yr	Acetaminophen/hydrocodone	C	Ingestion	Int misuse		
287	63 yr	Acetaminophen/hydrocodone	A	Ingestion	Int suicide	65 µg/mL¥ hydrocodone 0.62 µg/mL	
288	>19 yr	Acetaminophen/hydrocodone	U	Ingestion	Int suicide		
289	36 yr	Acetaminophen/hydrocodone acetaminophen/oxycodone	U	Ingestion	Int unk	84 µg/mL¥	
290	40 yr	Acetaminophen/hydrocodone acetaminophen/oxycodone	A/C	Ingestion	Int suicide	168 µg/mL¥	
291	39 yr	Acetaminophen/hydrocodone alprazolam	A	Ingestion	Unknown		
292	42 yr	Acetaminophen/hydrocodone alprazolam carisoprodol	A/C	Ingestion	Int suicide	59 µg/mL¥	

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TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
293[p]	37 yr	Acetaminophen/hydrocodone benzodiazepine ethanol	A	Ingestion	Int unk		
294[p]	41 yr	Acetaminophen/hydrocodone butorphanol carisoprodol	A/C	Ingestion	Int abuse		
295	24 yr	Acetaminophen/hydrocodone carisoprodol	C	Ingestion	Int misuse	85 µg/mL¥	
296[p]	32 yr	Acetaminophen/hydrocodone carisoprodol diazepam	C	Ingestion	Int misuse		
297	44 yr	Acetaminophen/hydrocodone chlordiazepoxide ethanol	A	Ingestion	Int suicide	92 µg/mL¥ hydrocodone 102 ng/mL 3400 ng/mL 53 mg/dL	
298	40 yr	Acetaminophen/hydrocodone clonazepam	A/C	Ingestion	Int abuse	15 µg/mL¥	
299[p]	39 yr	Acetaminophen/hydrocodone diazepam cocaine	A/C	Ingestion	Int misuse		
300[p]	46 yr	Acetaminophen/hydrocodone ethanol	C	Ingestion	Int misuse	44 µg/mL¥	
301	55 yr	Acetaminophen/hydrocodone ethanol	U	Ingestion	Int suicide	263 µg/mL¥	
302	20 yr	Acetaminophen/hydrocodone ethanol cocaine	A	Ingestion	Int suicide		
303	46 yr	Acetaminophen/hydrocodone hydromorphone alprazolam	A	Ingestion	Int suicide	176 µg/mL¥	24 h
304	47 yr	Acetaminophen/hydrocodone lorazepam acetaminophen/isometheptene/ dichloralphenazone	A	Ingestion	Int suicide	193 µg/mL¥	3 h
305[p]	18 yr	Acetaminophen/hydrocodone methadone	U	Ingestion	Int unk		
306	35 yr	Acetaminophen/hydrocodone methadone ethanol	A/C	Ingestion	Int suicide	331 µg/mL¥ hydrocodone 870 ng/mL§ 0.29 µg/mL§ 229 mg/dL	
307	22 yr	Acetaminophen/hydrocodone morphine (long-acting)	C	Ingestion	Int misuse	88 µg/mL¥	
308	49 yr	Acetaminophen/hydrocodone oxycodone (long-acting) amitriptyline	A/C	Ingestion	Int suicide	193 µg/mL¥	3 h
309	43 yr	Acetaminophen/oxycodone	U	Ingestion	Int misuse	20 µg/mL¥	
310	47 yr	Acetaminophen/oxycodone	A	Ingestion	Int suicide		
311	>19 yr	Acetaminophen/oxycodone	A	Ingestion	Int suicide		
312	42 yr	Acetaminophen/oxycodone acetaminophen/codeine	U	Ingestion	Int suicide	239 µg/mL¥	
313	39 yr	Acetaminophen/oxycodone acetaminophen/propoxyphene acetaminophen	A	Ingestion	Int unk	161 µg/mL¥	
314[jp]	42 yr	Acetaminophen/oxycodone alprazolam	A	Ingestion	Int unk		
315	66 yr	Acetaminophen/oxycodone amitriptyline	A/C	Ingestion	Int suicide	34 µg/mL¥	
316[p]	27 yr	Acetaminophen/oxycodone aspirin/carisoprodol alprazolam	A/C	Ingestion	Int abuse		
317[p]	33 yr	Acetaminophen/oxycodone zolpidem	A/C	Ingestion	Int suicide		
318[p]	23 yr	Acetaminophen/propoxyphene	A	Ingestion	Int suicide	143 µg/mL¥ propoxyphene 1.4 µg/mL norpropoxyphene 0.83 µg/mL	
319	36 yr	Acetaminophen/propoxyphene	A/C	Ingestion	Int abuse	115 µg/mL¥	

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TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
320	77 yr	Acetaminophen/propoxyphene	A	Ingestion	Int suicide	150 µg/mL¥	
321[p]	86 yr	Acetaminophen/propoxyphene	A	Ingestion	Unknown	99 µg/mL¥	
322[p]	>19 yr	Acetaminophen/propoxyphene	A/C	Ingestion	Int misuse	124 µg/mL¥	
323	87 yr	Acetaminophen/propoxyphene acetaminophen	C	Ingestion	Int misuse		
324	36 yr	Acetaminophen/propoxyphene acetaminophen/hydrocodone	A	Ingestion	Int suicide	34 µg/mL¥	48 h
325	53 yr	Acetaminophen/propoxyphene alprazolam zolpidem	A	Ingestion	Int suicide	585 µg/mL¥	
326[p]	24 yr	Acetaminophen/propoxyphene cocaine tramadol	A/C	Ing/Unk	Int suicidal	60 µg/mL¥	10 h
327[p]	36 yr	Acetaminophen/propoxyphene cyclobenzaprine ethanol	A/C	Ingestion	Int suicide	74 µg/mL¥ 300 mg/dL	
328[p]	20 yr	Acetaminophen/propoxyphene ethanol	A	Ingestion	Int suicide	85 µg/mL¥ 98 mg/dL	
329	67 yr	Acetaminophen/propoxyphene lorazepam	A/C	Ingestion	Int suicide		
330	16 yr	Aspirin	A	Ingestion	Int suicide	110 mg/dL	
331	16 yr	Aspirin	A	Ingestion	Int suicide	134 mg/dL	18.5 h
332	18 yr	Aspirin	A	Ingestion	Int suicide	110 mg/dL	
333	40 yr	Aspirin	A	Ingestion	Int suicide	121 mg/dL	
334	41 yr	Aspirin	U	Ingestion	Int suicide	104 mg/dL	8 h
335	41 yr	Aspirin	C	Ingestion	Int misuse	57 mg/dL	
336	42 yr	Aspirin	A	Ingestion	Int suicide	150 mg/dL	
337	43 yr	Aspirin	A	Ingestion	Int suicide	80 mg/dL	17 h
338	48 yr	Aspirin	A	Ingestion	Int suicide	109 mg/dL	9 h
339	54 yr	Aspirin	A	Ingestion	Int suicide	113 mg/dL	31 h
340[i]	56 yr	Aspirin	A	Ingestion	Int suicide	102 mg/dL	17 h
341	61 yr	Aspirin	A	Ingestion	Int suicide	88 mg/dL	
342	64 yr	Aspirin	A/C	Ingestion	Int misuse	45 mg/dL	
343	70 yr	Aspirin	A/C	Ingestion	Int misuse	99 mg/dL	
344	71 yr	Aspirin	C	Ingestion	Ther error	81 mg/dL	
345	72 yr	Aspirin	A	Ingestion	Int suicide	34 mg/dL	6 h
346	80 yr	Aspirin	A/C	Ingestion	Int suicide	78 mg/dL	
347	89 yr	Aspirin	A	Ingestion	Int suicide	101 mg/dL	4.5 h
348	92 yr	Aspirin	C	Ingestion	Ther error	43 mg/dL	
349	20 yr	Aspirin acetaminophen	U	Ingestion	Int suicide	55 mg/dL 148 µg/mL	
350	17 yr	Aspirin acetaminophen amphetamines	A	Ingestion	Int suicide	124 mg/dL 157 µg/mL	
351	35 yr	Aspirin acetaminophen hydrofluoric acid	A	Ing/Inh	Int suicide	80 mg/dL 142 µg/mL	
352	47 yr	Aspirin acetaminophen opiate	A	Ingestion	Int suicide	52 mg/dL 251 µg/mL	>10 h >10 h
353[p]	71 yr	Aspirin amitriptyline	C	Ingestion	Int misuse	44 mg/dL	
354	50 yr	Aspirin amlodipine	A/C	Ingestion	Int suicide	115 mg/dL	
355[i]	70 yr	Aspirin aspirin/acetaminophen/caffeine	C	Ingestion	Int suicide	73 mg/dL	
356[p]	23 yr	Aspirin benztropine fluoxetine	A	Ingestion	Int suicide	50 mg/dL	
357	50 yr	Aspirin carbon monoxide	A	Ing/Inh	Int suicide	134 mg/dL 12%	
358	67 yr	Aspirin carbon monoxide/smoke	A	Ing/Inh	Int suicide	123 mg/dL	
359	38 yr	Aspirin chlorpromazine	A	Ingestion	Int suicide	88 mg/dL	
360	64 yr	Aspirin diazepam trifluoperazine	A	Ingestion	Int suicide	68 mg/dL	

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
361	51 yr	Aspirin	A	Ingestion	Int suicide	95 mg/dL	
		ethanol				230 mg/dL	
362	58 yr	Aspirin	A	Ingestion	Int suicide	73 mg/dL	
		ethanol				124 mg/dL	
363	58 yr	Aspirin	U	Ingestion	Int suicide	108 mg/dL	
		metformin					
364[a]	15 yr	Aspirin	A	Ingestion	Int suicide	82 mg/dL	5 h
		loratadine					
		hydrochlorothiazide/triamterene					
365	86 yr	Aspirin	A	Ingestion	Int suicide	112 mg/dL	
		opioid				codeine 0.662 µg/mL§	
366	43 yr	Aspirin	A	Ingestion	Int suicide	104 mg/dL	9 h
		propoxyphene				0.72 µg/mL§	
						norpropoxyphene 2.5 µg/mL§	
		fluoxetine				1.65 µg/mL§	
367	16 yr	Aspirin	A	Ingestion	Int suicide	101 mg/dL	
		pseudoephedrine/brompheniramine					
		diphenhydramine					
368	49 yr	Aspirin/butalbital	A	Ingestion	Int suicide	29 mg/dL¶	
		diphenhydramine					
		fluoxetine					
369	50 yr	Aspirin/butalbital/caffeine/codeine	A/C	Ingestion	Int suicide		
		alprazolam					
370[p]	>19 yr	Aspirin/caffeine/dihydrocodeine	U	Ingestion	Int suicide		
371	56 yr	Aspirin/oxycodone	C	Ingestion	Ther error	40 mg/dL¶	
372	45 yr	Aspirin/oxycodone	A	Ingestion	Int suicide	75 mg/dL¶	8-12 h
		trazodone					
		hydroxyzine					
373	44 yr	Colchicine	U	Unknown	Unknown	9.6 ng/mL	
374	45 yr	Colchicine	A	Ingestion	Int suicide		
375[a]	45 yr	Colchicine	A	Ingestion	Int suicide		
376	46 yr	Colchicine	A	Ingestion	Int suicide		
377	68 yr	Colchicine	A/C	Ingestion	Int suicide	4.3 ng/mL	20 h
378	86 yr	Colchicine	C	Parenteral	Ther error		
379[p]	45 yr	Fentanyl	U	Dermal	Int abuse	21 ng/mL	
380[p]	76 yr	Fentanyl	C	Derm/Ing	Adv rxn		
		alprazolam					
		promethazine					
381[p]	68 yr	Fentanyl	C	Derm/Ing	Int misuse		
		irbesartan					
382[p]	46 yr	Fentanyl	A/C	Derm/Ing	Int suicide		
		paroxetine					
		acetaminophen/hydrocodone					
383	42 yr	Fentanyl	A	Parenteral	Int suicide		
		sufentanil					
		morphine					
384	37 yr	Hydrocodone	A	Ingestion	Int suicide	220 ng/mL	
		benzodiazepine				780 ng/mL	
385[p]	51 yr	Hydrocodone	A	Ingestion	Int suicide	hydrocodeine 300 ng/mL§	
						dihydrocodeine 34 ng/mL§	
		ethanol				185 mg/dL	
		celecoxib					
386[p]	42 yr	Hydrocodone	U	Ingestion	Unknown	480 ng/mL§	
		ethanol				130 mg/dL§	
		olanzapine					
387	39 yr	Hydromorphone	A/C	Parenteral	Ther error		
388	42 yr	Hydromorphone	A	Ingestion	Int suicide		
		acetaminophen/hydrocodone					
		carisoprodol					
389[p]	45 yr	Hydromorphone	A	Ing/Paren	Int suicide		
		methamphetamine					
		imipramine					
390	46 yr	Ibuprofen	C	Ingestion	Adv rxn	27.6 µg/mL§	
		ethanol					
391	>19 yr	Meperidine	A	Parenteral	Ther error		
392[aip]	5 mo	Methadone	A	Ingestion	Int misuse	0.3 µg/mL§	
393[p]	19 yr	Methadone	U	Ingestion	Int abuse		
394[p]	35 yr	Methadone	A/C	Ingestion	Int suicide		

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
395[ipm]	47 yr	Methadone	A	Unknown	Int abuse		
396[ipm]	56 yr	Methadone	U	Unknown	Int abuse		
397[p]	58 yr	Methadone	A	Ingestion	Int suicide		
398[p]	37 yr	Methadone	A/C	Ingestion	Int abuse		
		acetaminophen/hydrocodone					
399	37 yr	Methadone	A	Ingestion	Int abuse	1.07 µg/mL§	
		alprazolam				11 ng/mL§	
400[p]	60 yr	Methadone	A/C	Ingestion	Int suicide		
		doxepin					
		zolpidem					
401[p]	36 yr	Methadone	A/C	Ingestion	Int suicide	0.33 µg/mL§	
		ethanol				370 mg/dL	
402[p]	30 yr	Methadone	U	Ingestion	Int abuse	0.35 µg/mL§	
		promethazine				0.07 µg/mL§	
		diazepam				80 ng/mL§	
						nordiazepam 360 ng/mL§	
403[p]	37 yr	Morphine (long acting)	A/C	Ingestion	Int misuse		
404	70 yr	Morphine	A/C	Ingestion	Int suicide		
405[p]	85 yr	Morphine	A	Ingestion	Int suicide		
406[p]	47 yr	Morphine	U	Unknown	Int unk	40 ng/mL§	
		amphetamines					
		marijuana					
407[p]	20 yr	Morphine	A	Ing/Inh	Int abuse	65 ng/mL§	
		codeine					
		cocaine					
408	78 yr	Morphine	A	Ing/Paren	Int suicide	830 ng/mL	
		diphenhydramine				930 ng/mL	
		diazepam				1450 ng/mL	
						nordiazepam 410 ng/mL	
409[p]	35 yr	Morphine	A	Ing/Unk	Int abuse	57 ng/mL§	
		ethanol				30 mg/dL	
410[p]	38 yr	Morphine	U	Ingestion	Int abuse	160 ng/mL§	
		meperidine				normeperidine 0.24 µg/mL§	
		clomipramine					
411[ip]	62 yr	Morphine	A/C	Ingestion	Ther error	730 ng/mL§	
		zolpidem				45 ng/mL§	
		propoxyphene				norpropoxyphene 0.12 µg/mL§	
412[p]	27 yr	Opiate	U	Unknown	Unknown		
413	37 yr	Opiate	U	Ingestion	Int suicide		
414[ipm]	38 yr	Opiate	A	Unknown	Int abuse		
415[ipm]	41 yr	Opiate	U	Unknown	Int abuse		
416[ipm]	48 yr	Opiate	U	Unknown	Int abuse		
417	23 yr	Opiate	U	Unknown	Int unk		
		benzodiazepine					
418[p]	42 yr	Opiate	U	Ingestion	Int unk		
		benzodiazepine					
419[p]	65 yr	Opiate	A/C	Ingestion	Int suicide		
		benzodiazepine					
		amphetamine					
420	22 yr	Opiate	A	Ingestion	Int abuse		
		benzodiazepine					
		ethanol				30 mg/dL	
421	18 yr	Opiate	A	Ingestion	Unknown	morphine 190 ng/mL§	
						mono-acetyl-morphine 100 ng/mL§	
		diazepam				110 ng/mL§	
						nordiazepam 20 ng/mL§	
		chlordiazepoxide					
422[ipm]	21 yr	Opiate	U	Unknown	Int abuse		
		ethanol					
423[ipm]	24 yr	Opiate	U	Unknown	Int abuse		
		ethanol					
424[ipm]	24 yr	Opiate	U	Ingestion	Int abuse		
		ethanol					
425[ipm]	31 yr	Opiate	U	Unknown	Int abuse		
		ethanol					
426[ipm]	36 yr	Opiate	U	Unknown	Int abuse		
		ethanol					

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
427[ipm]	38 yr	Opiate ethanol	U	Unknown	Int abuse		
428[ipm]	43 yr	Opiate ethanol	U	Unknown	Int abuse		
429[ipm]	45 yr	Opiate ethanol	U	Unknown	Int abuse		
430	36 yr	Opiate gabapentin unknown drug	A/C	Ingestion	Int suicide		
431[p]	22 yr	Oxycodone	U	Unknown	Int unk		
432[ip]	38 yr	Oxycodone (long-acting)	A	Parenteral	Int abuse		
433[p]	46 yr	Oxycodone	U	Ingestion	Int suicide		
434[p]	47 yr	Oxycodone	A/C	Unknown	Int suicide		
435[p]	19 yr	Oxycodone acetaminophen methocarbamol	A/C	Ingestion	Int suicide		
436[p]	39 yr	Oxycodone acetaminophen/oxycodone	A	Parenteral	Int abuse		
437[p]	40 yr	Oxycodone benzodiazepine	A/C	Ingestion	Int suicide		
438[im]	42 yr	Oxycodone ethanol	U	Ingestion	Int suicide		
439	63 yr	Oxycodone (long-acting) nadolol	A/C	Ingestion	Int suicide		
440[p]	52 yr	Oxycodone temazepam carbon monoxide	A/C	Ing/Inh	Int suicide		
441[p]	28 yr	Propoxyphene	A	Ingestion	Int suicide		
442[ip]	43 yr	Propoxyphene	A/C	Ingestion	Int unk	8.17 µg/mL§ norpropoxyphene 9.89 µg/mL§	
443	74 yr	Propoxyphene	A/C	Ingestion	Int suicide		
444[p]	37 yr	Propoxyphene amitriptyline diazepam	A	Ingestion	Int suicide	5 µg/mL§ 800 ng/mL§ nortriptyline 400 ng/mL§ 140 ng/mL§ nordiazepam 370 ng/mL§	
445[p]	15 yr	Propoxyphene cyclobenzaprine	A	Ingestion	Int suicide	1 µg/mL norpropoxyphene 1 µg/mL	
446[p]	39 yr	Propoxyphene diphenhydramine alprazolam	A	Ingestion	Int suicide		
447[p]	29 yr	Propoxyphene diphenhydramine ethanol	A	Ingestion	Int suicide	2.62 µg/mL§ norpropoxyphene 1.55 µg/mL§	
448[ipm]	45 yr	Propoxyphene hydrocodone ethanol	U	Unknown	Int abuse		
449	29 yr	Propoxyphene lorazepam acetaminophen/oxycodone	A	Ingestion	Int suicide		
450	60 yr	Salicylate	U	Ingestion	Int unk	86 mg/dL	
451	63 yr	Salicylate	U	Ingestion	Unknown	108 mg/dL	
452	34 yr	Salicylate sertraline paroxetine	A/C	Ingestion	Int suicide	68 mg/dL§ 1.9 µg/mL§ desmethylsertraline 0.6 µg/mL§ 2.1 µg/mL§	

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TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
453[ip]	33 yr	Tramadol	U	Ing/Paren	Int unk	2600 ng/mL	
		ethanol				380 mg/dL	
		propranolol				0.59 µg/mL	
See also cases 14, 313, 323, 349 thru 352, 435, 457, 568, 644, 664, 687, 729 (acetaminophen); 20, 312, 535, 571 (acetaminophen/codeine); 236 (acetaminophen/diphenhydramine); 702 (acetaminophen/diphenhydramine/pseudoephedrine/dextromethorphan); 15, 237, 324, 382, 388, 398, 559, 616, 739, 740 (acetaminophen/hydrocodone); 304, 570, 693 (acetaminophen/isometheptene/dichloralphenazone); 238, 263, 269, 289, 290, 436, 449, 566 (acetaminophen/oxycodone); 263, 270, 313, 481, 482, 535, 570 (acetaminophen/propoxyphene); 239, 240, 252, 458, 513, 555, 710 (aspirin); 355 (aspirin/acetaminophen/caffeine); 316 (aspirin/carisoprodol); 294 (butorphanol); 385, 486 (celecoxib); 407, 774, 824 (codeine); 448, 731 (hydrocodone); 303 (hydromorphone); 240, 650, 653, 689, 735 (ibuprofen); 256 (ketoprofen); 410 (meperidine); 305, 306, 492, 500, 501, 737, 857 (methadone); 307, 383, 545 (morphine); 260 (naproxen); 30, 352, 365, 714, 723, 743, 825, 826 (opiate/opioid); 258, 308 (oxycodone); 17, 19, 366, 411, 506, 668, 746, 831 (propoxyphene); 383 (sufentanil); 326, 509 (tramadol)							
Anesthetics							
454[ap]	37 yr	Enflurane	A	Inhalation	Int unk		
Anticholinergic drugs							
455[p]	66 yr	Amantadine	C	Ingestion	Ther error		
		atenolol					
		amlodipine					
See also cases 356, 483, 756 (benztropine); 567 (oxybutynin), 253 (trihexyphenidyl).							
Anticoagulants							
456[a]	2 day	Heparin	A	Parenteral	Ther error		
457	77 yr	Warfarin	A/C	Ingestion	Int suicide		
		acetaminophen				45 µg/mL	
Anticonvulsants							
458	40's yr	Gabapentin	A/C	Asp/Ing	Int suicide		
		aspirin				56 mg/dL	5 h
		activated charcoal					
459[a]	10 yr	Lamotrigine	C	Ingestion	Adv rxn		
460	70 yr	Phenytoin	A/C	Asp/Ing	Ther error	70 µg/mL	
		activated charcoal					
461	23 yr	Valproic acid	U	Ingestion	Int suicide	432 µg/mL	
462	27 yr	Valproic acid	A/C	Ingestion	Int suicide	3,000 µg/mL	
463[a]	30 yr	Valproic acid	A/C	Ingestion	Int suicide	1,280 µg/mL	
464	39 yr	Valproic acid	A	Ingestion	Int suicide	400 µg/mL	
465	36 yr	Valproic acid	A/C	Ingestion	Int suicide	1,425 µg/mL	
		olanzapine					
466	36 yr	Valproic acid	U	Ingestion	Int suicide	1,200 µg/mL	
		olanzapine					
See also cases 430, 523, 569, 575 (gabapentin); 765 (primidone); 675 (topiramate); 541, 654, 766, 772 (valproic acid).							
Antidepressants							
467[p]	14 yr	Amitriptyline	A	Ingestion	Int suicide		
468	16 yr	Amitriptyline	A/C	Ingestion	Int suicide		
469[p]	19 yr	Amitriptyline	A/C	Ingestion	Int suicide	4,700 ng/mL§	
470[p]	20 yr	Amitriptyline	A/C	Ingestion	Int suicide	900 ng/mL	
						nortriptyline 350 ng/mL	
471	34 yr	Amitriptyline	A/C	Ingestion	Int suicide	670 ng/mL§	
472[p]	37 yr	Amitriptyline	A	Ingestion	Int suicide		
473[p]	39 yr	Amitriptyline	A	Ingestion	Int suicide		
474[p]	40 yr	Amitriptyline	U	Ingestion	Int suicide		
475	40 yr	Amitriptyline	U	Ingestion	Int suicide		
476[p]	40 yr	Amitriptyline	A	Ingestion	Int suicide		
477	42 yr	Amitriptyline	U	Ingestion	Int suicide		
478[p]	49 yr	Amitriptyline	A	Ingestion	Int suicide	332 ng/mL§	
						nortriptyline 260 ng/mL§	
479	51 yr	Amitriptyline	A/C	Ingestion	Int suicide		
480[ipm]	55 yr	Amitriptyline	A/C	Ingestion	Int suicide		
481	24 yr	Amitriptyline	A	Ingestion	Int suicide		
		acetaminophen/propoxyphene				propoxyphene 1.5 µg/mL§	
482[p]	46 yr	Amitriptyline	A	Ingestion	Int suicide		
		acetaminophen/propoxyphene					
		ethanol					
483[p]	76 yr	Amitriptyline	A/C	Ingestion	Int suicide		
		benztropine					
		sertraline					

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
484	32 yr	Amitriptyline bupropion haloperidol	A	Ingestion	Int suicide		
485	>19 yr	Amitriptyline carisoprodol	A	Ingestion	Int suicide		
486[ip]	32 yr	Amitriptyline celecoxib	U	Ingestion	Int suicide	4,500 ng/mL§ nortriptyline 900 ng/mL§	
487	57 yr	Amitriptyline citalopram quinapril	A	Ingestion	Int suicide	2,000 ng/mL	
488	57 yr	Amitriptyline clonazepam	A	Ingestion	Int suicide		
489	60 yr	Amitriptyline clonazepam	A	Ingestion	Int suicide		
490	39 yr	Amitriptyline clonazepam ethanol	A/C	Ingestion	Int suicide	 210 mg/dL	
491	35 yr	Amitriptyline cocaine	U	Ing/Inh	Int unk		
492	35 yr	Amitriptyline diphenhydramine methadone	A	Ingestion	Int suicide	1,510 ng/mL 0.37 µg/mL§ 0.35 µg/mL§	
493	31 yr	Amitriptyline ethanol	A/C	Ingestion	Int suicide	 300 mg/dL	
494[p]	39 yr	Amitriptyline ethanol	A	Ingestion	Int suicide		
495	40 yr	Amitriptyline ethanol	A	Ingestion	Int suicide		
496[ipm]	43 yr	Amitriptyline ethanol	U	Ingestion	Int suicide		
497	53 yr	Amitriptyline ethanol	A/C	Ingestion	Int suicide		
498[p]	61 yr	Amitriptyline ethanol	A/C	Ingestion	Int suicide		
499[p]	46 yr	Amitriptyline fluoxetine	A/C	Ingestion	Int suicide		
500[p]	34 yr	Amitriptyline methadone benzodiazepine	A	Ingestion	Int unk		
501[p]	39 yr	Amitriptyline methadone clonazepam	A/C	Ingestion	Int suicide		
502	21 yr	Amitriptyline methamphetamine ethanol	A	Ingestion	Int suicide		
503	34 yr	Amitriptyline metoclopramide paroxetine	A	Ingestion	Int suicide		
504	35 yr	Amitriptyline mibefradil diltiazem	A/C	Ingestion	Int suicide		
505	53 yr	Amitriptyline nortriptyline methamphetamine	A/C	Ingestion	Ther error		
506[i]	27 yr	Amitriptyline propoxyphene benzodiazepine	A/C	Ingestion	Int suicide		
507[p]	40 yr	Amitriptyline propranolol ethanol	A	Ingestion	Int suicide		
508	50 yr	Amitriptyline sertraline clonazepam	A/C	Ingestion	Int suicide	4600 ng/mL§ nortriptyline 3200 ng/mL§	

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
509[p]	45 yr	Amitriptyline	A	Ingestion	Int suicide	840 ng/mL§	
						nortriptyline 250 ng/mL§	
		tramadol				o-desmethyl tramadol 700 ng/mL§	
						n-desmethyl tramadol 84 ng/mL§	
		carisoprodol				36.1 µg/mL§	
						meprobamate 22.6 µg/mL§	
510[ip]	43 yr	Amitriptyline	A/C	Ingestion	Int suicide	5200 ng/mL§	
						nortriptyline 2400 ng/mL§	
		trazodone				0.1 µg/mL§	
		diphenhydramine				0.1 µg/mL§	
511	35 yr	Amitriptyline	A/C	Ingestion	Int suicide		
		verapamil					
		olanzapine					
512	68 yr	Amitriptyline	A/C	Ingestion	Int suicide		
		zolpidem					
513	66 yr	Amitriptyline/chlordiazepoxide	U	Ingestion	Unknown	amitriptyline 530 ng/mL§	
						nortriptyline 460 ng/mL§	
		aspirin				69 mg/dL	
		paroxetine					
514[ipm]	24 yr	Bupropion	U	Ingestion	Int suicide		
515[p]	41 yr	Bupropion	A	Ingestion	Int suicide		
516	45 yr	Bupropion (long acting)	A	Ingestion	Int suicide		
517	42 yr	Bupropion (long-acting)	U	Ingestion	Int suicide		
		ethanol				206 mg/dL	
518	29 yr	Bupropion	A/C	Ingestion	Int suicide		
		ethanol					
		sibutramine					
519	35 yr	Bupropion	A	Ingestion	Int suicide		
		fluvoxamine					
		olanzapine					
520	41 yr	Bupropion	A	Ingestion	Int suicide		
		imipramine					
		desipramine					
521	40 yr	Bupropion (long acting)	A	Ingestion	Int suicide	2,800 ng/mL	
		olanzapine				946 ng/mL	
522	36 yr	Bupropion	A/C	Ingestion	Int suicide		
		olanzapine					
		fluoxetine					
523[p]	57 yr	Bupropion	A/C	Ingestion	Int suicide		
		olanzapine					
		gabapentin					
524	16 yr	Bupropion	A/C	Ingestion	Int suicide	700 ng/mL	
		paroxetine					
525	40 yr	Desipramine	A	Ingestion	Int suicide		
526	54 yr	Desipramine	A/C	Ingestion	Int suicide	21,900 ng/mL§	
		fluoxetine				2,400 ng/mL§	
		sertraline				720 ng/mL§	
						desmethylsertraline 1,030 ng/mL§	
527	21 yr	Doxepin	A	Ingestion	Int suicide		
528	30 yr	Doxepin	U	Ingestion	Int suicide		
529[ipm]	32 yr	Doxepin	A/C	Ingestion	Int suicide		
530[ipm]	32 yr	Doxepin	U	Ingestion	Int suicide		
531	37 yr	Doxepin	A/C	Ingestion	Int suicide		
532	39 yr	Doxepin	A/C	Ingestion	Int suicide	>1,500 ng/mL	
533	39 yr	Doxepin	A	Ingestion	Int suicide	14,000 ng/mL§	
						nordoxepin 6,960 ng/mL§	
534[p]	64 yr	Doxepin	A/C	Ingestion	Int suicide		
535	52 yr	Doxepin	A/C	Ingestion	Int suicide		
		acetaminophen/propoxyphene					
		acetaminophen/codeine					
536	68 yr	Doxepin	A/C	Ingestion	Int suicide		
		chlordiazepoxide					
537[p]	32 yr	Doxepin	A	Ingestion	Int suicide		
		diazepam					
538[p]	56 yr	Doxepin	A	Ingestion	Int suicide		
		procainamide					

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
539	48 yr	Doxepin	A/C	Ingestion	Int suicide		
		risperidone					
		trazodone					
540	45 yr	Doxepin	A/C	Ingestion	Int suicide		
		trazodone					
		prednisone					
541	36 yr	Doxepin	A/C	Ingestion	Int suicide		
		valproic acid				200 µg/mL	
		ethanol				164 mg/dL	
542	74 yr	Doxepin	A	Ingestion	Int suicide		
		venlafaxine					
		risperidone					
543	50 yr	Fluoxetine	U	Ingestion	Unknown	240 ng/mL§	
544[p]	>19 yr	Fluoxetine	A/C	Ingestion	Int suicide		
		benzodiazepine					
545	48 yr	Fluoxetine	A	Ingestion	Int suicide	norfluoxetine 3,760 ng/mL§	
		diphenhydramine				0.38 µg/mL§	
		morphine				350 ng/mL§	
546[p]	44 yr	Fluoxetine	U	Ing/Paren	Int suicide		
		trazodone					
		heroin					
547	42 yr	Fluoxetine	A/C	Ingestion	Int suicide		
		zolpidem					
		diltiazem					
548	40 yr	Fluvoxamine	A/C	Ingestion	Int suicide		
549	35 yr	Fluvoxamine	A	Ingestion	Int suicide		
		ethanol					
550	24 yr	Imipramine	A	Ingestion	Int suicide	3,000 ng/mL§	
						desipramine 5,000 ng/mL§	
551	36 yr	Imipramine	A	Ingestion	Int suicide		
552	37 yr	Imipramine	A/C	Ingestion	Int suicide	2,200 ng/mL§	
						desipramine 310 ng/mL§	
553	50 yr	Imipramine	A	Ingestion	Int suicide	700 ng/mL	
554[ipm]	43 yr	Imipramine	U	Ingestion	Int suicide		
		ethanol					
555	65 yr	Imipramine	A	Ingestion	Int suicide		
		thioridazine					
		aspirin				66 mg/dL	
556	58 yr	Lithium	C	Ingestion	Ther error	4.2 mEq/L	
557	61 yr	Lithium	A/C	Ingestion	Int suicide		
558	79 yr	Lithium	A/C	Ingestion	Int suicide	7.0 mEq/L	
559	33 yr	Lithium	A/C	Ingestion	Int suicide	2.8 mEq/L	
		acetaminophen/hydrocodone				27 µg/mL¥	
		olanzapine					
560	74 yr	Lithium	A/C	Ingestion	Ther error	1.7 mEq/L	
		amitriptyline				848 ng/mL	
561	42 yr	Lithium	A/C	Ingestion	Int suicide	4.3 mEq/L	
		olanzapine					
562	36 yr	Nortriptyline	A/C	Ingestion	Int suicide	1,720 ng/mL§	
563	55 yr	Nortriptyline	A/C	Ingestion	Int suicide	6,950 ng/mL§	
564[ipm]	60 yr	Nortriptyline	A/C	Ingestion	Int suicide	6,950 ng/mL§	
565[p]	60 yr	Nortriptyline	A	Ingestion	Int suicide	6,950 ng/mL§	
566	49 yr	Nortriptyline	A/C	Ingestion	Int suicide	122 µg/mL	
		acetaminophen/oxycodone					
567	49 yr	Nortriptyline	A/C	Ingestion	Int suicide	819 ng/mL	
		clonazepam					
		oxybutynin					
568[p]	29 yr	Nortriptyline	A	Ingestion	Int suicide		
		paroxetine					
		acetaminophen				129 µg/mL	
569	28 yr	Paroxetine	A/C	Ingestion	Int suicide		
		gabapentin					
570	30 yr	Sertraline	U	Ingestion	Int suicide		
		acetaminophen/propoxyphene					
		acetaminophen/isometheptene/ dichloralphenazone					

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
571	36 yr	Trazodone cocaine acetaminophen/codeine	A	Ingestion	Int suicide		
572[p]	40 yr	Tricyclic antidepressant	A	Ingestion	Int suicide	>500 ng/mL	
573	42 yr	Tricyclic antidepressant benzodiazepine ethanol	A	Ingestion	Int suicide		
574[p]	41 yr	Tricyclic antidepressant cocaine	A	Ingestion	Int suicide		
575[p]	40 yr	Tricyclic antidepressant gabapentin paroxetine	A	Ingestion	Int suicide		
576	49 yr	Tricyclic antidepressant heroin cocaine	A	Ingestion	Int unk	1781 ng/mL	
577	42 yr	Venlafaxine	A	Ingestion	Int suicide	94 µg/mL§	

See also cases 40, 308, 315, 353, 444, 560, 645, 674, 675, 681, 764, 767 (amitriptyline); 760 (amoxapine); 484 (bupropion); 487 (citalopram); 410 (clomipramine); 520 (desipramine); 20, 400 (doxepin); 356, 366, 368, 499, 522, 526, 763 (fluoxetine); 519 (fluvoxamine); 389, 520, 608 (imipramine); 505, 609 (nortriptyline); 22, 382, 452, 503, 513, 524, 568, 575, 694, 740, 768 (paroxetine); 452, 483, 508, 526, 614, 758 (sertraline); 23, 259, 372, 510, 539, 540, 546, 760, 763, 769 (trazodone); 827 (tricyclic antidepressant); 542, 697, 769 (venlafaxine).

Antihistamines

578[p]	35 yr	Cetirizine ethanol	A/C	Ingestion	Int suicide	 109 mg/dL	
579	28 yr	Diphenhydramine	A	Ingestion	Int suicide		
580	29 yr	Diphenhydramine	A	Ingestion	Int suicide	7.8 µg/mL	
581[p]	54 yr	Diphenhydramine	U	Ingestion	Unknown	11 µg/mL§	
582	55 yr	Diphenhydramine dimenhydrinate	A	Ingestion	Int suicide		
583[p]	40 yr	Diphenhydramine doxylamine	A	Ingestion	Int suicide	9.1 µg/mL§ 6.7 µg/mL§	
584	20 yr	Diphenhydramine ethanol	A	Ingestion	Int misuse		
585	57 yr	Diphenhydramine ethanol	A	Ingestion	Int suicide		
586	28 yr	Diphenhydramine mouthwash (ethanol)	A	Ingestion	Int suicide	12 µg/mL§ 200 mg/dL	
587	46 yr	Diphenhydramine phencyclidine marijuana	A/C	Ingestion	Int suicide		
588[p]	43 yr	Doxylamine	A	Ingestion	Int suicide		
589[p]	54 yr	Doxylamine	A	Ingestion	Int suicide		

See also cases 70, 139, 243, 367, 368, 408, 446, 447, 492, 510, 545, 676, 730, 746 (diphenhydramine); 582 (dimenhydrinate); 583 (doxylamine); 142, 372, 775 (hydroxyzine); 364 (loratadine).

Antimicrobials

590	89 yr	Fluconazole	A	Ingestion	Adv rxn		
591[p]	35 yr	Hydroxychloroquine	U	Ingestion	Int suicide		
592	15 yr	Isoniazid	A/C	Ingestion	Int unk		
593[a]	39 yr	Isoniazid cocaine	A/C	Ingestion	Int suicide		
594[a]	16 yr	Zidovudine/lamivudine	C	Ingestion	Adv rxn		

See also case 633 (clarithromycin).

Antineoplastics

595[a]	51 yr	Methotrexate	C	Ingestion	Ther error	0.29 µmol/L	
596	82 yr	Methotrexate	C	Ingestion	Ther error	0.3 µmol/L	

Asthma therapies

597[a]	3 yr	Theophylline (long-acting)	A	Ingestion	Unint gen	114 µg/mL	
598	40 yr	Theophylline (long-acting)	U	Ingestion	Int suicide	101 µg/mL	27 h
599	52 yr	Theophylline	C	Ingestion	Int misuse	40 µg/mL	
600	58 yr	Theophylline	A/C	Ingestion	Ther error	41 µg/mL	
601	63 yr	Theophylline	C	Ingestion	Ther error	34 µg/mL	
602	68 yr	Theophylline (long-acting)	A/C	Ingestion	Int misuse	36 µg/mL	
603	80 yr	Theophylline	C	Ingestion	Ther error	55 µg/mL	
604	83 yr	Theophylline	C	Ingestion	Ther error	42 µg/mL	
605	90 yr	Theophylline	C	Ingestion	Unknown	28 µg/mL	

See also case 668 (theophylline).

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TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
Cardiovascular drugs							
606	71 yr	Amiodarone	A/C	Ingestion	Int suicide		
607	51 yr	Amlodipine benazepril metformin	A/C	Ingestion	Int suicide		
608[p]	46 yr	Amlodipine imipramine	A/C	Ingestion	Int suicide		
609[p]	43 yr	Amlodipine nortriptyline alprazolam	A/C	Ingestion	Int unk		
610	50 yr	Atenolol amlodipine zolpidem	A/C	Ingestion	Int suicide		
611	62 yr	Atenolol diltiazem	A/C	Ingestion	Int suicide		
612	55 yr	Atenolol nifedipine ethanol	A/C	Ingestion	Int suicide	238 mg/dL	
613	82 yr	Beta blocker calcium channel blocker	A/C	Ingestion	Ther error		
614	33 yr	Captopril sertraline alprazolam	A	Ingestion	Int misuse		
615[a]	23 mo	Clonidine	A	Ingestion	Unint gen	46 ng/mL§	
616	28 yr	Clonidine acetaminophen/hydrocodone methyldopa	A	Ingestion	Int suicide		
617	55 yr	Clonidine ethanol lisinopril	A/C	Ingestion	Int suicide		
618	60's yr	Digoxin	C	Ingestion	Ther error	6.7 ng/mL	
619[p]	61 yr	Digoxin	A/C	Ingestion	Unknown	5.4 ng/mL	
620	69 yr	Digoxin	C	Ingestion	Ther error	10 ng/mL	
621	69 yr	Digoxin	C	Ingestion	Ther error	2.7 ng/mL	
622	72 yr	Digoxin	C	Ingestion	Ther error	2.4 ng/mL	
623	76 yr	Digoxin	C	Ingestion	Ther error	3.6 ng/mL	
624	77 yr	Digoxin	C	Ingestion	Unknown	4 ng/mL	
625	78 yr	Digoxin	C	Ingestion	Ther error	8.2 ng/mL	
626	79 yr	Digoxin	C	Ingestion	Ther error	4.8 ng/mL	
627	82 yr	Digoxin	A/C	Ingestion	Int suicide		
628[p]	88 yr	Digoxin	C	Ingestion	Ther error	4.6 ng/mL	
629	88 yr	Digoxin	C	Ingestion	Ther error	5.4 ng/mL	
630	92 yr	Digoxin	C	Ingestion	Ther error	3 ng/mL	
631	92 yr	Digoxin	C	Ingestion	Ther error	2.1 ng/mL	
632	76 yr	Digoxin amiodarone	C	Ingestion	Ther error	3.5 ng/mL	
633[p]	89 yr	Digoxin clarithromycin	C	Ingestion	Ther error	5.5 ng/mL	
634	79 yr	Digoxin propafenone	A/C	Ingestion	Ther error		
635	60 yr	Digoxin temazepam verapamil	A/C	Ingestion	Int suicide	11 ng/mL	
636	51 yr	Digoxin verapamil metoprolol	A/C	Ingestion	Int suicide	9.8 ng/mL	
637	29 yr	Diltiazem (long-acting)	A/C	Ingestion	Int suicide		
638[a]	43 yr	Diltiazem	A	Ingestion	Int suicide		
639	44 yr	Diltiazem (long-acting)	A	Ingestion	Int suicide	46 µg/mL§	
640	45 yr	Diltiazem (long-acting)	A/C	Ingestion	Int suicide		
641	47 yr	Diltiazem (long-acting)	U	Ingestion	Int suicide		
642	49 yr	Diltiazem (long-acting)	A	Ingestion	Int suicide		
643	89 yr	Diltiazem (long-acting)	A	Ingestion	Int suicide		
644	49 yr	Diltiazem acetaminophen	A/C	Ingestion	Int suicide	163 µg/mL	
645	49 yr	Diltiazem amitriptyline	A/C	Ingestion	Int suicide		

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
646[p]	43 yr	Diltiazem (long-acting) atenolol	A	Ingestion	Int suicide		
647	31 yr	Diltiazem atenolol clozapine	A/C	Ingestion	Int suicide		
648	41 yr	Diltiazem digoxin	C	Ingestion	Ther error	 2.9 ng/mL	
649	40 yr	Diltiazem (long acting) ethanol	A	Ingestion	Int suicide		
650	29 yr	Diltiazem (long-acting) ibuprofen	A	Ingestion	Int suicide		
651	66 yr	Diltiazem metformin glimepiride	A/C	Ingestion	Int suicide		
652	76 yr	Diltiazem metoprolol	A/C	Ingestion	Int suicide	9.5 µg/mL§	
653	47 yr	Diltiazem phenobarbital ibuprofen	A/C	Ingestion	Int suicide		
654	26 yr	Diltiazem propafenone valproic acid	U	Ingestion	Int suicide	0.8 µg/mL§ 9.49 µg/mL§ 51 µg/mL§	
655	21 yr	Diltiazem verapamil metoprolol	A	Ingestion	Int suicide		
656[p]	45 yr	Disopyramide	A	Ingestion	Int suicide		
657[p]	39 yr	Felodipine buspirone alprazolam	A/C	Ingestion	Int suicide		
658	29 yr	Flecainide cocaine (crack)	A/C	Ing/Inh	Int suicide		
659[ipm]	21 yr	Flecainide ethanol	U	Ingestion	Int suicide		
660	30 yr	Metoprolol	A	Ingestion	Int suicide		
661	49 yr	Metoprolol clonidine	A/C	Ingestion	Int suicide		
662[ai]	20 mo	Nifedipine (long-acting)	A	Ingestion	Unint gen	560 µg/mL§	
663	43 yr	Nifedipine (long-acting)	A/C	Ingestion	Int suicide		
664	53 yr	Nifedipine (long-acting) acetaminophen diazepam	A	Ingestion	Int suicide	 263 µg/mL	
665	40 yr	Nifedipine (long-acting) ethanol	A	Ingestion	Int suicide		
666	42 yr	Nifedipine (long-acting) metoprolol (long-acting) cocaine	A/C	Ing/Unk	Int suicide	 benzoylecgonine 380 ng/mL§	
667[p]	45 yr	Nifedipine (long acting) propranolol diazepam	A/C	Ingestion	Int suicide		
668	52 yr	Nifedipine theophylline propoxyphene	A	Ingestion	Int suicide	 33 µg/mL	
669[a]	80 yr	Nitroglycerin	A	Dermal	Ther error		
670[ap]	69 yr	Procainamide ethanol	A/C	Ingestion	Int suicide	52 µg/mL 221 mg/dL	
671[a]	48 yr	Propafenone	A/C	Ingestion	Ther error	4.88 µg/mL	
672	49 yr	Propranolol	A	Ingestion	Int suicide		
673	50 yr	Propranolol	A/C	Ingestion	Int suicide		
674	45 yr	Propranolol amitriptyline thioridazine	A	Ingestion	Int suicide		
675	40 yr	Propranolol amitriptyline topiramate	A/C	Ingestion	Int suicide		
676[p]	19 yr	Propranolol diphenhydramine	A	Ingestion	Int suicide		
677	46 yr	Verapamil (long-acting)	A	Ingestion	Int suicide		

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
678	52 yr	Verapamil (long-acting)	A	Ingestion	Int suicide		
679	60 yr	Verapamil (long-acting)	A/C	Ingestion	Int suicide		
680	60 yr	Verapamil (long-acting)	A/C	Ingestion	Int suicide		
681	45 yr	Verapamil amitriptyline clonazepam	A	Ingestion	Int suicide		
682	30 yr	Verapamil (long-acting) atenolol	A	Ingestion	Int suicide		
683	24 yr	Verapamil atenolol ethanol	A/C	Ingestion	Int suicide	 308 mg/dL	
684	17 yr	Verapamil atenolol potassium chloride	A	Ingestion	Int suicide		
685	48 yr	Verapamil (long-acting) carisoprodol	A/C	Ingestion	Int suicide		
686	72 yr	Verapamil clonazepam risperidone	A/C	Ingestion	Int suicide		
687	46 yr	Verapamil (long-acting) cocaine acetaminophen	A	Ing/Unk	Int suicide		
688	39 yr	Verapamil (long-acting) enalapril	A	Ingestion	Int suicide		
689	31 yr	Verapamil ibuprofen	A	Ingestion	Int suicide		
690	20 yr	Verapamil lorazepam clonazepam	A	Ingestion	Int suicide		
691	65 yr	Verapamil metoprolol	A/C	Ingestion	Int suicide		
692	69 yr	Verapamil (long-acting) metoprolol risperidone	A/C	Ingestion	Int suicide		
693	29 yr	Verapamil nadolol acetaminophen/isometheptene/ dichloralphenazone	A	Ingestion	Int suicide		
694	40 yr	Verapamil propranolol paroxetine	A/C	Ingestion	Int suicide		
695[p]	67 yr	Verapamil quetiapine	A/C	Ingestion	Ther error		
696	45 yr	Verapamil simvastatin	A	Ingestion	Int suicide		
697[p]	62 yr	Verapamil hydrochlorothiazide/triamterene venlafaxine	A	Ingestion	Int suicide		

See also cases 632 (amiodarone); 354, 455, 610 (amlodipine); 455, 646, 647, 682 thru 684 (atenolol); 607 (benazepril); 613 (calcium channel blocker); 661 (clonidine); 648 (digoxin); 504, 547, 611, 758 (diltiazem); 688 (enalapril); 255 (hydrochlorothiazide/lisinopril); 364, 697 (hydrochlorothiazide/triamterene); 381 (irbesartan); 617 (lisinopril); 616 (methyldopa); 636, 652, 655, 666, 691, 692 (metoprolol); 504 (mibefradil); 439, 693 (nadolol); 612 (nifedipine); 538 (procainamide); 634, 654 (propafenone); 453, 507, 667, 694, (propranolol); 487 (quinapril); 696 (simvastatin); 511, 635, 636, 655 (verapamil).

Corticosteroids

See also case 540 (prednisone).

Cough and cold preparations

698[p]	21 yr	Benzonatate	A	Ingestion	Int suicide		
699[p]	3 yr	Codeine/guaifenesin	A	Ingestion	Malicious		
700[aip]	2 yr	Hydrocodone/guaifenesin	A	Ingestion	Ther error	hydrocodone 80 ng/mL§	
701[p]	42 yr	Phenylpropanolamine/guaifenesin	A	Ingestion	Int misuse		
702[a]	23 yr	Phenylpropanolamine (long-acting) acetaminophen/diphenhydramine/ pseudoephedrine/dextromethorphan	A	Ingestion	Int suicide	0.95 µg/mL 14.8 µg/mL¥ pseudoephedrine 0.33 µg/mL	

See also case 367 (pseudoephedrine/brompheniramine).

Electrolytes and minerals

703[a]	14 mo	Iron	A	Ingestion	Unint gen	18,750 µg/dL	3 h

See also case 684 (potassium chloride).

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TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
Gastrointestinal preparations							
704[a]	73 yr	Magnesium citrate	A	Asp/Ing	Ther error	magnesium 6.6 mEq/L	
705[a]	6 yr	Trimethobenzamide	A	Other	Adv rxn		
See also case 503 (metoclopramide).							
Hormones and hormone antagonists							
706	47 yr	Glipizide	A	Ingestion	Ther error		
707	32 yr	Insulin	A	Parenteral	Int suicide		
708[ipm]	45 yr	Insulin	U	Parenteral	Int suicide		
709	78 yr	Insulin	A	Parenteral	Ther error		
710	19 yr	Insulin	A/C	Ing/Paren	Int suicide		
		aspirin				91 mg/dL	4 h
711	36 yr	Metformin	C	Ingestion	Unknown		
712	80 yr	Metformin	C	Ingestion	Ther error		
713	80 yr	Metformin	A/C	Ingestion	Int suicide		
714	52 yr	Metformin	A/C	Ingestion	Int unk		
		opiate					
		benzodiazepine					
715[a]	38 yr	Metformin	A/C	Ingestion	Int suicide		
		sulfonylurea					
See also cases 651 (glimepiride); 363, 607, 651 (metformin); 715 (sulfonylurea).							
Miscellaneous drugs							
716[ap]	29 yr	1,4-butanediol	A/C	Ingestion	Int abuse		
717[a]	4 yr	Disodium edetate	A	Parenteral	Ther error		
718[a]	52 yr	Gamma butyrolactone	C	Ingestion	Int abuse		
		ethanol					
719[p]	24 yr	Gamma hydroxybutyrate	U	Ingestion	Int unk	375 µg/mL§	
720[p]	42 yr	Gamma hydroxybutyrate	A	Ingestion	Int abuse		
721[p]	21 yr	Gamma hydroxybutyrate	A	Ingestion	Int abuse	240 µg/mL§	
		ethanol				50 mg/dL§	
722[p]	33 yr	Gamma hydroxybutyrate	U	Ing/Inh	Int abuse	503 µg/mL§	
		nitrite (volatile)					
723	26 yr	Gamma hydroxybutyrate	C	Ingestion	Int abuse		
		opioid					
		benzodiazepine					
724[ipm]	36 yr	Gamma hydroxybutyrate	U	Ingestion	Int suicide		
		unknown drug					
725[aip]	38 yr	Nicotine (transdermal patch)	A	Ingestion	Int suicide	106 µg/mL§	
726	62 yr	Sildenafil	A	Ingestion	Adv rxn		
727	13 yr	Throat spray (phenol, 1.4%)	A	Ingestion	Int suicide		
		unknown liquid					
See also cases 21, 822 (gamma hydroxybutyrate); 518 (sibutramine).							
Muscle relaxants							
728[p]	44 yr	Baclofen	A/C	Ingestion	Int suicide		
729[p]	52 yr	Baclofen	A/C	Ingestion	Int suicide		
		methocarbamol					
		acetaminophen					
730[p]	38 yr	Carisoprodol	A	Ingestion	Int suicide	meprobamate 15.7 µg/mL	
		diphenhydramine					
731	44 yr	Carisoprodol	A	Ingestion	Int suicide		
		hydrocodone					
732[p]	21 yr	Cyclobenzaprine	A	Ingestion	Int suicide		
733	34 yr	Cyclobenzaprine	U	Ingestion	Int suicide		
734[p]	38 yr	Cyclobenzaprine	A	Ingestion	Int suicide		
		alprazolam					
735	43 yr	Cyclobenzaprine	U	Ingestion	Int suicide		
		lorazepam					
		ibuprofen					
See also cases 17, 242, 269, 292, 294 thru 296, 388, 485, 509, 685, 817 (carisoprodol); 327, 445 (cyclobenzaprine); 435, 729 (methocarbamol).							
Narcotic Antagonists							
736[ap]	30 yr	Naltrexone	A	Other	Adv rxn		
737	37 yr	Naltrexone	A/C	Ingestion	Int abuse		
		methadone				1.5 µg/mL§	
		cocaine				0.1 µg/mL§	

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
Sedatives/hypnotics/antipsychotics							
738[p]	32 yr	Alprazolam	A/C	Ingestion	Int abuse		
739	40 yr	Alprazolam	A	Ingestion	Int suicide	260 ng/mL§	
		acetaminophen/hydrocodone				95 µg/mL¥	
						hydrocodone 650 ng/mL§	
740[p]	46 yr	Alprazolam	A	Ingestion	Unknown		
		paroxetine					
		acetaminophen/hydrocodone					
741[ipm]	45 yr	Barbiturate	U	Unknown	Int suicide		
742[ipm]	75 yr	Barbiturate	U	Unknown	Int suicide		
743[p]	39 yr	Benzodiazepine	U	Ing/Unk	Unknown		
		opiate				morphine 250 ng/mL§	
						monoacetyl morphine 540 ng/mL§	
		cocaine					
744[p]	39 yr	Chloral hydrate	A	Ingestion	Int suicide		
745[a]	73 yr	Chloral hydrate	A/C	Ingestion	Unknown		
746	42 yr	Chlordiazepoxide	U	Ingestion	Int suicide	11,250 ng/mL§	
		propoxyphene				2.828 µg/mL§	
						norpropoxyphene 5.55 µg/mL§	
		diphenhydramine				0.7 µg/mL§	
747[p]	37 yr	Clonazepam	A	Ingestion	Int suicide		
748	40 yr	Clonazepam	A/C	Ingestion	Int suicide		
749	52 yr	Clonazepam	A/C	Ingestion	Int suicide		
		ethanol					
750	46 yr	Clozapine	A	Ingestion	Int suicide		
		ethanol				248 mg/dL	
751	39 yr	Diazepam	A	Ingestion	Int suicide		
752[ipm]	52 yr	Diazepam	U	Ingestion	Int suicide		
753[ipm]	52 yr	Diazepam	A/C	Ingestion	Int suicide		
		alprazolam					
754	73 yr	Diazepam	A/C	Ingestion	Int suicide		
		zolpidem					
755	26 yr	Glutethimide/codeine	A	Ingestion	Int abuse		
756	41 yr	Haloperidol	A/C	Ingestion	Int suicide		
		benztropine					
757	51 yr	Lorazepam	A	Ingestion	Int suicide		
		ethanol					
758	34 yr	Loxapine	A	Ingestion	Int suicide		
		diltiazem					
		sertraline					
759[p]	51 yr	Mesoridazine	U	Ingestion	Unknown		
760	54 yr	Molindone	U	Ingestion	Int suicide		
		trazodone					
		amoxapine					
761	84 yr	Nitrazepam	U	Ingestion	Int suicide		
762[p]	32 yr	Olanzapine	U	Ingestion	Int suicide		
763	23 yr	Olanzapine	U	Ingestion	Int unk		
		trazodone					
		fluoxetine					
764	66 yr	Phenobarbital	A/C	Ingestion	Int suicide	31 µg/mL	36 h
		amitriptyline					
765[p]	32 yr	Phenobarbital	A/C	Ingestion	Int suicide	76 µg/mL§	
		primidone				66 µg/mL§	
766[p]	40 yr	Phenobarbital	A/C	Ingestion	Int suicide	51 µg/mL	
		valproic acid				127 µg/mL	
		haloperidol					
767[p]	40 yr	Promethazine	A/C	Ingestion	Int suicide		
		amitriptyline					
		oxazepam					
768[p]	17 yr	Quetiapine	A	Ingestion	Int suicide		
		paroxetine					
769	45 yr	Quetiapine	A/C	Ingestion	Int suicide		
		trazodone					
		venlafaxine					
770	25 yr	Risperidone	A	Ingestion	Int suicide		
771	30 yr	Risperidone	A/C	Ingestion	Int suicide		
		ammonia					
		fabric spray (zinc chloride <1%)					

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
772	42 yr	Risperidone clonazepam valproic acid	A/C	Ingestion	Int suicide	 374 µg/mL	
773	50 yr	Secobarbital	A	Ingestion	Int suicide		
774	95 yr	Temazepam codeine ethanol	A/C	Ingestion	Int unk		
775	49 yr	Temazepam hydroxyzine	A/C	Ingestion	Int unk		
776[p]	46 yr	Triazolam	A	Ingestion	Int suicide		

See also cases 44, 291, 292, 303, 314, 316, 325, 369, 380, 399, 446, 609, 614, 657, 734, 753, 830, 867 (alprazolam); 16, 96, 241, 293, 384, 417 thru 420, 437, 500, 506, 544, 573, 714, 723, 779, 816, 846, 857 (benzodiazepine); 657 (buspirone); 22, 297, 421, 536 (chlordiazepoxide); 359 (chlorpromazine); 298, 488 thru 490, 501, 508, 567, 681, 686, 690, 772, 831 (clonazepam); 647 (clozapine); 15, 19, 296, 299, 360, 402, 408, 421, 444, 537, 664, 667 (diazepam); 821 (flunitrazepam); 253 (fluphenazine); 72 (flurazepam); 484, 766 (haloperidol); 304, 329, 449, 690, 735 (lorazepam); 386, 465, 466, 511, 519, 521 thru 523, 559, 561 (olanzapine); 767 (oxazepam); 653 (phenobarbital); 380, 402 (promethazine); 259, 695 (quetiapine); 539, 542, 686, 692 (risperidone); 440, 635 (temazepam); 555, 674 (thioridazine); 23, 360 (trifluoperazine); 274, 317, 325, 400, 411, 512, 547, 610, 754 (zolpidem).

Stimulants and street drugs

777[p]	25 yr	Amphetamine	U	Unknown	Int abuse		
778	37 yr	Amphetamine	C	Unknown	Int abuse		
779	21 yr	Amphetamine benzodiazepine ethanol	A	Ingestion	Int suicide	 103 mg/dL	
780[aip]	2 mo	Cocaine	A	Inhalation	Malicious		
781	19 yr	Cocaine	C	Unknown	Int abuse		
782	19 yr	Cocaine	A	Unknown	Int abuse		
783	20 yr	Cocaine	A	Parenteral	Int abuse		
784[p]	21 yr	Cocaine	A	Ingestion	Int unk		
785[p]	21 yr	Cocaine	A	Ingestion	Int misuse		
786	22 yr	Cocaine	A	Unknown	Int abuse		
787[p]	22 yr	Cocaine (crack)	A/C	Ingestion	Int misuse		
788	24 yr	Cocaine	U	Unknown	Int abuse		
789[ipm]	24 yr	Cocaine	U	Unknown	Int abuse		
790	24 yr	Cocaine	A	Ingestion	Int misuse	5.9 µg/mL benzoylecgonine 14 µg/mL§ ecgonine methyl ester 5.1 µg/mL§	
791[p]	26 yr	Cocaine	A	Ingestion	Int misuse		
792	28 yr	Cocaine	A	Inhalation	Int abuse		
793	30 yr	Cocaine	A/C	Unknown	Unknown		
794	30 yr	Cocaine	A	Ingestion	Int misuse		
795	30 yr	Cocaine (crack)	A	Ingestion	Int misuse	0.55 µg/mL§ benzoylecgonine 11.7 µg/mL§	
796	31 yr	Cocaine	A	Ingestion	Int abuse		
797	33 yr	Cocaine	U	Parenteral	Int abuse		
798[p]	34 yr	Cocaine	A	Ingestion	Int suicide		
799[p]	34 yr	Cocaine	U	Parenteral	Int abuse		
800[p]	35 yr	Cocaine	A	Inhalation	Int abuse		
801[p]	35 yr	Cocaine	A	Inhalation	Int suicide		
802[ipm]	35 yr	Cocaine	U	Unknown	Int abuse		
803	36 yr	Cocaine	A	Ingestion	Int misuse		
804	38 yr	Cocaine	A	Ing/Paren	Int misuse	>1 µg/mL§	
805	39 yr	Cocaine	A/C	Unknown	Int abuse		
806	40 yr	Cocaine	C	Unknown	Int abuse		
807[ipm]	40 yr	Cocaine	A	Unknown	Int abuse		
808	42 yr	Cocaine	C	Unknown	Int abuse		
809[p]	42 yr	Cocaine	U	Parenteral	Int abuse		
810[p]	43 yr	Cocaine	A	Other	Int misuse		
811[ipm]	45 yr	Cocaine	U	Unknown	Int abuse		
812[ipm]	45 yr	Cocaine	A	Unknown	Int abuse		
813[ipm]	45 yr	Cocaine	A	Unknown	Int abuse		
814[ipm]	46 yr	Cocaine	U	Unknown	Int suicide		
815[ipm]	47 yr	Cocaine	U	Unknown	Int abuse		
816[p]	27 yr	Cocaine benzodiazepine marijuana	A	Ingestion	Int abuse		
817[p]	27 yr	Cocaine carisoprodol	A/C	Ing/Unk	Int abuse	benzoylecgonine 1.3 µg/mL§	

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
818[p]	20 yr	Cocaine ethanol	U	Unknown	Int abuse		
819[p]	24 yr	Cocaine ethanol	U	Ingestion	Int abuse	benzoylecgonine 120 ng/mL§ cocaethylene 47 ng/mL§ 270 mg/dL	
820	39 yr	Cocaine ethanol	A/C	Unknown	Int abuse		
821	18 yr	Cocaine flunitrazepam	A	Ingestion	Int abuse		
822[p]	30 yr	Cocaine gamma hydroxybutyrate marijuana	A/C	Ing/Inh	Int abuse		
823	27 yr	Cocaine hallucinogenic mushroom	A	Ing/Inh	Int abuse		
824[p]	41 yr	Cocaine heroin codeine	A/C	Ing/Paren	Int abuse		
825[p]	32 yr	Cocaine opiates	A/C	Parenteral	Int abuse		
826[p]	26 yr	Cocaine opiates ethanol	U	Ung/Unk	Unknown		
827[p]	44 yr	Cocaine tricyclic antidepressants amphetamines	U	Ing/Unk	Int suicide		
828	36 yr	Cocaine unknown pesticide	U	Unknown	Int unk		
829[p]	27 yr	Cocaine/heroin marijuana	A	Inh/Paren	Int abuse		
830	32 yr	Diet drug (unknown type) alprazolam herbicide (unknown type)	A	Ingestion	Int suicide		
831[p]	43 yr	Dextroamphetamine propoxyphene clonazepam	A/C	Ingestion	Int suicide		
832	20 yr	Heroin	A	Ingestion	Int misuse		
833[p]	20 yr	Heroin	A/C	Parenteral	Int abuse		
834[a]	20 yr	Heroin (body packer)	U	Ingestion	Int misuse		
835[ipm]	24 yr	Heroin	U	Unknown	Int unk		
836[p]	27 yr	Heroin	A/C	Unknown	Int abuse		
837[p]	28 yr	Heroin	U	Parenteral	Int abuse		
838[p]	31 yr	Heroin	A	Parenteral	Int abuse		
839	32 yr	Heroin	A	Parenteral	Int abuse		
840[p]	34 yr	Heroin	A/C	Parenteral	Int abuse	morphine 87 ng/mL§	
841[p]	36 yr	Heroin	A	Unknown	Int abuse		
842[p]	38 yr	Heroin	A	Parenteral	Int abuse		
843[p]	44 yr	Heroin	A/C	Inhalation	Int abuse		
844	48 yr	Heroin	A/C	Parenteral	Int abuse		
845[p]	>19 yr	Heroin	A	Parenteral	Int abuse		
846	44 yr	Heroin benzodiazepine	A/C	Ing/Paren	Int suicide		
847[p]	17 yr	Heroin cocaine	A/C	Parenteral	Int abuse	morphine 80 ng/mL§ benzoylecgonine 0.03 µg/mL§	
848[p]	27 yr	Heroin cocaine	A/C	Parenteral	Int abuse		
849[p]	30 yr	Heroin cocaine	A	Unknown	Int suicide	benzoylecgonine 0.45 µg/mL	
850	37 yr	Heroin cocaine	U	Unknown	Int unk		
851	37 yr	Heroin cocaine	A	Parenteral	Int abuse	morphine 70 ng/mL§ 0.31 µg/mL§	
852[p]	40 yr	Heroin cocaine	U	Parenteral	Int abuse		
853[p]	40 yr	Heroin cocaine	A/C	Parenteral	Int abuse		
854[p]	>19 yr	Heroin cocaine ethanol	A	Ing/Inh	Int abuse		

(Continued on following page)

TABLE 21. Summary of Fatal Exposures Reported to TESS in 1999 (Cont'd)

Case	Age	Substances	Chronicity	Route	Reason	Blood Concentrations	Interval After Exposure
855[p]	>19 yr	Heroin cocaine ethanol	A	Ing/Inh	Int abuse		
856[p]	29 yr	Heroin ethanol	A	Ing/Paren	Int abuse	59 mg/dL	
857[p]	46 yr	Heroin methadone benzodiazepine	A	Unknown	Int suicide		
858	19 yr	Methamphetamine	A	Ingestion	Int abuse	5.99 µg/mL	
859	22 yr	Methamphetamine	A	Ingestion	Int abuse		
860	35 yr	Methamphetamine	U	Ingestion	Int abuse	1.7 µg/mL	
861[p]	40 yr	Methamphetamine	A	Inhalation	Int abuse		
862[p]	23 yr	Methamphetamine ethanol	C	Ingestion	Int abuse		
863[p]	48 yr	Methamphetamine ethanol	U	Ingestion	Int abuse		
864[p]	19 yr	Methylenedioxymethamphetamine	A	Ingestion	Int abuse		
865[p]	19 yr	Methylenedioxymethamphetamine	U	Ingestion	Int abuse		
866[a]	23 yr	Methylenedioxymethamphetamine	A	Ingestion	Int abuse		
867[a]	22 yr	Methylenedioxymethamphetamine ethanol alprazolam	A	Ingestion	Int abuse	0.82 µg/mL	
See also cases 350, 406, 419, 827 (amphetamine); 101 (amphetamine/dextroamphetamine); 18, 29, 30, 96, 299, 302, 326, 407, 491, 571, 574, 576, 593, 658, 666, 687, 737, 743, 847 thru 855 (cocaine); 254, 546, 576, 824 (heroin); 16, 162, 406, 587, 816, 822, 829 (marijuana); 389, 502, 505 (methamphetamine); 722 (nitrite, volatile); 587 (phencyclidine).							
Topical preparations							
868[a]	17 yr	Cardiac glycoside (topical aphrodisiac)	A	Ingestion	Int suicide	digoxin 4.2 ng/mL	
Unknown substances							
869[p]	19 yr	Unknown drug	A	Ingestion	Unknown		
870	38 yr	Unknown drug	A	Ingestion	Int suicide		
871[ipm]	39 yr	Unknown drug	U	Ingestion	Int suicide		
872	>19 yr	Unknown drug trichlorocyanuric acid (0.1-1%) cleaner	A	Unknown	Int unknown		
See also cases 275, 430, 724 (unknown drug); 727 (unknown liquid).							
Vitamins							
873[p]	34 yr	Prenatal vitamins with iron	A	Ingestion	Int suicide	92 µg/dL	
See also case 257 (vitamins with iron).							

ABBREVIATIONS: C, chronic exposure; A, acute exposure; A/C, acute on chronic; U, unknown; Oc, ocular; Inh, inhalation; Ing, ingestion; Adv rxn, adverse reaction; Env, environmental; Int, intentional; Occ, occupational; Ther error, therapeutic error; Unint gen, unintentional general

[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

#Concentration includes metabolite and parent compound

[a]Abstract 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 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Adhesives/glues														
Cyanoacrylates	11,115	3,485	2,425	4,322	10,894	145	45	20	2,624	1,373	2,354	593	7	0
Epoxy	874	309	58	444	850	15	2	7	249	184	188	73	1	0
Toluene/xylene	1,420	805	274	262	1,346	61	8	5	258	322	351	44	1	0
Non-toxic	1,503	1,004	376	106	1,441	48	10	4	64	245	84	10	0	0
Unknown	4,812	2,589	658	1,379	4,632	107	32	36	854	1,036	870	171	9	3
*Category totals	19,724	8,192	3,791	6,513	19,163	376	97	72	4,049	3,160	3,847	891	18	3
Alcohols														
Ethanol (beverage)	29,960	1,465	4,866	21,624	5,449	23,330	326	597	20,055	3,209	8,780	4,660	1,149	89
Ethanol (other)	2,600	1,508	251	751	2,391	164	12	26	357	750	361	55	5	0

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TABLE 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Higher alcohols	211	90	33	74	197	9	2	3	62	72	41	14	2	0
Isopropanol	11,422	7,247	1,067	2,751	10,227	1,068	73	17	2,058	3,490	2,193	330	82	1
Methanol	976	227	136	542	839	110	12	1	470	252	246	73	35	6
Rubbing alcohol														
Ethanol, with methyl salicylate	38	31	3	4	36	1	1	0	4	9	9	0	0	0
Ethanol, without methyl salicylate	369	257	28	81	350	18	0	0	50	109	64	7	1	0
Isopropanol, with methyl salicylate	309	234	21	51	286	21	1	1	59	117	66	8	2	0
Isopropanol, without methyl salicylate	7,674	5,220	584	1,724	6,917	682	54	8	1,222	2,490	1,278	156	28	0
Unknown rubbing alcohol	15	10	1	1	14	1	0	0	3	7	1	0	1	0
Other	57	23	3	26	51	3	0	3	16	17	7	1	1	0
Unknown	651	99	100	391	264	368	4	6	335	72	129	89	25	1
*Category totals	54,282	16,411	7,093	28,020	27,021	25,775	485	662	24,691	10,594	13,175	5,393	1,331	97
Arts/crafts/office supplies														
Artist paints, non-water-color	1,741	1,149	266	289	1,694	32	5	8	148	351	180	28	2	0
Chalk	1,737	1,563	132	37	1,708	20	4	4	32	307	51	3	0	0
Clay	2,057	1,718	183	140	2,035	13	0	8	77	311	95	6	0	0
Crayon	2,259	2,012	168	70	2,242	12	1	4	42	307	36	3	0	0
Glazes	194	79	54	50	188	5	1	0	36	53	26	6	0	0
Office supplies: miscellaneous	448	187	48	185	442	4	2	0	66	109	73	10	0	0
Pencil	3,354	1,624	1,384	267	3,235	62	44	3	148	368	282	15	0	0
Pens/ink	15,753	9,570	5,439	602	15,279	403	38	25	378	2,794	551	36	1	0
Typewriter correction fluid	2,551	1,764	544	203	2,408	112	21	2	183	819	268	16	0	0
Water color	2,753	2,198	326	199	2,689	48	8	7	68	528	110	4	0	0
Other	9,207	7,083	1,344	672	9,037	123	8	34	302	1,574	430	47	1	0
Unknown	376	278	72	22	371	3	2	0	8	60	15	0	0	0
*Category totals	42,430	29,225	9,960	2,736	41,328	837	134	95	1,488	7,581	2,117	174	4	0
Automotive/aircraft/boat products														
Ethylene glycol	5,427	788	852	3,246	4,978	391	40	4	1,669	1,171	1,086	312	101	9
Glycols: other	1,695	447	173	945	1,639	43	5	5	570	368	601	110	8	0
Glycol and methanol	99	24	19	51	93	4	1	1	25	27	25	4	2	0
Hydrocarbons	3,485	1,554	388	1,350	3,329	130	17	3	941	973	987	170	11	1
Methanol	1,396	352	217	714	1,269	102	17	0	565	409	403	55	17	4
Non-toxic	41	27	4	10	40	1	0	0	4	11	7	1	0	0
Other	2,240	986	302	807	2,177	30	20	13	698	434	731	147	6	0
Unknown	146	36	23	76	132	9	3	1	63	23	48	11	3	1
*Category totals	14,529	4,214	1,978	7,199	13,657	710	103	27	4,535	3,416	3,888	810	148	15
Batteries														
Automotive batteries	1,609	124	214	1,080	1,590	10	6	1	516	133	591	199	2	0
Disc batteries														
Alkaline (MnO_2)	42	30	7	4	41	0	0	0	27	23	4	1	0	0
Lithium	84	30	18	29	81	1	0	0	44	28	6	4	0	0
Mercuric oxide	9	3	0	4	9	0	0	0	5	5	0	0	0	0
Nickel cadmium	10	5	1	3	9	0	0	1	3	4	1	0	1	0
Silver oxide	28	14	3	11	28	0	0	0	23	11	1	2	0	0
Zinc-air	63	21	6	35	63	0	0	0	41	48	1	0	0	0
Other	2	0	1	1	2	0	0	0	0	0	0	0	0	0
Unknown	1,701	1,031	451	190	1,652	37	6	1	1,121	907	75	15	2	0
Dry cell batteries	4,898	2,407	1,166	1,091	4,677	178	14	20	692	1,199	1,051	188	4	0
Other	68	24	17	23	66	2	0	0	13	14	19	5	0	0
Unknown	13	1	6	4	13	0	0	0	0	4	3	0	0	0
*Category totals	8,527	3,690	1,890	2,475	8,231	228	26	23	2,485	2,376	1,752	414	9	0
Bites and envenomations														
Aquatic														
Coelenterate	1,008	114	474	387	1,003	1	0	4	121	9	240	51	0	0
Fish	1,389	20	230	1,064	1,381	3	0	5	436	22	481	164	0	0
Other/unknown	467	240	59	154	458	7	0	2	87	83	61	23	1	0
Insects														
Ant/fire ant	2,895	1,095	422	1,281	2,878	1	12	2	265	62	865	170	6	0
Bee/wasp/hornet	14,924	2,855	3,160	8,141	14,909	10	1	2	1,316	178	5,271	731	21	3

(Continued on following page)

TABLE 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Caterpillar	2,569	603	676	1,212	2,554	8	3	4	187	58	783	61	0	0
Centipede/millipede	176	54	36	74	176	0	0	0	19	12	55	9	0	0
Mosquito	730	184	158	306	728	0	0	1	92	6	111	29	1	0
Scorpion	13,642	1,055	2,737	9,553	13,627	13	1	0	814	133	5,140	505	20	0
Tick	3,337	848	720	1,557	3,332	3	0	1	551	141	513	54	4	0
Other	17,472	3,610	3,033	9,737	17,282	19	111	43	2,578	534	4,113	1,143	19	0
Mammals														
Bat	355	49	66	205	354	1	0	0	197	57	47	5	0	0
Cat	900	149	203	469	898	0	0	2	413	17	146	18	1	0
Dog	1,912	377	822	639	1,909	1	1	1	1,187	29	275	78	2	0
Fox	16	0	5	11	15	0	0	1	7	3	1	0	0	0
Human	52	11	14	21	47	2	2	0	19	0	9	4	0	0
Raccoon	141	10	32	83	140	0	0	1	89	14	23	1	0	0
Rodents/lagomorphs	1,727	434	626	563	1,705	4	13	3	378	99	336	22	0	0
Skunk	273	30	67	133	272	0	0	0	34	39	63	3	0	0
Other	1,507	264	496	634	1,500	4	1	2	629	95	288	38	0	0
Reptile: other/unknown	1,065	346	368	301	1,043	10	2	8	219	59	293	32	0	0
Snakes														
Copperhead	579	30	130	391	578	1	0	0	519	9	190	251	24	0
Coral	46	0	12	32	46	0	0	0	42	3	25	7	3	0
Cottonmouth	111	0	29	78	111	0	0	0	98	3	39	38	3	0
Crotalid: unknown	2	0	0	2	2	0	0	0	0	0	0	0	0	0
Rattlesnake	993	51	177	717	980	7	1	3	859	43	215	407	115	1
Exotic snakes														
Poisonous	80	3	21	50	80	0	0	0	66	6	26	23	6	0
Non-poisonous	190	14	77	87	190	0	0	0	60	2	60	6	0	0
Unknown if poisonous	1	0	0	1	1	0	0	0	1	0	0	0	1	0
Nonpoisonous snake bite	1,982	183	895	822	1,970	1	0	10	491	80	786	49	1	0
Unknown snake	1,783	126	575	1,005	1,776	3	2	1	1,115	64	803	266	45	1
Spiders														
Black widow	2,471	202	387	1,795	2,466	2	3	0	855	163	860	363	20	0
Brown recluse	2,402	201	354	1,669	2,400	1	0	1	1,034	32	448	582	35	2
Other spider	10,057	1,390	1,901	6,099	10,030	10	5	3	1,738	189	2,756	667	9	0
Tarantula	209	18	68	107	202	1	0	5	46	5	75	15	2	0
Unknown insect or spider	4,647	671	866	2,952	4,644	3	0	0	561	132	1,078	138	4	0
Other/unknown bite/ envenomation	27	4	3	17	27	0	0	0	9	0	7	1	1	0
*Category totals	92,137	15,241	19,899	52,349	91,714	116	158	105	17,132	2,381	26,482	5,954	344	7
Building and construction products														
Caulking compounds and putties	3,395	2,379	217	719	3,347	22	4	22	264	789	247	58	1	0
Cement, concrete	1,837	430	165	1,079	1,813	13	1	10	666	236	440	331	10	0
Insulation														
Asbestos	237	20	31	141	237	0	0	0	54	25	13	10	0	0
Fiberglass	1,570	523	288	638	1,540	7	8	14	189	162	362	54	1	0
Urea/formaldehyde	76	37	8	23	75	0	0	1	10	12	9	1	0	0
Other	361	164	44	132	356	2	2	0	51	64	45	16	0	0
Unknown	47	18	6	20	45	2	0	0	13	4	12	1	0	0
Soldering flux	456	150	61	206	449	5	1	0	151	85	117	43	1	0
Other	2,096	1,263	162	573	2,066	11	2	14	320	420	286	75	3	0
Unknown	62	11	2	46	61	0	0	1	25	8	14	3	0	0
*Category totals	10,137	4,995	984	3,577	9,989	62	18	62	1,743	1,805	1,545	592	16	0
Chemicals														
Acetone	1,309	444	161	590	1,220	60	15	11	393	222	313	87	5	0
Acids														
Hydrochloric	3,243	196	576	2,174	3,160	58	17	4	1,229	263	1,160	462	20	3
Hydrofluoric	1,516	67	125	1,159	1,484	18	6	5	1,159	131	561	399	24	7
Other	5,371	561	873	3,407	5,220	96	29	22	2,276	560	1,907	782	33	3
Unknown	490	47	68	312	470	12	4	3	212	46	146	93	3	0
Alkali	5,903	1,291	1,061	3,027	5,720	101	50	20	2,646	728	1,869	918	81	1
Ammonia	5,603	1,302	776	3,060	5,333	189	49	21	1,804	567	1,848	652	35	1
Borates/boric acid	3,007	1,590	307	971	2,790	156	35	23	477	791	273	65	5	0
Chlorates	67	15	15	34	65	1	1	0	19	8	5	6	0	0
Cyanide	328	9	23	252	280	22	21	1	206	59	70	41	8	6
Dioxin	22	1	1	19	19	0	3	0	9	4	3	2	0	0

(Continued on following page)

TABLE 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Formaldehyde/formalin	1,555	173	344	889	1,437	86	15	11	576	230	408	139	7	1
Glycol: ethylene	854	134	121	546	637	178	12	3	441	193	157	95	75	16
Glycol: other	1,729	661	331	610	1,614	71	18	19	516	340	477	81	13	1
Ketones	954	243	86	542	913	23	9	8	428	170	290	114	13	1
Methylene chloride	769	115	108	467	734	31	3	1	335	108	265	94	1	0
Nitrates and nitrites	1,176	307	441	353	1,058	79	24	12	292	229	224	84	3	1
Phenol/creosote	1,526	282	189	895	1,483	17	4	15	537	197	432	158	7	0
Strychnine	50	27	5	15	38	2	9	1	19	21	2	3	1	0
Toluene diisocyanate	829	121	105	520	814	6	1	5	215	107	186	58	2	0
Other	20,038	6,509	3,133	8,705	18,412	660	374	481	5,586	3,779	4,006	1,207	94	2
Unknown	2,973	1,454	464	894	2,817	46	61	39	415	455	309	86	5	0
*Category totals	59,312	15,549	9,313	29,441	55,718	1,912	760	705	19,790	9,208	14,911	5,626	435	43
Cleaning substances (household)														
Ammonia cleaners														
(all purpose)	3,064	1,341	282	1,291	2,914	106	27	11	527	608	754	181	6	0
Automatic dishwasher detergents														
Granules	5,947	5,143	241	505	5,901	19	25	0	250	2,572	984	59	2	0
Liquids	3,307	2,761	145	358	3,292	7	4	3	224	1,179	684	51	1	0
Rinse agents	1,069	993	21	46	1,064	5	0	0	56	300	148	9	0	0
Other/unknown	1,071	865	55	128	1,064	4	2	1	84	376	196	19	3	0
Bleaches														
Borate	418	197	41	163	402	12	2	2	61	84	85	21	1	0
Hypochlorite	50,696	19,784	5,751	22,379	48,256	1,742	476	154	8,946	7,641	14,958	2,478	60	0
Nonhypochlorite	783	364	78	289	748	25	4	6	111	134	216	30	0	0
Other/unknown	155	72	12	57	152	3	0	0	31	33	47	14	0	0
Carpet/upholstery cleaners	5,012	3,768	305	838	4,896	41	18	56	431	1,287	921	90	3	0
Cleansers														
Anionic/nonionic	3,646	2,583	288	690	3,536	81	13	13	441	1,015	617	97	2	0
Other/unknown	1,038	598	118	283	995	27	8	7	197	235	233	35	3	0
Disinfectants														
Hypochlorite	9,080	5,574	865	2,348	8,856	145	41	33	1,538	2,308	2,284	442	21	1
Phenol	3,713	2,490	381	721	3,558	111	30	11	479	805	936	83	8	0
Pine oil	8,414	5,558	774	1,853	7,848	449	69	29	1,611	2,507	1,795	201	21	3
Other/unknown	2,647	1,485	339	708	2,504	88	28	23	523	626	676	107	2	0
Drain cleaners														
Acid	1,143	97	97	826	1,100	33	8	2	431	106	365	233	9	2
Alkali	4,204	652	399	2,730	3,951	217	20	10	1,330	569	1,279	579	46	3
Other/unknown	552	90	46	351	527	20	3	2	127	82	152	55	2	0
Fabric softeners/antistatic agents														
Aerosol/spray	60	35	5	18	53	4	2	1	4	14	10	0	0	0
Dry/powder	4	4	0	0	4	0	0	0	0	1	1	0	0	0
Liquid	1,142	950	58	120	1,108	24	5	5	104	376	149	10	1	0
Solid/sheet	328	280	20	27	321	4	0	3	13	87	15	3	0	0
Other/unknown	39	29	1	9	39	0	0	0	6	11	7	2	0	0
Glass cleaners														
Ammonia	1,776	1,386	140	219	1,712	47	11	3	142	521	304	31	1	0
Anionic/nonionic	166	94	12	53	164	2	0	0	38	38	42	13	0	0
Isopropanol	6,957	5,525	639	700	6,690	194	55	8	567	1,898	1,324	70	4	0
Other/unknown	3,288	2,527	343	369	3,133	119	28	4	293	890	645	36	3	0
Hand dishwashing														
Anionic/nonionic	7,931	5,306	670	1,771	7,645	93	96	94	477	1,272	1,741	80	2	0
Other/unknown	1,028	577	101	321	952	22	25	27	56	129	199	8	0	0
Laundry additives														
Bluing/brightening agent	63	38	12	12	60	3	0	0	5	22	9	1	0	0
Detergent booster	182	116	16	43	179	2	0	1	23	41	51	4	0	0
Enzyme/microbiological additive	109	75	5	22	108	0	0	0	15	36	20	5	0	0
Water softener	99	18	10	59	87	0	9	3	11	41	20	2	0	0
Other/unknown	2,073	1,662	148	230	2,001	17	16	36	148	573	324	29	2	0

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TABLE 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Laundry detergents														
Granules	7,296	6,150	380	663	7,133	79	25	55	713	1,879	1,819	108	4	0
Liquids	3,651	2,606	283	685	3,505	79	7	57	461	705	1,027	75	5	0
Soaps	142	97	7	36	140	0	1	1	13	31	27	1	0	0
Other/unknown	164	90	21	47	149	12	1	2	18	36	33	6	0	0
Laundry prewash/stain removers														
Dry solvent-based	3	3	0	0	3	0	0	0	0	2	0	0	0	0
Liquid solvent-based	370	305	21	36	366	2	1	1	34	119	63	9	0	0
Spray solvent-based	339	284	14	35	336	3	0	0	44	82	80	12	0	0
Other/unknown solvent-based	29	20	2	7	28	0	1	0	5	6	4	1	0	0
Dry surfactant-based	291	254	14	19	288	1	0	2	14	90	41	1	0	0
Liquid surfactant-based	2,169	1,843	102	192	2,143	20	2	4	222	571	421	41	0	0
Spray surfactant-based	285	251	8	21	282	2	1	0	32	64	72	7	0	0
Other/unknown surfactant-based	70	62	2	6	70	0	0	0	2	18	4	3	0	0
Other/unknown	28	19	3	4	26	1	0	1	4	8	4	1	0	0
Miscellaneous cleaner														
Acid	779	281	68	378	754	16	2	4	200	157	239	55	0	0
Alkali	7,825	4,088	757	2,611	7,583	162	39	33	2,358	1,689	2,341	679	35	1
Anionic/nonionic	7,506	4,935	663	1,689	7,188	173	72	67	957	1,649	1,527	189	5	0
Cationic	2,985	1,382	386	1,024	2,812	127	31	12	825	653	841	177	11	0
Ethanol	1,068	799	108	134	1,033	20	9	3	83	252	284	14	0	0
Glycols	3,883	2,918	293	578	3,771	53	34	23	453	1,096	889	71	1	0
Isopropanol	1,966	1,178	396	334	1,883	52	21	4	296	518	501	43	6	0
Methanol	45	28	5	12	44	1	0	0	15	14	9	1	0	0
Phenol	296	169	29	85	272	17	2	3	49	55	90	7	0	0
Other/unknown	3,143	1,764	328	899	3,029	74	19	17	655	724	710	145	3	1
Oven cleaner														
Acid	25	11	2	10	25	0	0	0	3	5	7	0	0	0
Alkali	3,250	750	413	1,806	3,167	42	21	16	1,330	306	1,066	510	14	0
Detergent type	21	7	1	9	21	0	0	0	4	7	5	1	0	0
Other/unknown	264	64	28	143	257	3	2	2	93	29	71	31	1	0
Rust remover														
Alkali	25	8	3	12	24	1	0	0	7	8	8	2	0	0
Anionic/nonionic	1	0	0	1	1	0	0	0	0	0	1	0	0	0
Hydrofluoric acid	729	80	48	552	709	17	2	1	400	113	347	127	2	0
Other acid	757	226	60	420	718	27	4	6	176	170	209	53	1	0
Other/unknown	299	48	23	197	283	3	0	13	50	31	81	43	1	0
Spot removers/dry cleaning agents														
Anionic/nonionic	521	417	29	65	511	4	1	5	49	126	98	11	1	0
Glycol	93	53	12	25	91	0	1	1	16	23	16	1	0	0
Carbon tetrachloride	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Perchloroethylene	36	23	1	12	36	0	0	0	8	10	11	1	0	0
Other halogenated hydrocarbon	136	50	15	64	131	3	1	1	31	23	33	13	0	0
Isopropanol	12	6	2	2	11	1	0	0	4	4	1	0	0	0
Other nonhalogenated hydrocarbon	116	72	14	26	114	2	0	0	18	35	34	6	0	0
Other/unknown	99	60	7	27	97	1	1	0	19	28	23	7	0	0
Starch/fabric finishes/sizing	1,146	942	89	99	1,112	28	4	0	50	244	94	4	0	0
Toilet bowl cleaner														
Acid	3,851	1,336	414	1,825	3,664	163	17	5	1,067	711	1,317	447	18	2
Alkali	1,203	959	64	158	1,192	8	1	2	114	415	157	30	1	0
Other/unknown	1,754	1,308	91	301	1,708	40	5	1	183	499	210	45	3	0
Wall/floor/tile cleaner														
Acid	3,580	1,697	296	1,360	3,463	74	23	20	872	722	1,305	299	7	0
Alkali	8,591	5,697	703	1,978	8,342	168	45	32	1,536	2,244	2,558	369	13	0
Anionic/nonionic	1,024	640	87	268	986	29	3	5	211	214	183	27	3	0
Cationic	1,332	923	104	265	1,295	24	4	8	200	332	367	52	1	0
Ethanol	6	4	0	2	6	0	0	0	0	2	1	0	0	0
Glycols	2,007	1,449	147	367	1,937	52	9	9	234	520	374	45	1	0
Isopropanol	1,430	1,026	109	257	1,370	36	6	18	200	385	351	59	2	0
Other/unknown	522	283	42	166	492	17	8	4	118	136	121	19	1	0
*Category totals	208,367	120,702	19,112	60,449	200,421	5,303	1,451	986	33,746	46,177	52,266	8,926	343	13

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TABLE 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Industrial cleaners														
Acids	1,639	631	169	726	1,590	31	8	9	565	317	505	172	8	0
Alkali	3,320	814	546	1,717	3,154	91	58	12	1,623	426	1,225	487	31	0
Anionic/nonionic	1,031	533	130	317	979	35	7	8	242	211	279	47	5	0
Cationic	1,300	353	241	604	1,213	67	15	4	505	202	459	116	2	0
Other/unknown	1,819	542	253	878	1,700	60	39	15	690	272	587	168	6	0
*Category totals	9,109	2,873	1,339	4,242	8,636	284	127	48	3,625	1,428	3,055	990	52	0
Cosmetics/personal care products														
Bath oil, bubble bath	8,260	7,680	358	195	8,180	31	11	36	192	2,015	939	28	0	0
Creams, lotions, make-up	19,519	15,770	1,330	2,202	18,845	240	58	365	769	4,104	1,441	115	5	0
Dental care products														
Denture cleaning	1,441	245	70	1,063	1,390	36	6	5	87	386	123	10	2	0
Toothpaste with fluoride	21,678	19,320	1,029	1,228	21,041	216	44	372	403	6,557	1,322	32	1	0
Toothpaste without fluoride	761	609	45	99	735	15	2	9	28	174	49	2	0	0
Other	1,531	921	218	362	1,471	19	3	36	112	340	244	12	0	0
Deodorants	10,330	8,540	723	980	9,685	145	18	477	338	1,999	997	46	1	0
Depilatories	1,096	380	180	454	852	52	9	181	261	170	295	110	3	0
Douches	139	101	6	25	128	4	2	4	8	42	9	1	1	0
Eye products	1,772	1,208	129	363	1,741	8	2	20	174	276	252	49	1	0
Hair care products														
Coloring agents	1,871	828	196	724	1,691	15	4	161	400	365	526	96	0	0
Rinses, conditioners, relaxers	3,894	2,945	322	549	3,751	72	4	64	1,009	939	909	233	6	0
Shampoos	8,136	6,373	687	978	7,808	212	12	93	517	1,632	1,476	87	4	0
Sprays	2,891	1,826	505	478	2,505	361	10	11	491	694	711	68	12	1
Other	3,324	2,195	343	679	3,084	89	13	136	601	783	622	172	2	1
Lipsticks/balms, with camphor	868	793	47	26	861	1	2	4	11	177	44	1	0	0
Lipsticks/balms, without camphor	2,527	2,368	99	56	2,504	8	0	14	37	424	69	3	0	0
Mouthwash														
Ethanol	12,934	3,769	2,440	6,051	11,821	1,018	45	38	1,070	2,871	1,079	178	33	2
Fluoride	1,959	1,367	448	127	1,940	18	0	1	42	556	60	2	0	0
Non-ethanol	327	127	87	106	275	48	0	4	53	97	37	7	1	0
Unknown	340	69	142	111	310	17	12	1	36	41	128	11	0	0
Nail products														
Polish	10,422	9,208	744	408	10,285	111	11	12	550	2,610	1,644	56	3	0
Polish removers: acetone	3,434	2,685	335	396	3,344	71	16	3	314	1,144	611	19	0	0
Polish removers: other	2,406	1,896	216	267	2,349	46	8	3	211	754	457	15	3	0
Polish removers: unknown	9,528	7,079	1,052	1,233	9,251	212	53	6	991	2,827	1,771	67	2	0
Other	4,363	2,396	821	986	4,254	36	12	56	1,301	928	1,184	329	4	0
Perfume, cologne, after-shave	23,342	20,051	1,902	1,234	22,700	478	107	46	1,336	7,029	4,441	112	3	0
Peroxide	15,347	7,182	1,646	5,778	14,875	312	54	92	1,042	2,931	2,645	180	6	0
Powders: talc	4,429	3,942	255	193	4,368	38	7	15	309	1,063	1,102	55	0	0
Powders: without talc	1,412	1,328	46	31	1,406	4	2	0	35	272	301	7	1	0
Soaps	16,631	12,777	1,418	2,211	16,020	255	96	257	805	3,968	2,447	152	4	0
Suntan/sunscreen products	8,330	7,079	735	436	8,128	23	12	167	381	1,456	2,161	73	0	0
*Category totals	205,242	153,057	18,574	30,029	197,598	4,211	635	2,689	13,914	49,624	30,096	2,328	98	4
Deodorizers														
Air fresheners	12,874	10,734	1,127	881	12,577	219	43	26	916	3,123	2,752	131	4	6
Diaper pail deodorizers	301	287	7	7	298	3	0	0	13	118	15	0	1	0
Toilet bowl deodorizers	863	777	43	39	855	4	1	3	99	325	65	6	0	0
Other	3,440	2,378	309	659	3,353	51	20	16	490	921	681	77	5	0
Unknown	95	61	11	22	88	4	0	3	11	25	20	1	0	0
*Category totals	17,573	14,237	1,497	1,608	17,171	281	64	48	1,529	4,512	3,533	215	10	6
Dyes														
Fabric	849	685	62	89	833	4	1	10	59	268	39	2	0	0
Food dye (eg, Easter egg)	1,088	889	143	42	1,046	25	2	13	19	260	56	0	0	0
Leather	92	78	3	8	91	1	0	0	5	17	3	1	0	0
Other	675	353	199	106	643	13	0	19	70	172	57	11	1	0

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TABLE 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Unknown	74	51	4	14	64	0	2	8	8	14	3	2	0	0
*Category totals	2,778	2,056	411	259	2,677	43	5	50	161	731	158	16	1	0
Essential oils	4,099	2,772	435	779	3,893	102	19	84	548	958	1,166	78	9	1
Fertilizers														
Household plant food	4,412	2,788	565	923	4,364	22	17	4	133	1,080	157	7	1	0
Outdoor fertilizers	3,921	2,612	449	761	3,864	19	16	19	198	1,006	207	34	1	0
Plant hormones	162	77	11	66	155	2	2	3	35	40	21	9	0	0
Other	493	273	71	134	479	8	2	4	26	129	30	4	0	0
Unknown	2,162	1,462	255	386	2,125	11	6	18	185	513	165	27	0	0
*Category totals	11,150	7,212	1,351	2,270	10,987	62	43	48	577	2,768	580	81	2	0
Fire extinguishers	3,477	307	1,087	1,742	3,200	70	194	2	857	506	1,067	225	6	0
Food products/food poisoning	74,980	21,351	12,224	36,924	70,556	548	866	2,908	6,092	7,652	10,668	2,247	79	0
Foreign bodies/toys/ miscellaneous														
Ashes	558	460	28	53	548	7	2	1	45	91	45	7	1	0
Bubble blowing solutions	4,619	4,283	234	89	4,596	9	8	5	121	770	1,209	19	0	0
Charcoal	943	694	84	147	898	30	6	8	67	210	74	11	13	1
Christmas ornaments	1,112	901	87	106	1,104	5	1	1	68	251	69	4	1	0
Coins	4,017	3,338	584	83	3,963	44	5	0	1,284	1,100	336	45	4	0
Desiccants	33,090	29,815	2,030	1,039	32,876	152	42	11	849	5,189	200	8	3	0
Feces/urine	5,764	4,740	355	569	5,619	38	102	2	163	939	152	19	1	0
Glass	2,038	765	269	858	1,923	23	82	4	253	314	193	18	0	0
Incense, punk	279	242	11	23	275	4	0	0	21	74	26	1	0	0
Soil	2,483	2,147	129	181	2,462	9	5	5	63	474	97	7	0	0
Thermometer	19,239	9,093	5,071	3,971	19,087	106	35	7	1,098	3,702	268	10	3	0
Toys	7,830	5,351	2,170	254	7,716	74	25	12	364	1,379	1,111	30	3	0
Other	23,685	14,346	6,077	2,733	22,668	413	388	193	2,158	4,182	2,696	200	12	0
Unknown	180	93	38	38	144	11	14	5	33	55	23	4	0	0
*Category totals	105,837	76,268	17,167	10,144	103,879	925	715	254	6,587	18,730	6,499	383	41	1
Fumes/gases/vapors														
Carbon dioxide	496	43	167	242	462	20	10	4	109	65	94	45	4	1
Carbon monoxide	17,006	2,180	2,852	10,137	16,614	330	15	7	5,843	1,954	4,662	1,444	164	35
Chloramine	3,542	107	292	2,817	3,405	125	5	5	851	139	1,292	582	6	0
Chlorine: acid mixed with hypochlorite	509	13	77	363	498	10	1	0	188	17	191	114	1	1
Chlorine: other	6,610	529	1,272	4,157	6,449	99	24	30	2,020	317	2,641	1,275	23	1
Methane and natural gas	4,841	852	780	2,497	4,790	40	3	3	1,129	881	1,124	228	20	0
Hydrogen sulfide	1,580	167	185	978	1,570	2	3	2	442	157	430	140	19	2
Propane/simple asphyxiants	2,777	276	580	1,651	2,565	196	5	1	860	334	812	279	9	2
Other	2,433	283	347	1,413	2,328	45	36	20	814	277	562	220	12	3
Unknown	1,393	109	195	801	1,354	10	16	5	366	133	362	119	3	0
*Category totals	41,187	4,559	6,747	25,056	40,035	877	118	77	12,622	4,274	12,170	4,446	261	45
Fungicides														
Carbamate fungicide	257	69	22	94	215	40	1	1	75	86	39	15	0	0
Mercurial fungicide	11	8	0	2	11	0	0	0	3	3	1	1	0	0
Non-mercurial fungicide	301	55	32	185	292	5	1	3	103	51	81	16	2	0
Phthalimide fungicide	198	101	36	51	194	1	2	0	26	55	15	6	0	0
Other/unknown	287	106	33	120	282	2	1	2	42	58	59	5	1	0
*Category totals	1,054	339	123	452	994	48	5	6	249	253	195	43	3	0
Heavy metals														
Aluminum	978	445	114	353	941	8	18	5	125	131	103	23	3	0
Arsenic (excluding pesticides)	1,003	135	66	686	705	47	155	6	540	145	72	76	14	2
Barium	26	1	1	17	19	0	0	7	10	3	1	2	0	0
Cadmium	85	8	6	56	76	0	1	0	45	6	9	9	1	0
Copper	1,169	215	378	481	1,105	40	11	11	333	188	328	81	2	0
Fireplace flame colors	14	10	2	2	14	0	0	0	2	3	4	0	0	0
Gold	5	3	0	1	5	0	0	0	1	0	2	0	0	0

(Continued on following page)

TABLE 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Lead	3,317	1,535	539	1,059	3,172	60	39	8	1,253	663	138	89	13	1
Manganese	57	11	5	34	54	1	1	1	23	9	6	4	0	0
Mercury	3,861	957	1,137	1,372	3,497	254	35	36	789	1,123	111	52	6	1
Metal fume fever	1,045	19	61	886	1,039	4	0	2	289	25	302	153	4	0
Selenium	151	67	6	75	132	6	1	11	32	41	19	5	0	0
Thallium	40	10	4	25	28	2	5	2	18	7	3	0	2	0
Other	890	271	157	393	811	24	16	36	302	142	135	48	1	0
Unknown	19	5	2	12	15	0	3	0	9	3	0	2	0	0
*Category totals	12,660	3,692	2,478	5,452	11,613	446	285	125	3,771	2,489	1,233	544	46	4
Herbicides														
Carbamate herbicide	76	11	17	44	76	0	0	0	50	33	20	2	0	0
2,4-D or 2,4,5-T	2,293	703	246	1,145	2,229	15	5	42	511	453	469	97	4	0
Diquat	374	85	32	235	362	3	1	8	94	104	87	16	2	0
Paraquat	114	7	7	93	102	6	2	2	71	16	22	5	4	1
Paraquat/diquat	1	0	0	1	1	0	0	0	0	0	1	0	0	0
Triazine herbicide	396	74	44	220	381	6	2	6	127	65	65	23	1	0
Urea herbicide	80	24	9	42	76	0	2	2	18	10	18	3	0	0
Other	5,594	1,624	484	2,984	5,276	47	33	228	1,256	1,422	1,233	143	9	3
Unknown	263	71	21	134	250	0	4	8	75	33	39	13	0	0
*Category totals	9,191	2,599	860	4,898	8,753	77	49	296	2,202	2,136	1,954	302	20	4
Hydrocarbons														
Benzene	120	12	5	88	116	0	4	0	57	19	21	18	2	0
Carbon tetrachloride	44	4	4	29	40	2	1	0	20	8	10	3	0	0
Diesel fuel	921	171	101	583	898	18	4	0	228	118	280	43	2	0
Fluorochlorocarbons/ propellants	7,134	598	974	4,702	6,838	248	34	10	1,417	1,220	1,622	449	14	3
Gasoline	20,720	6,320	3,872	9,253	19,495	1,112	75	10	3,089	3,580	8,290	645	24	1
Halogenated hydrocarbon: other	794	179	92	421	754	23	7	9	340	115	262	95	7	0
Kerosene	2,677	1,450	346	765	2,533	92	42	5	835	610	777	175	9	0
Lighter fluid/naphtha	4,011	2,075	487	1,297	3,755	163	69	13	1,223	1,015	1,168	225	16	1
Lubricating oils/motor oil	3,984	2,643	373	833	3,882	63	34	2	601	1,429	668	84	1	0
Mineral seal oil	188	164	7	14	184	1	1	2	25	97	17	0	0	0
Mineral spirits/varsol	4,755	2,082	665	1,788	4,497	175	52	20	1,093	1,114	1,305	208	14	0
Toluene/xylene	2,366	474	313	1,396	2,181	161	13	5	1,055	316	776	240	33	0
Turpentine	954	313	152	428	825	113	9	6	273	190	241	46	2	0
Other	6,600	3,228	726	2,236	6,329	188	38	35	1,657	1,688	1,400	375	28	4
Unknown	7,504	4,755	596	1,843	7,288	128	55	24	2,097	2,076	1,920	504	39	0
*Category totals	62,772	24,468	8,713	25,676	59,615	2,487	438	141	14,010	13,595	18,757	3,110	191	9
Insecticides/pesticides (excluding rodenticides)														
Arsenic pesticides	335	249	22	60	322	11	1	0	41	142	17	5	0	0
Borates/boric acid	2,971	2,445	158	322	2,912	45	4	6	250	796	118	10	2	0
Carbamate only	3,231	1,377	336	1,321	3,094	84	23	26	657	717	474	140	9	0
Carbamate with other pesticide	963	309	101	503	915	25	11	12	166	149	191	31	1	0
Chlorinated hydrocarbon only	2,528	988	429	968	2,317	100	4	104	818	745	489	87	11	2
Chlorinated hydrocarbon with other pesticide	140	38	8	81	138	2	0	0	20	16	29	7	0	0
Metaldehyde	248	156	16	69	241	6	0	0	45	97	20	1	0	0
Nicotine	7	3	1	3	7	0	0	0	1	2	1	0	0	0
Organophosphate														
Alone	11,193	3,420	929	6,003	10,725	258	40	140	2,943	2,350	1,972	567	72	5
With carbamate	530	199	61	254	508	10	8	4	70	125	78	16	0	0
With chlorinated hydrocarbon	176	50	13	100	167	7	1	1	46	27	31	9	2	0
With other pesticide	1,398	378	152	779	1,348	28	7	13	279	291	359	71	9	0
With carbamate and chlorinated hydrocarbon	51	9	7	28	50	0	0	1	11	9	14	2	0	0
Piperonyl butoxide only	191	79	28	71	180	5	1	4	35	31	49	9	0	0
Piperonyl butoxide/ pyrethrin	7,293	2,608	1,158	3,120	6,742	202	46	296	1,498	1,313	1,535	434	13	0
Pyrethrins only	8,475	2,814	1,094	3,996	7,890	216	47	310	1,863	1,414	2,009	471	23	1

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TABLE 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Repellants (insect)	6,498	4,446	1,092	804	6,156	50	47	241	637	1,412	1,532	106	6	0
Rotenone	103	41	13	44	98	1	0	3	18	29	24	1	0	0
Veterinary insecticide	4,378	2,119	614	1,450	4,218	80	12	68	490	1,027	734	92	9	0
Other	4,374	2,917	276	999	4,266	39	11	55	482	1,094	419	68	6	0
Unknown	3,564	964	415	1,863	3,284	94	90	73	922	505	552	168	13	3
*Category totals	58,647	25,609	6,923	22,838	55,578	1,263	353	1,357	11,292	12,291	10,647	2,295	176	11
Lacrimators														
Capsicum/peppers	156	63	67	20	138	3	12	2	30	2	92	4	0	0
Lacrimators: CN	2,432	580	741	874	2,013	71	305	12	436	90	1,208	110	0	0
Lacrimators: CS	137	57	44	32	119	0	18	0	22	10	86	3	1	0
Other	99	12	18	69	95	1	1	2	21	6	36	6	0	0
Unknown	324	52	125	94	189	42	90	0	104	6	199	10	0	0
*Category totals	3,148	764	995	1,089	2,554	117	426	16	613	114	1,621	133	1	0
Matches/fireworks/explosives														
Explosives	279	144	72	48	250	17	11	0	65	80	48	12	0	0
Fireworks	482	392	63	20	469	4	9	0	42	164	63	9	0	0
Matches	1,478	1,334	60	62	1,458	16	1	2	56	390	22	4	0	0
Other	55	28	12	14	54	1	0	0	16	21	9	4	1	0
Unknown	4	1	0	3	4	0	0	0	1	1	1	0	0	0
*Category totals	2,298	1,899	207	147	2,235	38	21	2	180	656	143	29	1	0
Moth repellants														
Naphthalene	1,767	1,341	100	269	1,744	19	2	2	404	741	120	22	4	0
Paradichlorobenzene	38	21	6	10	35	2	0	1	3	7	3	0	0	0
Other	83	61	4	15	82	0	1	0	11	22	8	1	0	0
Unknown	2,703	1,839	221	518	2,621	41	28	10	491	936	241	40	1	0
*Category totals	4,591	3,262	331	812	4,482	62	31	13	909	1,706	372	63	5	0
Mushrooms														
Coprine	20	5	4	10	15	4	1	0	12	7	4	1	0	0
Cyclopeptide	41	13	7	20	38	1	0	2	25	11	8	4	2	4
Gastrointestinal irritants	181	74	40	61	150	20	0	11	75	68	55	28	0	1
Hallucinogenic	782	42	452	250	134	633	10	1	542	56	152	258	20	1
Ibotenic acid	37	8	12	16	26	11	0	0	27	8	7	14	2	0
Miscellaneous, nontoxic	181	85	25	64	161	1	0	19	39	51	31	10	0	0
Monomethylhydrazine	36	3	2	27	29	2	0	5	15	3	12	6	0	0
Muscarine	9	0	3	6	4	5	0	0	7	0	2	1	0	0
Orellanine	3	1	0	2	1	1	0	1	2	1	0	1	1	0
Other potentially toxic	7	7	0	0	7	0	0	0	0	4	0	0	0	0
Unknown	7,699	5,738	1,009	846	7,080	534	10	63	2,186	4,449	721	253	31	0
*Category totals	8,996	5,976	1,554	1,302	7,645	1,212	21	102	2,930	4,658	992	576	56	6
Paints and stripping agents														
Paints														
Anti-algae	9	0	0	8	9	0	0	0	2	1	2	1	0	0
Anticorrosion	93	22	12	50	91	1	0	1	30	9	24	10	0	0
Oil-base	4,166	1,232	819	1,867	3,908	206	19	27	937	658	1,161	244	14	0
Water-base	4,337	3,126	265	755	4,288	18	9	20	298	864	313	142	0	0
Stains	1,036	416	95	440	1,012	6	6	10	200	168	243	39	2	0
Stripping agents														
Methylene chloride	1,183	181	123	766	1,143	29	1	9	442	85	511	107	5	0
Other	758	155	66	457	732	13	3	8	262	69	250	93	0	1
Unknown	315	94	36	163	302	3	3	6	102	52	98	21	1	0
Varnishes, lacquers	965	294	101	491	937	19	6	3	205	117	228	52	4	0
Wood preservatives	588	141	66	333	576	5	2	5	151	104	123	27	0	0
Other paint/varnish/lacquer	1,348	653	121	494	1,322	17	3	6	262	203	240	64	5	0
Unknown paint/varnish/lacquer	10,703	6,654	1,025	2,578	10,426	177	36	57	1,261	1,853	1,104	223	15	0
*Category totals	25,501	12,968	2,729	8,402	24,746	494	88	152	4,152	4,183	4,297	1,023	46	1
Photographic products														
Developers/fixing/stop baths	577	83	226	218	562	1	8	6	191	77	220	27	0	0
Photographic coating fluids	5	3	0	2	5	0	0	0	0	1	1	0	0	0
Other	416	204	60	132	410	4	2	0	75	76	91	15	0	0
Unknown	25	4	5	10	25	0	0	0	3	5	9	0	0	0
*Category totals	1,023	294	291	362	1,002	5	10	6	269	159	321	42	0	0

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TABLE 22A. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Plants														
Amygdalin/cyanogenic glycosides	3,519	2,518	593	353	3,400	53	2	64	145	919	101	19	3	0
Anticholinergic	988	285	475	210	504	452	6	20	537	171	120	325	34	2
Cardiac glycosides	2,498	1,784	365	318	2,389	84	3	19	348	981	134	28	3	0
Colchicine	24	17	7	0	24	0	0	0	0	6	0	0	0	0
Depressants	71	29	11	27	54	10	0	7	17	21	9	4	0	0
Dermatitis	25,774	11,007	5,144	8,136	23,521	405	714	1,079	2,196	3,051	7,360	742	25	0
Gastrointestinal irritants	19,488	15,695	1,750	1,801	18,949	292	32	200	1,041	5,816	1,336	144	8	0
Hallucinogenic	366	158	72	121	242	76	3	43	128	101	50	50	4	0
Nicotine	254	105	49	82	236	9	3	4	81	50	71	21	2	0
Non-toxic plant	19,132	15,873	1,827	1,209	18,653	166	11	292	529	3,292	741	91	4	0
Oxalate	13,025	11,464	934	533	12,876	98	5	38	405	4,493	1,634	67	3	0
Solanine	1,856	1,466	144	203	1,805	20	3	25	183	693	115	12	0	0
Stimulants	397	225	62	92	342	37	1	16	111	144	42	19	1	1
Toxalbumins	245	115	40	77	224	10	7	4	110	86	49	13	1	0
Other	3,734	2,711	432	501	3,534	70	9	113	328	1,049	388	54	6	1
Unknown	22,493	15,835	3,072	3,101	21,624	416	56	371	1,458	6,060	1,603	248	12	0
*Category totals	113,864	79,287	14,977	16,764	108,377	2,198	855	2,295	7,617	26,933	13,753	1,837	106	4
Polishes and waxes	7,152	5,529	515	948	6,969	140	23	16	815	2,618	1,122	126	5	0
Radioisotopes	235	22	33	152	220	4	0	7	64	26	8	6	0	0
Rodenticides														
ANTU	1	0	1	0	0	1	0	0	0	1	0	0	0	0
Anticoagulant: standard	1,916	1,660	69	161	1,838	64	12	0	579	671	27	10	3	0
Anticoagulant: long-acting	15,862	14,232	536	963	15,303	461	67	10	5,301	6,311	173	60	30	2
Barium carbonate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cyanide	2	2	0	0	2	0	0	0	1	0	0	0	0	0
Monofluoroacetate	12	0	2	10	10	1	1	0	7	1	5	2	0	0
Strychnine	171	24	28	97	83	50	31	1	96	27	9	14	8	0
Vacor	4	2	2	0	2	0	2	0	2	1	0	2	0	0
Other	839	565	52	193	781	44	10	1	224	268	63	15	6	2
Unknown	1,399	1,013	82	248	1,229	109	45	5	632	493	40	14	8	0
*Category totals	20,206	17,498	772	1,672	19,248	730	168	17	6,842	7,773	317	117	55	4
Sporting equipment														
Fishing bait	61	50	8	1	58	1	1	1	1	12	9	1	0	0
Fishing products, other	27	20	7	0	27	0	0	0	2	4	3	0	0	0
Golf balls	59	2	43	14	52	7	0	0	11	10	24	4	0	0
Gun bluing	36	13	2	20	34	1	0	0	11	8	11	3	0	0
Hunting products, other	406	223	85	81	371	14	16	1	126	149	31	8	1	0
Other	259	170	47	38	248	6	4	1	49	89	23	6	0	0
Unknown	7	5	1	1	7	0	0	0	1	2	1	0	0	0
*Category totals	855	483	193	155	797	29	21	3	201	274	102	22	1	0
Swimming pool/aquarium	7,354	3,365	1,279	2,437	7,171	89	14	75	1,185	1,405	2,100	489	11	0
Tobacco products	7,884	6,947	332	549	7,618	156	43	62	1,446	2,912	1,876	105	4	0
Other/unknown nondrug substances	15,590	5,921	2,435	5,932	13,310	530	1,024	387	3,558	2,541	2,354	682	90	1
Total number of nonpharmaceutical substances	1,347,898	703,833	180,592	405,851	1,268,801	52,847	9,893	14,023	218,476	264,603	251,139	51,333	4,024	279
% of nonpharmaceutical substances		52.2%	13.4%	30.1%	94.1%	3.9%	0.7%	1.0%	16.2%	19.6%	18.6%	3.8%	0.3%	0.0%
% of all substances	56.9%	29.7%	7.6%	17.1%	53.6%	2.2%	0.4%	0.6%	9.2%	11.2%	10.6%	2.2%	0.2%	0.0%

TABLE 22B. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Analgesics														
Acetaminophen only														
Adult formulations	25,978	6,412	9,084	9,657	13,257	12,346	15	272	14,610	8,258	3,531	1,451	457	38
Pediatric formulations	26,151	23,324	2,508	273	25,694	343	10	92	3,075	7,141	398	63	22	0
Unknown formulations	8,963	2,572	2,852	3,222	4,342	4,433	6	98	5,237	2,413	1,390	662	261	47
Acetaminophen in combination with:														
Aspirin (with other ingredients)	5,423	2,016	1,476	1,756	3,096	2,061	1	246	2,432	1,649	968	248	22	4
Aspirin (no other ingredients)	12	5	3	4	7	4	0	1	4	3	2	1	0	0
Codeine	5,741	1,090	1,150	3,214	2,505	2,755	4	444	3,084	1,364	1,349	439	98	3
Oxycodone	3,553	434	446	2,385	1,460	1,745	3	317	1,836	678	850	265	81	15
Propoxyphene	5,120	594	629	3,611	1,824	3,024	0	223	3,295	1,162	1,338	519	193	18
Other narcotics	11,626	1,212	1,721	7,987	4,465	6,175	7	874	6,409	2,211	2,741	979	320	40
Other drugs, adult formulations	15,213	2,222	3,760	8,528	5,383	9,323	10	406	9,701	3,523	3,842	1,604	312	12
Other drugs, pediatric formulations	322	224	60	34	289	25	0	8	44	74	54	8	2	0
Aspirin alone														
Adult formulations	4,022	1,545	1,184	1,206	2,280	1,632	9	90	1,902	1,202	619	317	38	7
Pediatric formulations	482	385	73	21	444	34	0	4	90	194	25	7	0	0
Unknown formulations	9,350	1,938	3,355	3,699	3,512	5,560	6	205	6,231	2,490	1,949	1276	213	38
Aspirin in combination with:														
Codeine	353	49	37	244	126	209	0	16	228	67	94	36	18	1
Oxycodone	234	29	30	161	98	120	0	15	123	43	45	27	5	2
Propoxyphene	41	7	5	27	21	17	0	3	22	8	11	3	2	0
Other narcotics	33	10	7	13	23	9	0	1	17	9	7	1	1	1
Other drugs, adult formulations	1,785	377	371	949	823	852	1	96	956	403	382	180	30	2
Other drugs, pediatric formulations	3	1	1	1	3	0	0	0	1	1	0	0	0	0
Narcotics														
Codeine	1,258	497	273	437	873	290	2	89	369	311	210	50	16	3
Meperidine	600	59	74	415	253	259	0	82	316	96	134	72	25	2
Methadone	1,047	79	108	792	342	580	4	84	705	87	190	204	117	17
Morphine	1,218	146	125	843	562	529	8	100	706	189	245	169	61	10
Oxycodone	1,632	187	111	1,201	792	652	2	163	804	268	324	181	71	12
Pentazocine	204	15	17	156	77	87	0	38	95	25	57	14	7	0
Propoxyphene	560	53	47	416	193	325	0	35	361	99	113	83	33	12
Other/unknown	3,267	468	431	2,141	1,377	1,404	4	435	1,690	503	702	419	159	44
Nonaspirin salicylates	1,065	536	143	359	792	231	0	41	377	342	146	63	5	0
Other nonsteroidal antiinflammatory drugs														
Colchicine	146	45	22	78	94	32	0	19	82	43	17	17	6	6
Ibuprofen	54,643	33,886	10,376	9,356	41,986	11,678	21	854	13,013	17,073	4,149	854	105	3
Indomethacin	682	203	82	357	392	209	0	77	284	180	120	30	4	0
Other	18,181	5,300	3,716	8,322	10,809	5,910	10	1,381	6,710	5,174	2,532	738	115	3
Unknown	8	3	0	4	6	1	0	1	2	1	1	0	0	0
Phenacetin	2	1	0	1	2	0	0	0	0	0	0	0	0	0
Phenazopyridine	913	693	77	133	819	47	0	47	221	396	96	14	1	0
Salicylamide	75	67	1	7	70	3	0	2	23	35	3	0	0	0
Other	4,058	771	466	2,553	2,069	1,419	1	545	1,792	751	1,102	377	89	0
Unknown	102	16	37	39	30	63	1	6	61	22	18	5	0	0
*Category totals	214,066	87,471	44,858	74,602	131,190	74,386	125	7,410	86,908	58,488	29,754	11,376	2,889	340
Anesthetics														
Inhalation anesthetics														
Nitrous oxide	232	16	105	96	108	85	2	35	114	23	46	32	12	2
Other	199	18	25	138	160	23	3	12	87	15	57	28	3	1
Unknown	2	0	0	0	0	0	0	2	2	0	0	1	0	0
Ketamine and analogs	294	12	113	156	52	227	5	4	247	24	67	88	24	0
Local and topical anesthetics	6,966	4,731	652	1,390	6,421	164	35	335	1,184	2,531	821	144	31	0

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TABLE 22B. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Other	41	8	7	22	24	6	0	10	27	5	9	6	2	0
Unknown	6	2	3	1	3	1	1	1	3	0	3	1	0	0
*Category totals	7,740	4,787	905	1,803	6,768	506	46	399	1,664	2,598	1,003	300	72	3
Anticholinergic drugs	4,689	1,576	630	2,308	2,868	1,462	11	299	2,384	1,227	869	600	132	4
Anticoagulants														
Heparin	95	19	11	52	83	5	0	7	50	22	8	9	5	1
Warfarin (excluding rodenticides)	1,699	666	84	883	1,336	263	6	82	725	511	69	105	84	1
Other	439	129	23	269	371	35	0	33	140	153	26	10	5	0
Unknown	6	3	0	2	4	2	0	0	5	2	0	1	0	0
*Category totals	2,239	817	118	1,206	1,794	305	6	122	920	688	103	125	94	2
Anticonvulsants														
Carbamazepine	6,132	1,741	1,305	2,864	3,812	1,958	5	277	3,768	1,338	1,614	927	285	0
Phenytoin	4,045	786	345	2,720	2,310	1,319	3	337	2,575	910	955	559	115	1
Succinimides	98	48	29	20	91	6	0	1	22	41	9	1	0	0
Valproic acid	8,743	1,027	2,202	5,100	3,672	4,691	1	297	5,762	2,391	2,095	1,012	336	8
Other	4,378	544	727	2,847	2,115	1,928	4	311	2,472	1,075	968	472	140	5
Unknown	14	8	1	4	10	4	0	0	9	3	1	1	0	0
*Category totals	23,410	4,154	4,609	13,555	12,010	9,906	13	1,223	14,608	5,758	5,642	2,972	876	14
Antidepressants														
Cyclic antidepressants														
Amitriptyline	7,787	969	980	5,456	2,410	5,048	6	192	6,157	1,241	1,794	1,727	1,021	62
Amoxapine	48	4	8	35	16	30	1	1	35	4	10	7	10	0
Desipramine	334	44	57	219	133	180	0	19	240	79	61	66	23	2
Doxepin	1,854	134	156	1,463	490	1,288	5	50	1,494	274	434	423	243	18
Imipramine	1,704	437	551	668	966	659	1	68	1,036	518	346	227	95	8
Maprotiline	37	6	6	24	16	20	0	1	26	5	5	8	7	0
Nortriptyline	1,332	163	206	894	536	728	0	57	935	291	298	203	108	9
Protriptyline	21	9	4	7	15	5	0	1	15	8	6	2	0	0
Other cyclic antidepressants	751	74	87	545	376	325	3	43	434	169	198	110	48	1
Unknown cyclic antidepressants	15	0	0	12	2	12	0	1	11	0	1	4	4	1
Cyclic antidepressant formulated with a benzodiazepine	70	10	6	50	25	41	0	2	44	12	14	11	7	1
Cyclic antidepressant formulated with a phenothiazine	198	30	18	146	80	106	0	7	148	33	32	47	20	0
Lithium	4,361	277	734	3,145	1,567	2,264	8	428	3,381	941	1,020	898	253	6
MAO inhibitors	372	46	8	288	215	102	0	52	227	69	52	87	21	0
SSRIs	28,563	4,743	7,030	15,278	10,568	16,335	23	1,485	18,023	8,561	6,296	2,518	473	22
Trazodone	10,501	767	1,590	7,480	2,916	7,077	8	442	7,552	2,307	3,292	1,284	218	9
Other	12,088	1,806	2,364	7,258	4,757	6,634	4	634	8,203	3,275	2,719	1,709	551	14
Unknown	24	0	5	15	4	20	0	0	17	1	7	1	2	0
*Category totals	70,060	9,519	13,810	42,983	25,092	40,874	59	3,483	47,978	17,788	16,585	9,332	3,104	153
Antihistamines														
Diphenhydramine, (OTC)	17,632	9,245	2,902	5,070	12,492	4,724	9	357	6,264	4,716	3,327	1,401	175	6
Diphenhydramine, (Rx)	332	105	71	143	194	127	0	10	167	87	61	41	9	0
Diphenhydramine, unknown if OTC or Rx	5,936	2,092	1,240	2,400	3,353	2,347	4	195	2,741	1,309	1,239	702	105	14
H_2 receptor antagonists	5,721	3,429	655	1,484	4,854	654	1	196	1,152	1,834	426	88	9	0
Other	22,497	10,110	5,590	6,197	16,805	4,825	19	770	7,457	6,984	3,193	1,198	156	8
*Category totals	52,118	24,981	10,458	15,294	37,698	12,677	33	1,528	17,781	14,930	8,246	3,430	454	28
Antimicrobials														
Antibiotics														
Systemic	36,763	20,232	5,848	9,529	28,951	3,584	22	4,107	6,073	8,166	3,259	781	54	2
Topical	7,314	5,460	497	1,168	7,109	67	1	133	203	1,480	341	19	3	0
Unknown	879	286	207	341	488	226	0	161	282	153	190	22	2	0
Antifungals														
Systemic	1,180	625	147	361	952	96	0	129	261	305	114	26	1	1
Topical	8,137	6,132	430	1,379	7,889	52	9	181	283	1,718	596	37	1	0

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TABLE 22B. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Unknown	13	7	0	6	12	0	0	1	2	5	3	0	0	0
Anthelmintics														
Diethylcarbamazine	250	130	15	96	241	6	0	2	13	65	10	2	0	0
Piperazine	508	391	42	69	488	10	2	6	50	178	24	2	1	0
Other	731	400	84	199	691	12	5	22	163	189	118	22	3	0
Unknown	23	15	2	5	21	1	0	1	4	5	1	1	0	0
Antiparasitics														
Antimalarial	437	129	69	213	332	67	1	36	195	151	40	34	7	1
Metronidazole	1,253	307	192	669	768	238	0	245	327	247	183	43	1	0
Other	108	62	15	28	102	2	0	4	20	28	10	0	0	0
Antituberculars														
Isoniazid	412	86	160	152	187	189	0	31	301	102	53	42	86	2
Rifampin	49	16	10	21	34	8	0	7	24	13	11	2	0	0
Other	14	3	1	10	11	1	0	2	5	4	1	1	0	0
Unknown	3	2	0	1	2	1	0	0	1	1	1	0	0	0
Antivirals														
Systemic	1,575	480	200	807	1,030	346	0	191	558	394	159	69	23	1
Topical	48	29	7	10	47	0	0	1	3	14	4	0	0	0
Unknown	53	17	9	25	34	6	0	13	13	12	2	2	0	0
Other	174	129	18	24	147	14	0	13	35	65	14	2	0	0
Unknown	9	2	2	4	6	2	0	1	3	0	2	0	0	0
*Category totals	59,933	34,940	7,955	15,117	49,542	4,928	40	5,287	8,819	13,295	5,136	1,107	182	7
Antineoplastics	1,257	392	83	678	1,075	63	4	113	427	381	129	48	14	2
Asthma therapies														
Aminophylline/theophylline	1,641	357	190	1,048	1,110	395	2	110	962	401	286	313	65	10
Terbutaline and other beta-2 agonists	9,536	7,297	1,255	900	8,746	449	13	317	2,282	3,103	1,488	534	15	0
Other beta agonists	2,412	560	577	1,149	1,105	1,050	3	236	1,270	468	576	376	37	0
Other	3,306	2,254	562	441	3,010	216	3	71	500	1,228	188	47	5	0
Unknown	10	2	4	4	5	4	0	0	5	1	1	2	0	0
*Category totals	16,905	10,470	2,588	3,542	13,976	2,114	21	734	5,019	5,201	2,539	1,272	122	10
Cardiovascular drugs														
ACE inhibitors	7,160	2,836	488	3,600	5,984	951	4	209	2,410	3,083	452	381	50	4
Alpha blockers	1,455	540	90	775	1,194	186	2	68	681	602	151	121	18	0
Antiarrhythmics	1,046	199	51	754	916	73	0	53	383	391	75	72	23	9
Antihypertensives	6,683	2,308	2,066	2,173	5,142	1,302	11	183	3,659	2,001	1,248	1,038	171	5
Beta blockers	9,502	2,556	972	5,622	7,124	2,078	10	259	4,684	3,817	827	890	195	26
Calcium antagonists	8,844	2,304	554	5,665	6,831	1,723	5	252	4,667	3,622	801	883	243	61
Cardiac glycosides	2,810	812	128	1,799	2,247	285	1	234	1,404	964	191	408	153	20
Hydralazine	152	42	14	95	117	31	0	4	73	61	22	16	3	0
Long-acting nitrates	582	232	15	314	517	54	0	8	185	256	40	33	3	0
Nitroglycerin	2,194	1,313	139	681	1,900	246	9	34	641	1,024	152	65	10	1
Nitroprusside	36	3	2	25	15	0	0	21	32	4	8	5	4	0
Other vasodilator	301	136	24	131	276	19	0	4	91	133	27	10	0	0
Unknown types of vasodilators	2	0	0	1	1	0	0	1	0	0	0	0	0	0
Vasopressor	7	2	2	3	6	0	0	0	5	2	2	0	0	0
Other	3,060	1,294	344	1,296	2,689	216	3	144	706	941	262	95	13	1
Unknown	22	6	1	13	11	10	0	1	12	3	0	1	0	0
*Category totals	43,856	14,583	4,890	22,947	34,970	7,174	45	1,475	19,633	16,904	4,258	4,018	886	127
Cold and cough preparations	99,873	63,951	18,650	15,868	86,784	9,889	49	2,974	18,717	27,445	14,501	2,900	199	5
Diagnostic agents	454	85	37	270	387	9	3	52	178	72	99	27	2	0
Diuretics														
Furosemide	1,687	829	145	658	1,495	152	1	33	488	541	212	73	7	0
Thiazide	1,869	814	183	809	1,556	240	2	67	580	655	159	76	9	1
Other	1,404	636	132	588	1,168	165	2	64	419	528	134	53	9	0
Unknown	302	141	27	123	247	34	1	19	107	109	32	17	3	0
*Category totals	5,262	2,420	487	2,178	4,466	591	6	183	1,594	1,833	537	219	28	1
Electrolytes and minerals														
Calcium	4,045	3,407	284	306	3,912	72	3	55	189	949	120	20	2	0
Fluoride	3,911	3,398	341	150	3,850	24	2	33	213	1,238	357	13	0	0
Iron	3,654	2,265	530	781	3,005	534	9	96	1,257	1,282	447	110	9	1

(Continued on following page)

TABLE 22B. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Magnesium	447	161	68	194	377	35	4	30	122	85	71	25	5	1
Potassium	1,163	556	112	453	1,015	112	2	29	308	425	87	43	6	0
Sodium	2,426	1,600	442	328	2,306	87	18	13	295	615	370	39	4	0
Zinc	2,574	1,778	192	543	2,430	49	0	87	205	495	237	41	0	0
Other	857	557	92	190	681	96	1	77	178	245	85	21	3	0
Unknown	6	1	1	4	3	2	0	1	3	4	1	0	0	0
*Category totals	19,083	13,723	2,062	2,949	17,579	1,011	39	421	2,770	5,338	1,775	312	29	2
Eye/ear/nose/throat preparations														
Nasal preparations														
Tetrahydrozoline	75	53	3	17	67	3	0	5	27	33	10	1	0	0
Other decongestant	2,317	1,033	403	790	2,023	166	8	115	431	756	336	82	6	0
Other	568	388	42	120	544	7	0	17	22	134	78	7	0	0
Unknown	12	4	2	4	10	1	0	1	2	3	2	0	0	0
Ophthalmic preparations														
Contact lens products	3,209	1,872	287	889	3,155	24	13	17	311	527	535	97	1	0
Glaucoma therapies	125	48	3	67	113	1	0	11	26	37	18	6	0	0
Tetrahydrozoline	1,666	1,128	177	321	1,455	76	98	33	571	793	161	36	3	0
Other ophthalmic sympathomimetics	471	232	65	150	402	10	1	58	119	159	73	17	1	0
Other	1,119	531	136	406	1,036	27	7	48	149	176	148	35	3	0
Unknown	34	8	7	13	23	4	2	3	7	6	6	0	0	0
Otic preparations														
Combination products	1,172	844	117	186	1,165	2	0	4	114	354	291	12	0	0
Other	2,188	1,100	214	764	2,164	11	0	8	216	380	648	56	3	0
Unknown	25	9	2	14	24	1	0	0	3	3	7	0	0	0
Steroids-topical for eye/nose/throat	723	390	103	197	679	18	1	24	56	111	119	8	0	0
Throat preparations														
Lozenges without local anesthetics	738	581	81	71	705	13	0	20	27	169	37	4	0	0
Lozenges with local anesthetics	259	167	48	43	236	15	0	8	20	61	14	4	0	0
Other	310	157	93	51	254	47	0	7	70	102	39	4	0	0
Unknown	6	5	0	1	6	0	0	0	1	1	0	0	0	0
*Category totals	15,017	8,550	1,783	4,104	14,061	426	130	379	2,172	3,805	2,522	369	17	0
Gastrointestinal preparations														
Antacids														
Salicylate-containing	2,325	1,799	256	238	2,157	80	1	84	196	688	102	18	1	0
Other	18,014	16,397	703	807	17,694	160	26	128	447	3,637	396	38	6	0
Antidiarrheals														
Diphenoxylate/atropine	1,064	517	147	369	815	183	1	63	465	397	154	59	12	0
Non-narcotic	690	514	59	105	636	20	1	31	78	188	30	10	0	0
Paregoric	44	29	6	6	36	5	0	3	12	13	10	0	2	0
Other narcotic	182	128	15	34	161	8	0	12	36	95	13	2	0	0
Antispasmodics														
Anticholinergic	928	294	194	402	524	341	1	56	485	282	184	93	19	0
Other	9	4	1	3	8	0	0	0	2	6	0	1	0	0
Laxatives	13,509	9,512	1,269	2,444	12,257	747	127	354	1,615	2,591	2,014	195	6	0
Other	7,933	5,941	484	1,355	7,140	443	6	326	1,394	2,211	506	207	22	1
Unknown	1,885	998	146	674	1,571	209	0	103	402	694	113	33	6	0
*Category totals	46,583	36,133	3,280	6,437	42,999	2,196	163	1,160	5,132	10,802	3,522	656	74	1
Hormones and hormone antagonists														
Androgens	502	185	61	220	321	116	2	58	166	106	57	29	7	0
Corticosteroids	9,483	5,538	1,172	2,447	8,491	368	8	603	818	1,937	572	100	7	0
Estrogens	3,463	2,539	183	668	3,279	108	3	72	332	889	94	29	3	0
Insulin	1,428	116	100	1,105	1,048	330	7	34	558	416	104	248	43	4
Oral contraceptives	8,730	7,294	784	558	8,165	435	6	120	627	1,910	277	9	2	0
Oral hypoglycemics	5,351	2,137	402	2,636	4,296	862	1	162	3,349	2,355	422	812	129	9
Progestins	1,147	607	169	337	1,004	61	2	78	164	277	54	8	3	0
Thyroid preparations	6,930	4,156	625	1,987	6,435	394	3	89	1,179	1,872	231	83	11	0
Other hormones	1,986	976	360	564	1,504	379	8	93	534	562	257	43	8	0
Other hormone antagonists	321	110	40	152	258	41	1	21	87	94	21	10	2	0

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TABLE 22B. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Unknown hormone or antagonists	10	3	0	6	6	1	0	2	5	1	1	1	1	0
*Category totals	39,351	23,661	3,896	10,680	34,807	3,095	41	1,332	7,819	10,419	2,090	1,372	216	13
Miscellaneous drugs														
Allopurinol	278	163	13	102	240	18	0	18	67	106	19	8	0	0
L-dopa and related drugs	668	200	17	437	566	62	0	35	225	196	95	50	5	0
Dietary supplements/ homeopathic	13,722	6,313	1,894	5,097	8,482	3,396	271	1,410	5,413	3,008	1,796	1,641	744	10
Disulfiram	410	13	15	333	115	223	3	64	223	47	82	67	14	0
Ergot alkaloids	479	230	52	181	328	94	0	53	289	168	77	45	5	0
Methysergide	3	2	0	1	2	1	0	0	2	1	0	0	0	0
Neuromuscular blocking agents	21	0	3	16	10	5	0	5	17	3	3	6	0	0
Nicotine pharmaceuticals	750	221	80	409	481	77	2	189	127	150	153	55	0	1
Other	11,788	5,093	1,247	4,903	9,823	1,000	41	887	2,826	3,058	1,730	522	65	4
*Category totals	28,119	12,235	3,321	11,479	20,047	4,876	317	2,661	9,189	6,737	3,955	2,394	833	15
Muscle relaxants														
Carisoprodol (formulated alone)	5,267	285	505	4,193	1,295	3,776	2	131	4,002	661	1,807	858	280	9
Cyclobenzaprine	4,441	834	686	2,671	1,776	2,519	2	108	2,948	1,015	1,193	647	183	6
Methocarbamol	1,199	168	185	768	479	653	1	51	692	269	296	84	33	1
Other	2,139	443	310	1,250	962	1,036	1	119	1,317	494	458	299	135	2
Unknown	49	7	13	27	15	33	0	1	33	10	13	3	0	0
*Category totals	13,095	1,737	1,699	8,909	4,527	8,017	6	410	8,992	2,449	3,767	1,891	631	18
Narcotic antagonists	219	11	20	173	72	104	1	39	140	31	45	34	13	2
Radiopharmaceuticals	16	2	0	13	8	3	0	5	9	0	4	0	1	0
Sedative/hypnotics/ antipsychotics														
Barbiturates														
Long-acting	3,478	727	322	2,273	1,994	1,346	2	90	1,833	703	751	425	213	7
Short-acting	961	81	108	703	315	598	2	36	670	156	274	132	50	1
Unknown type	4	0	0	4	0	3	0	1	4	0	1	0	1	0
Benzodiazepines	40,299	4,663	4,016	28,946	11,301	27,544	291	792	29,087	6,965	13,299	4,942	1,354	65
Chloral hydrate	305	74	33	184	123	143	0	34	223	25	102	58	27	2
Ethchlorvynol	59	4	1	53	12	44	0	2	49	5	11	19	11	0
Glutethimide	8	3	1	4	4	4	0	0	5	4	1	0	0	1
Meprobamate	139	9	10	112	43	91	0	2	103	17	34	27	14	0
Methaqualone	38	0	7	27	6	31	0	0	29	1	8	8	1	0
Phenothiazines	6,952	1,041	976	4,549	3,033	3,330	13	497	4,696	1,529	1,583	1,342	258	8
Sleep aids (OTC)	1,533	100	228	1,115	327	1,167	1	25	1,151	278	428	247	40	2
Other	17,793	1,502	3,167	12,176	5,578	11,178	14	848	12,755	3,415	5,368	2,745	673	23
Unknown	240	14	32	165	65	152	12	9	179	29	53	40	6	1
*Category totals	71,809	8,218	8,901	50,311	22,801	45,631	335	2,336	50,784	13,127	21,913	9,985	2,648	110
Serums, toxoids, vaccines	2,003	361	307	1,107	1,432	32	1	530	618	160	381	90	5	0
Stimulants and street drugs														
Amphetamines	16,684	4,593	6,995	4,614	9,945	6,006	167	438	8,743	4,274	3,028	2,324	389	18
Amyl/butyl nitrites	105	12	8	74	44	58	2	0	50	13	27	10	2	1
Caffeine	6,264	1,039	3,162	1,846	2,477	3,423	16	312	2,927	847	1,909	807	26	0
Cocaine	4,286	91	584	3,352	465	3,691	40	21	3,730	643	833	1,080	374	70
Diet aids														
Phenylpropanolamine	1,125	400	341	349	623	437	0	58	599	355	169	141	11	1
Phenylpropanolamine and caffeine	180	67	60	49	93	78	0	8	108	59	32	25	1	0
Other, OTC	235	116	46	65	147	50	0	38	81	75	29	25	0	0
Other, Rx	178	55	46	68	80	81	1	13	124	55	39	28	1	0
Unknown	152	46	38	57	78	42	1	28	75	40	24	15	0	0
Heroin	1,669	12	175	1,387	117	1,503	12	24	1,484	146	267	521	230	30
LSD	1,252	20	830	335	156	1,002	72	11	902	48	219	446	42	0
Marijuana	1,930	125	878	819	367	1,457	44	36	1,304	164	449	420	65	0
Mescaline/peyote	173	43	45	79	125	40	2	5	58	8	58	22	2	0
Phencyclidine	465	21	140	271	90	343	14	4	400	34	82	167	44	1
Phenylpropanolamine look-alike drugs	19	3	4	9	6	13	0	0	11	3	3	4	1	0
Other stimulants	198	44	59	91	77	115	0	5	133	46	49	43	3	0
Other hallucinogens	1	0	0	1	1	0	0	0	1	0	0	0	0	0

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TABLE 22B. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Unknown hallucinogens	10	1	4	3	1	3	5	0	7	0	0	2	0	0
Other street drugs	25	0	7	18	4	20	1	0	18	3	8	6	1	0
Unknown stimulant/street drugs	59	2	24	27	10	36	10	0	45	7	7	14	3	0
*Category totals	35,010	6,690	13,446	13,514	14,906	18,398	387	1,001	20,800	6,820	7,232	6,100	1,195	121
Topical preparations														
Acne preparations	2,207	1,217	500	435	2,022	61	4	119	153	520	349	35	2	0
Boric acid/borates	214	100	19	85	199	11	1	3	29	44	26	4	0	0
Calamine	3,516	2,579	211	669	3,467	30	3	14	175	810	215	9	0	0
Camphor	8,486	6,501	580	1,273	8,282	144	18	38	979	2,995	1,315	78	7	0
Camphor/methyl salicylate	1,126	938	66	111	1,101	5	2	17	110	413	193	8	0	0
Diaper products	33,901	32,078	915	800	33,810	24	9	52	315	6,729	846	22	1	0
Hexachlorophene antiseptic	157	108	16	31	152	2	0	3	20	29	16	5	0	0
Hydrogen peroxide	7,772	3,421	819	3,291	7,583	104	34	50	432	1,461	1,377	57	1	0
Iodine or iodide antiseptics	1,628	540	295	702	1,406	148	8	61	396	400	300	65	3	0
Mercury antiseptics	267	211	14	34	254	6	0	6	30	87	14	2	1	0
Methyl salicylate	9,250	6,898	809	1,386	9,063	70	15	100	804	2,501	2,037	59	8	0
Podophyllin	54	16	10	24	47	4	0	3	20	9	10	2	2	0
Silver nitrate	221	17	96	90	191	14	2	12	39	25	57	9	0	0
Topical steroids	6,825	4,896	437	1,317	6,675	42	11	95	165	1,207	376	33	0	0
Topical steroid with antibiotics	1,276	946	108	196	1,240	6	1	28	46	279	117	8	0	0
Wart preparation	1,524	971	221	296	1,470	25	3	26	146	421	263	28	2	0
Other liniment	2,585	1,447	209	829	2,365	18	4	197	187	478	640	35	2	0
Other topical antiseptic	3,913	2,677	376	762	3,723	90	7	85	442	1,121	493	55	9	0
*Category totals	84,922	65,561	5,701	12,331	83,050	804	122	909	4,488	19,529	8,644	514	38	0
Veterinary drugs	3,316	1,729	243	1,170	3,249	47	7	11	259	872	426	46	5	0
Vitamins														
Multiple vitamin tablets: adult formulations														
No iron, no fluoride	2,578	1,782	281	481	2,256	169	3	143	283	563	177	26	4	0
With iron, no fluoride	5,856	3,994	614	1,130	5,225	506	2	118	942	1,862	302	41	5	2
With iron, with fluoride	60	57	2	1	59	0	0	1	6	10	7	0	0	0
No iron, with fluoride	24	24	0	0	24	0	0	0	2	6	4	0	0	0
Multiple vitamin tablets: pediatric formulations														
No iron, no fluoride	7,262	6,340	869	46	7,154	94	1	10	224	1,860	170	9	0	0
With iron, no fluoride	15,760	14,057	1,594	93	15,536	200	4	17	1,440	5,289	705	34	2	0
With iron, with fluoride	672	645	22	4	668	4	0	0	34	162	17	2	0	0
No iron, with fluoride	1,404	1,321	68	12	1,388	7	6	2	36	397	20	0	0	0
Multiple vitamin liquids: adult formulations														
No iron, no fluoride	79	43	9	23	62	8	0	9	17	13	6	2	0	0
With iron, no fluoride	119	66	11	36	96	10	0	13	23	30	10	1	0	0
With iron, with fluoride	4	2	1	1	3	0	0	1	0	0	0	0	0	0
No iron, with fluoride	2	1	0	1	2	0	0	0	0	0	0	0	0	0
Multiple vitamin liquids: pediatric formulations														
No iron, no fluoride	214	201	9	4	210	1	0	3	10	56	5	2	0	0
With iron, no fluoride	508	482	20	5	502	3	0	3	30	145	30	1	0	0
With iron, with fluoride	92	91	1	0	92	0	0	0	3	23	2	0	0	0
No iron, with fluoride	405	394	7	4	403	0	0	2	10	104	10	1	0	0
Multiple vitamins, unspecified adult formulations														
No iron, no fluoride	18	10	3	5	11	4	0	3	2	5	1	0	0	0
With iron, no fluoride	2,068	1,471	265	293	1,857	166	2	36	322	602	112	21	2	0
With iron, with fluoride	4	3	1	0	3	1	0	0	2	2	0	0	0	0
No iron, with fluoride	25	24	1	0	25	0	0	0	0	4	0	0	0	0

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TABLE 22B. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)

Substances Implicated In the Exposure	No. of Exposures	Age (yr)			Reason				Treated in Health Care Facility	Outcome				
		<6	6–19	>19	Unint	Int	Other	Adv Rxn		None	Minor	Moderate	Major	Death
Multiple vitamins, unspecified pediatric formulations														
No iron, no fluoride	41	37	3	1	41	0	0	0	0	10	0	0	0	0
With iron, no fluoride	85	73	11	1	84	1	0	0	11	33	5	0	0	0
With iron, with fluoride	10	9	1	0	10	0	0	0	0	0	0	0	0	0
Other vitamins														
Vitamin A	1,555	1,288	75	176	1,491	30	2	32	95	358	43	7	2	0
Niacin (B3)	2,088	454	345	1,166	1,065	217	3	800	278	136	780	58	2	0
Pyridoxine (B6)	445	268	68	96	352	65	0	28	95	128	30	11	4	0
Other B complex vitamins	1,535	1,068	112	309	1,346	105	2	76	189	344	71	12	2	0
Vitamin C	2,470	1,908	281	242	2,285	128	3	52	126	540	119	13	1	0
Vitamin D	228	133	18	66	208	8	0	12	29	60	9	5	1	0
Vitamin E	1,869	1,524	100	214	1,776	58	1	34	99	423	58	7	1	0
Other	610	433	55	111	525	24	1	60	88	134	53	10	0	0
Unknown	651	448	91	94	562	53	2	32	89	195	33	6	0	0
*Category totals	48,741	38,651	4,938	4,615	45,321	1,862	32	1,487	4,485	13,494	2,779	269	26	2
Unknown drug	11,452	3,416	2,409	4,845	6,056	3,629	723	639	6,516	2,332	1,593	1,206	388	7
Total number of pharmaceutical substances	1,020,598	480,824	162,084	344,988	719,535	255,015	2,765	38,602	350,803	262,523	150,049	62,964	15,173	987
% of pharmaceutical substances		47.1%	15.9%	33.8%	70.5%	25.0%	0.3%	3.8%	34.4%	25.7%	14.7%	6.2%	1.5%	0.1%
% of all substances	43.1%	20.3%	6.8%	14.6%	30.4%	10.8%	0.1%	1.6%	14.8%	11.1%	6.3%	2.7%	0.6%	0.0%

REFERENCES

1. Veltri JC, Litovitz TL: 1983 Annual Report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1984;2:420-443
2. Litovitz TL, Veltri JC: 1984 Annual Report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1985;3:423-450
3. Litovitz TL, Normann SA, Veltri JC: 1985 Annual Report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1986;4:427-458
4. Litovitz TL, Martin TG, Schmitz B: 1986 Annual Report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1987;5:405-445
5. Litovitz TL, Schmitz BF, Matyunas N, et al: 1987 Annual Report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1988;6:479-515
6. Litovitz TL, Schmitz BF, Holm KC: 1988 Annual Report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1989;7:495-545
7. Litovitz TL, Schmitz BF, Bailey KM: 1989 Annual Report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1990;8:394-442
8. Litovitz TL, Bailey KM, Schmitz BF, et al: 1990 Annual Report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1991;9:461-509
9. Litovitz TL, Holm KC, Bailey KM, et al: 1991 Annual Report of the American Association of Poison Control Centers National Data Collection System. Am J Emerg Med 1992;10:452-505
10. Litovitz TL, Holm KC, Clancy C, et al: 1992 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 1993;11:494-555
11. Litovitz TL, Clark LR, Soloway RA: 1993 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 1994;12:546-584
12. Litovitz TL, Felberg L, Soloway RA, et al: 1994 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 1995;13:551-597
13. Litovitz TL, Felberg L, White S, et al: 1995 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 1996;14:487-537
14. Litovitz TL, Smilkstein M, Felberg L, et al: 1996 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 1997;15:447-500
15. Litovitz TL, Klein-Schwartz W, Dyer KS, et al: 1997 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 1998;16:443-497
16. Litovitz TL, Klein-Schwartz W, Caravati EM, et al: 1998 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 1999;17:435-487

APPENDIX

Drug and chemical concentrations provided in these abstracts were obtained on blood, serum, or plasma unless otherwise indicated.

Cases 1 & 2. A 78-year-old woman with a history of coronary artery disease and hypertension was undergoing a multilevel vertebroplasty using **methylmethacrylate** injected percutaneously into the vertebra. She developed sudden dysrhythmias, pulmonary hypertension, and poor oxygenation during the series of injections and died in the OR. No postmortem was performed. The same day, a 42-year-old woman with a history of Crohn's disease and no known cardiac disease underwent a similar procedure, again using **methylmethacrylate** injected percutaneously into the vertebra. She also developed sudden dysrhythmias and poor oxygenation with pulmonary hypertension during the series of injections and died. The postmortem examination showed large amounts of methylmethacrylate in the lungs suggesting pulmonary embolization.

Case 3. A 41-year-old man was found unconscious next to his car with empty cans of a PVC pipe cleaner, PVC cement, and beer. The products were found to contain **tetrahydrofuran** and **methyl ethyl ketone.** In the ED, his vitals were within normal limits, pupils were fixed and dilated, and he remained unresponsive. Attempts to pass an Ewald tube into the esophagus were not successful. The patient suffered a cardiac arrest and expired the next day. Autopsy findings included: an eroded esophagus coated with an irregular plaque-like material; a similar coating of material in the stomach, along with 1 liter of tan fluid with an acetone-like odor that tested positive for methyl ethyl ketone and tetrahydrofuran; and methyl ethyl ketone and tetrahydrofuran detected in the blood.

Case 21. An 18-year-old woman was found unresponsive and in cardiac arrest at a party, after apparently having been raped. She was resuscitated and intubated, but remained comatose and required maximal vasopressor therapy. She subsequently developed cerebral edema. Despite treatment with mannitol, brain flow studies showed no flow and patient was pronounced brain dead 10 days after admission. Autopsy showed hypoxic encephalopathy, a laceration of the urethral meatus, multiple contusions, and ischemia of the toes and right heel. Her blood **ethanol** concentration was 367 mg/dL and **gamma hydroxybutyrate** (GHB) concentration was 17 µg/mL.

Case 45. A 40-year-old alcoholic with a history of recent paint thinner ingestion was released from a detox center and ingested one gallon of **windshield washer fluid.** Approximately 16 hours later, he was found comatose with labored respirations. Asystole developed en route to the ED. After 10 to 15 minutes of resuscitation, he had tachycardia and was vasopressor-dependent. The arterial pH was 6.98. Treatment included hemodialysis in the ED, intravenous ethanol, serum alkalinization, leucovorin, pyridoxine and thiamine. The patient's hemodynamic status deteriorated, and he never regained consciousness. The initial antemortem **methanol** concentration was 431 mg/dL. Postmortem showed cerebral edema.

Case 51. A 6-year-old girl presented with fever, vomiting, hematuria, and a history of recent spider bites. The child's condition rapidly deteriorated and she suffered a cardiac arrest. Antemortem cultures were negative. Autopsy findings included: interstitial hemorrhages in the chest, abdomen, retroperitoneum, and mesentery; petechiae and fluid in the pleural, pericardial and peritoneal cavities; hematuria; and intraepidermal bullae with inflammatory infiltrate consisting of eosinophils, lymphocytes and neutrophils, consistent with a hypersensitivity reaction. There was no evidence of foreign debris within the epidermis or dermis. The presumed spider was ***Loxosceles reclusa.***

Case 52. A 42-year-old woman presented 3 days after a possible brown recluse spider (***Loxosceles reclusa***) bite with abscess formation and tissue necrosis of the abdominal wall, hypoxia, hypertension, peripheral cyanosis, and a white blood cell count of 40,000/µL. The patient expired shortly thereafter.

Case 53. A 43-year-old man who was drinking with friends was bitten on the hand by a **rattlesnake** presumed to be dead. After further **ethanol** consumption, he presented 1 hour later with complaints of hand pain and mild abdominal cramping. Vital signs were: heart rate, 134 beats/min; respiratory rate, 28 breaths/min; and blood pressure, 81/46 mm Hg. Tongue swelling, fang marks, and minimal edema of the hand were noted. Hypotension necessitated vasopressor therapy and increased tongue edema was treated with diphenhydramine and steroids. Unsuccessful attempts at intubation were complicated by hypoxia, and cricothyrotomy was performed. Further treatment included sodium bicarbonate for metabolic acidosis, 10 units of polyvalent antivenin, and fresh frozen plasma. The course was complicated by acute renal failure secondary to hemolysis requiring hemodialysis, rhabdomyolysis, and prolonged ventilatory support. On the 13th hospital day, cardiac arrest secondary to pulmonary embolism occurred, following which the patient was declared brain dead.

Case 55. A 25-year-old man with a history of psychiatric illness ingested **potassium cyanide** obtained from his workplace (a university laboratory). He was found by students in full cardiopulmonary arrest. Resuscitative efforts, including intubation, 100% oxygen, advanced cardiac life support, sodium nitrite, and sodium thiosulfate resulted in return of spontaneous circulation. His course was complicated by neurologic unresponsiveness, fixed dilated pupils, acidosis, vasopressor dependence, and multiple cardiopulmonary arrests. Postmortem blood toxicology revealed a cyanide concentration of 150 µg/mL.

Case 57. A 97-year-old man with a history of lymphoma inhaled the vapors of a **cyanide** mixture and was found on the floor unresponsive. Following intubation, occasional spontaneous respirations were noted. Laboratory studies included: arterial pH, 7.11; pCO_2, 20 mm Hg; pO_2, 485 mm Hg; serum bicarbonate, 6.2 mEq/L, lactate, 16.4 mmol/L; and anion gap, 28 mEq/L. He was treated with sodium nitrite, sodium thiosulfate, and dopamine. The posttreatment methemoglobin concentration of 5.9% increased to 16% after second doses of sodium nitrite and sodium thiosulfate were administered. Resuscitative efforts were discontinued when it was discovered that the patient had a living will. He died approximately 12 hours postexposure. Antemortem blood cyanide concentration was greater than 10 µg/mL.

Case 60. A 15-year-old girl with a history of flu-like symptoms for approximately 1 week, developed abdominal pain and vomiting on the day of presentation. She presented with coma and an increased anion gap metabolic acidosis. Laboratory results revealed: bicarbonate, less than 5 mEq/L; BUN, 14 mg/dL; creatinine, 3.2 mg/dL; glucose, 216 mg/dL; anion gap, 39 mEq/L; osmolar gap, 18 mOsm/L; salicylate, 4.6 mg/dL; and normal liver transaminases. Treatment included sodium bicarbonate and fomepizole. An abdominal radiograph showing radiopaque foreign bodies prompted treatment with dimercaprol, which was discontinued after the blood lead concentration returned at 19 µg/dL and it was determined that she had received bismuth subsalicylate. The hospital course was complicated by seizures treated with anticonvulsants; oliguric renal failure; and increased intracranial pressure treated with intrathecal drainage. She died from apparent brain herniation on the fourth hospital day. The autopsy showed cerebral edema with brainstem herniation, renal tubular casts, dilatation and intratubular birefringent oxalate crystals, with no oxalate crystals in the heart or liver. Antemortem blood **ethylene**

glycol and glycolic acid concentrations were 77 mg/dL and 76.5 mg/dL, respectively. A postmortem glycolic acid concentration was 86 mg/dL.

Case 72. A 17-year-old boy with a history of depression presented with slurred speech, a decreased level of consciousness, and profound acidosis after a suspected overdose of **flurazepam** and another substance (presumed to be a toxic alcohol). Treatment included flumazenil, an ethanol infusion, fomepizole, and intubation. His parents later reported that the patient had exhibited upper and lower extremity paresis before arrival, which prompted magnetic resonance imaging of the brain and cervical spine. Bilateral basal ganglia and brainstem infarcts were seen. An **ethylene glycol** concentration was 29 mg/dL 18 hours postingestion. The following day, repeat imaging studies showed absent cerebral blood flow, diffuse cortical ischemia, and bilateral uncal herniation.

Case 73. A 27-year-old man drank an unknown amount of **formaldehyde** in a suicide attempt. In the ED, his unconscious state deteriorated to cardiac arrest. Resuscitative efforts including CPR, cardioversion, sodium bicarbonate, and folate were unsuccessful. After 4 ampules of sodium bicarbonate his arterial pH was 6.8. The postmortem findings included a blood formaldehyde concentration greater than 5,000 μg/mL; extensive fixation of the esophagus, stomach and proximal small intestine; and partial fixation of the tongue, liver, spleen, transverse colon, left adrenal gland and left kidney.

Case 83. A 69-year-old chemist presented with sudden onset of crushing chest pain and shortness of breath. For 4 to 6 weeks, he had been self-medicating symptoms of chronic, intermittent chest pain with 30 to 60 mg of **sodium nitrite.** He took 300 mg of sodium nitrite for severe pain on the day of presentation. Physical examination revealed cyanosis, a blood pressure of 77/50 mm Hg and a heart rate of 102 beats/min. Oxygen saturation by pulse oximetry was 68% and arterial blood gas results were: pH, 7.42; pCO_2, 26 mm Hg; pO_2, 316 mm Hg on 100% oxygen; and methemoglobin, 38%. ECG findings were consistent with an acute anterior wall myocardial infarction. Treatment with intravenous fluids and 120 mg of methylene blue resulted in decreased cyanosis, hemodynamic improvement, and increased oxygen saturation to 94% by pulse oximetry. Cardiac catheterization revealed a 95% occlusion of the left main coronary artery. Cardiogenic shock necessitated balloon pump assistance and vasopressor therapy. He died within 2 hours of arrival.

Case 85. A 12-month-old boy ingested an unknown quantity of a **degreaser** and descaler containing 3% **hydrochloric acid** and 14% **ammonium bifluoride,** with a pH of 1. Two episodes of emesis occurred initially. In the hospital, the heart rate was 175 beats/min and the pulse oximetry reading was 94 to 96%. The initial serum calcium measurement was 2.5 mmol/L. The patient was treated with intravenous fluids and calcium. Ventricular fibrillation and seizures developed and were refractory to resuscitative efforts.

Case 91. A 66-year-old man with a history of hypothyroidism, congestive heart failure, and depression presented to the hospital with a sore throat about 1 hour after the intentional ingestion of a **drain opener** containing **93-100% sulfuric acid.** Several episodes of spontaneous emesis occurred before arrival. Vital signs were: blood pressure, 146/89 mm Hg; pulse, 110 beats/min; and respiratory rate, 20 breaths/min. He had no stridor, hoarseness, oropharyngeal burns, or chest radiographic findings. Endoscopy performed approximately 3 hours after arrival revealed second and third degree burns of the distal esophagus and stomach. The patient suffered an asystolic cardiac arrest and died 6 to 7 hours after the ingestion. Postmortem showed findings included minimal laryngeal edema, ulceration and necrosis of the distal two-thirds of the esophagus, and necrosis of the stomach extending to the pylorus.

Case 92. A 48-year-old woman with a psychiatric history was found in the bathroom obtunded and foaming at the mouth, with blood-streaked emesis. An empty 1 L bottle of bathroom descaler containing an unknown concentration of **hydrofluoric acid** was next to her. In the ED, she was agitated, uncooperative, and had edema of the pharynx. Treatment included gastric lavage and administration of 60 mL of magnesium hydroxide. Evidence of upper gastrointestinal bleeding persisted. Twelve hours postingestion, the ECG showed peaked T-waves and a normal QT interval, despite a potassium of 6.2 mEq/L and calcium of 2.8 mg/dL. Although ventricular dysrhythmias developing shortly thereafter responded to intravenous calcium, refractory hypocalcemia (2.9 mg/dL), ventricular fibrillation, and asystole occurred 17 hours postingestion.

Case 95. A suicidal 82-year-old woman vomited after drinking an estimated 150 to 300 mL of a **pine oil/isopropanol cleaner.** Intubation was required within 3 hours of the ingestion for rapidly progressive aspiration pneumonitis. She developed adult respiratory distress syndrome and died on the 10th hospital day.

Case 98. An 18-month-old boy ingested an unknown amount of a **tire cleaner** (**hydrofluoric acid** or **ammonium bifluoride**) from an unmarked container and developed hematemesis and respiratory distress. The child required intubation for progressive lethargy and respiratory failure. Initial vital signs were: temperature, 37.9°C (rectal); heart rate, 168 beats/min; respiratory rate, 28 breaths/min; and blood pressure, 70/31 mm Hg. The pulse oximetry reading was 82%. Treatment included steroids and bronchodilators. An initial potassium was 5.2 mEq/L, with arterial pH (90 minutes postingestion), 7.08; pCO_2, 28.9 mm Hg; and pO_2, 393 mm Hg. At that time, ventricular fibrillation occurred and was refractory to multiple defibrillation attempts and epinephrine. Autopsy findings included: absence of burns in the mouth and esophagus; full-thickness burns (without perforation) to the depth of the muscularis mucosal layer from the stomach to the ileum; evidence of pulmonary aspiration; and massive hemolysis.

Case 100. A 12-month-old boy ingested a large amount of **hair oil** containing **safflower** (50% to 80%), **mineral** (30% to 50%), castor (<2%), avocado (<2%), sesame (<2%, and jojoba **oils** (<2%) 40 minutes prior to arrival at an urgent care center. He exhibited persistent cough and hypoxemia with a pulse oximetry reading of 89% on room air. His respiratory status deteriorated over the next 24 hours, necessitating intubation, high frequency/oscillatory ventilatory support and positive end-expiratory pressure. He developed bilateral pneumothoraces and was ultimately placed on ECMO 6 days postexposure. Although ECMO was contin-

ued for 24 days, multisystem organ failure developed, and the patient died after unsuccessful weaning.

Case 101. A 16-year-old boy was using a stimulant medication containing **amphetamine** and **dextroamphetamine** while studying for an examination. The medication had recently been discarded in a neighbor's trash. During a study break, the patient also huffed **hair spray,** containing **hydrofluorocarbons, isobutane,** and **ethanol.** He collapsed, was found to be in ventricular fibrillation, and was not able to be resuscitated. A subsequent toxicology screen was positive for amphetamines. Postmortem heart blood amphetamine concentration was 0.12 µg/mL. Blood, urine and vitreous humor were positive for isobutane and dimethyl ether.

Case 108. A 2-year-old boy ingested **citronella oil** stored in a perfume container. He developed aspiration pneumonitis, hypoxemia, and refractory hypotension. Treatment included mechanical ventilation, vasopressors, and antibiotics. Bilateral pneumothoraces developed, and the child died 66 hours after the exposure.

Case 109. An 87-year-old woman with dementia, colon cancer, and alcoholism developed acute respiratory distress and unresponsiveness after ingesting 1 cup of **potpourri oil,** mistaken for juice. Radiographic evidence of aspiration pneumonitis was present. The patient was not intubated, per her family's wishes, and developed progressive hypoxia and acidemia. She died on the third hospital day.

Case 110. A 50-year-old medical researcher was found dead in a refrigerated room that contained 15 new blocks of **dry ice** which had been placed there 3 hours earlier. The decedent had been crouching to store samples in a container several inches above the ground. There were no signs of struggle and there was no history of psychiatric disorder, recent personal crises, or medical illness. The external ventilation system in the cold room was not functioning, although internal air movement occurred via a cooling fan. Postmortem examination and toxicologic studies were not revealing. To confirm the cause of death, the conditions at the time of the event were reproduced. Air was sampled serially at several heights. At a height of 9 inches, the drop in F_iO_2 (13.6%) and rise in CO_2 (27.6%) were maximal by 3 hours. The temperature of the room fell to −15°C. The cause of death was thus determined to be from simple asphyxia secondary to **carbon dioxide** release from dry ice.

Case 112. A 2-year-old boy was found near his dead 3-year-old sister after riding in the rear of a car with a leaking exhaust system for several hours. In the ED, the child displayed lethargy and vomiting. His initial **carboxyhemoglobin** was measured as 37%. Despite treatment with 100% oxygen and a decrease in the carboxyhemoglobin to 2.2% 90 minutes later, the child remained lethargic. Neurologic deterioration occurred, with the development of fixed, dilated pupils, lack of response to painful stimuli, and body temperature dysregulation. Postmortem findings included necrosis of the basal ganglia, consistent with carbon monoxide poisoning.

Case 151. A 72-year-old man was found to have an elevated serum **lead** concentration of 302 µg/dL. The exposure was thought to be caused by ingestion of lead-contaminated moonshine. The patient was encephalopathic and hemodynamically unstable. Treatment included intubation and chelation therapy with dimercaprol (BAL) and calcium disodium EDTA. Prolonged intensive care and continued chelation were continued for 11 weeks. Lead concentrations slowly dropped over the first few weeks to 33 µg/dL. Complications included staphylococcal infection, hypertension, and renal failure requiring hemodialysis. He died with multisystem organ failure.

Case 153. A 38-year-old man suffered a large inhalational and dermal exposure to an **acrolein** herbicide after a worksite spill. He developed immediate shortness of breath, was transported to the ED, and was discharged after a period of observation. According to the patient's wife, he developed increasing dyspnea that evening and was unable to sleep. He was found dead in a chair approximately 18 hours postexposure. Postmortem findings were consistent with pulmonary edema.

Case 154. A 60-year-old man ingested fluid found in the garage that he mistook for white wine. On presentation, he was confused, diaphoretic, and vomiting. Lung fields were clear and pupils were pinpoint. Atropine resulted in no pupillary change, but caused an increase in heart rate and blood pressure to 180 beats/min and 210/100 mm Hg. Arterial blood gas results were: pH, 7.42; pCO_2, 31 mm Hg; and pO_2, 71 mm Hg. Pralidoxime was administered. The patient suffered a cardiac arrest and died. Postmortem **dinitrobutylphenol** concentrations were 20.2 µg/mL (toxic >10 µg/mL) in the blood; 0.32 µg/mL (bile); 0.86 mg/kg (brain); 0.15 mg/kg (liver); and 2.8 mg/kg (gastric contents). Antemortem blood concentrations were 7.7 µg/mL.

Case 155. A 47-year-old alcoholic ingested 540 mL of an herbicide containing **glyphosate.** He presented with lethargy, hypotension, bradycardia, metabolic acidosis, and an ethanol concentration of 140 mg/dL. Charcoal administration was followed by vomiting. Nine hours postingestion the patient developed flash pulmonary edema. Treatment included furosemide, intubation, and vasopressors. Abnormal renal function tests and minimal urine output were noted. The patient died 12 hours after the ingestion.

Case 156. A 44-year-old man showed miosis, tachycardia, hypersalivation, and loss of urinary and stool continence 4 hours after the intentional ingestion of an unknown amount of **monosodium methanearsonate** herbicide. Lack of dimercaprol necessitated transfer to a tertiary facility. Cardiovascular collapse and death occurred en route. On autopsy, toxic levels of arsenic were found in blood and urine and the medical examiner ruled the death as suicide by acute arsenic intoxication.

Case 158. A 16-year-old girl in her fourth month of pregnancy ingested an unknown quantity of **paraquat** in a suicide attempt. At presentation 24 hours later, her creatinine was 4 mg/dL. Six days later, renal function tests were: BUN, 91 mg/dL; and creatinine, 6.8 mg/dL. Hepatic transaminases, bilirubin and LDH were also elevated. On the seventh day after the ingestion, she developed shortness of breath and oxygen desaturation (94%) on room air. Over the next few days, oxygenation further deteriorated despite improvement in renal function. On the 11th day, the patient developed severe dyspnea, cyanosis, and chest radiographic findings suggestive of adult respiratory distress syndrome, then died.

Case 160. A 15-year-old boy collapsed after taking four

''hits'' from a tank of **butane** gas while inhaling with an adolescent friend. Paramedics found the youth in cardiopulmonary arrest. Prolonged resuscitative efforts were unsuccessful.

Case 163. A 4-year-old boy was taking a bath when his father pumped liquid **chlorodifluoromethane** into the bath water with a hose. The child became drowsy and was found lying face-down in the water a short time later. He was transported to a hospital where he later died. The medical examiner ruled that he died from liquid chlorodifluoromethane intoxication and that the manner was homicide.

Case 166. A 2-year-old boy had a seizure outdoors near a charcoal **lighter fluid** container. He arrived to the ED with lethargy and drooling. In less than an hour, the patient had developed recurrent seizures, treated with diazepam, midazolam, and succinylcholine. Frothy oral secretions and chest radiographic evidence of pulmonary edema were noted within 90 minutes of arrival. During transfer, the patient developed pulseless electrical activity, which responded to atropine and epinephrine. Cerebral edema developed and he was declared brain dead 21 hours after the exposure.

Case 169. A 62-year-old man ingested a large amount of a product containing 72% **chlordane.** He was found lying on the ground shaking. After transport to the hospital, he was reportedly awake, alert, and oriented. At 90 minutes postingestion, the patient vomited and seized. Treatment included decontamination, intubation, benzodiazepines and activated charcoal. The hospital course was complicated by metabolic acidosis, recurrent seizures, hypotension, and decreased urine output. Neurologic, pulmonary, and hemodynamic deterioration occurred on the third hospital day and the patient died.

Case 174. A 27-year-old man who reportedly drank a mixture of ''opium'' and ethanol presented with dyspnea, epiglottic swelling, hypoxia, tachycardia, and red urine. The ECG showed QRS prolongation, peaked T waves, elevated ST segments, and absent P waves. The ingested fluid was actually determined to be an old insecticide containing **nitric acid** and **lead arsenate.** The patient was intubated and placed on a ventilator. A gray, swollen epiglottis was noted. Laboratory results were: urine drug screen, positive for marijuana; blood ethanol, 63 mg/dL; acetaminophen, negative; and methemoglobin, 9%. Complications included perforation of the stomach and renal failure. Despite tracheostomy placement, supportive care, and hemodialysis, sepsis developed and the patient died on the sixth hospital day.

Case 179. A 63-year-old man picked wild mushrooms from his yard and ate them in a salad. The mushrooms were later identified as either ***Amanita verna*** or ***Amanita virosa.*** He developed headache, nausea, vomiting, abdominal pain, and diarrhea 7 hours postingestion. These symptoms persisted through the following day when he presented to the ED with fever, tachycardia, and the following laboratory abnormalities: AST, 1749 U/L; ALT, 1710 U/L; total bilirubin, 4.3 mg/dL; BUN, 48 mg/dL; creatinine, 6.5 mg/dL; anion gap, 31 mEq/L; PT, 25.5 seconds; and PTT, 48.4 seconds. Treatment included hydration, phytonadione, fresh frozen plasma, and antiemetics. At 60 hours postingestion, the gastrointestinal symptoms had resolved, but both renal dysfunction and coagulation abnormalities persisted. Ultimately, his hepatic and renal dysfunction worsened and encephalopathy, rhabdomyolysis, and hyperkalemia developed. He died approximately 91 hours postingestion.

Case 180. A 62-year-old woman presented 48 hours after eating a stir-fry meal containing self-harvested mushrooms. Similar mushrooms were later identified as ***Lepiota josserandii.*** Initial symptoms were fatigue, nausea, and abdominal cramps that began 16 hours post ingestion, followed by multiple episodes of diarrhea. After initial treatment with meperidine, hydroxyzine, and intravenous fluids, the patient was discharged home. Because of an elevated AST of 2,262 U/L, she was called back to the hospital. Repeat laboratory results on return were: AST, 12,904 U/L; PT, 40.8 sec; and INR, 10.2. Although transaminases gradually declined, the PT continued to rise to more than 100 seconds and the lactate increased. Despite treatment with intravenous penicillin G, cimetidine and milk thistle, encephalopathy developed within 48 hours of presentation. Amanitin was not detected. The next day, emergent orthotopic liver transplantation was performed. The patient had a complicated post-transplant course, including abnormal liver function tests and the development of fungal sepsis. Despite aggressive medical and surgical management, she died 23 days after the mushroom meal. The histology of the native liver showed massive necrosis. Other autopsy findings included CNS necrosis related to fungal infection and hypoxia.

Cases 183 & 184. A 20-year-old man presented comatose with a rectal temperature of 42.8°C after ingesting six to seven seed pods and smoking the leaves of **jimson weed** (***Datura stramonium***) with friends. His initial heart rate was 178 beats/min and blood pressure, 58/36 mm Hg. He was treated with fluids, intubation, ice water lavage and cooling blankets. Laboratory results were: urine drug screen, negative; pH, 7.29; pCO_2, 22.7 mm Hg; pO_2, 74 mm Hg, HCO_3, 9.4 mEq/L; oxygen saturation, 91.9%; BUN, 30 mg/dL, creatinine, 4.0 mg/dL; and potassium, 2.3 mEq/L. The patient died 6 hours after admission. His 21-year-old male friend, who also ingested six to seven pods containing jimson weed seeds and smoked some leaves, died at the scene.

Case 185. A 48-year-old man with a history of hypertension, peptic ulcer disease, gastroplasty, hyperchloremic metabolic acidosis attributed to gastric outlet obstruction, and depression was found unresponsive with labored respirations. He had been in a small enclosed room working with ''**glue**'' and ''fireworks'' and also had been consuming the fruit of the china berry tree (***Melia azedarach***) for 1 week before admission. Positive plant identification was performed. In the ED, the patient was described as awake but dyspneic, and the following laboratory results were noted: serum pH, 6.96; pCO_2, 8.8 mm Hg; pO_2 (F_iO_2 1.0), 72 mm Hg; serum bicarbonate, 2 mEq/L; BUN, 23 mg/dL; creatinine, 3.0 mg/dL; and anion gap, 29 mEq/L. Mental status deterioration, multisystem organ failure, and acute myocardial infarction developed. He expired after a prolonged hospitalization. Autopsy revealed necrotizing vasculitis of the brain stem and cranial nerve roots, subacute hemorrhagic infarcts in the cerebrum and cerebellum, centrilobular necrosis in the liver, and hemorrhagic infarcts of the lungs. The cause of death was determined to be a result of acute CNS and liver pathology followed by multiorgan failure

temporally related to glue inhalation and china berry ingestion.

Case 190. A 17-year-old girl with a history of intravenous drug abuse and migraine headaches managed with nonprescription analgesics presented with an altered mental status. Initial laboratory studies included: drugs of abuse screen, negative; serum acetaminophen, less than 10 µg/mL; salicylates, negative; AST, 5441 IU/L; ALT, 9559 IU/L; total bilirubin, 4.9 mg/dL; PT, 25 seconds; INR, 4.33, BUN, 24 mg/dL; creatinine 1.3 mg/dL, ammonia 183 µmol/L. Progressive neurologic deterioration and worsening hepatic dysfunction occurred, and she was pronounced brain dead within 24 hours. Later, her 8-year-old sister admitted that she had seen the patient take a whole bottle of **acetaminophen** 4 days earlier, but had been sworn to secrecy.

Case 196. A 24-year-old pregnant woman presented after rupture of membranes. She had normal labor progression until immediately before delivery when acute, severe fetal heart rate decelerations were noted. Forceps delivery yielded a stillborn full-term infant with no external anomalies. Soon after delivery, the mother developed a decreased level of consciousness, metabolic acidosis, and anuria. Within 48 hours, disseminated intravascular coagulopathy, multisystem organ failure, and death occurred. Admission serum **acetaminophen** concentration was 465 µg/mL, with a postdelivery concentration of 398 µg/mL. Days after her death, the patient's family reported that she may have taken as many as 100 acetaminophen tablets for back and labor pain. The infant's death was attributed to massive maternal acetaminophen overdose.

Case 214. A 41-year-old man ingested an unknown amount of **acetaminophen** 48 hours before presentation. He was awake and alert, had unremarkable vital signs, and complained of right upper quadrant abdominal pain. Laboratory results were: acetaminophen concentration, 180 µg/mL; total bilirubin, 10.6 mg/dL; AST, 8,272 U/L; ALT, 7400 U/L; PT, 46.4 seconds; and PTT, 40.5 seconds. Initial treatment included oral *N*-acetylcysteine. Bioartificial liver support was started 2½ days after presentation and was continued for 5 days. The patient died of hepatic failure on the eighth hospital day.

Case 364. A 15-year-old girl was admitted 7 hours after an intentional ingestion of 200 **aspirin** tablets along with clarithromycin, ibuprofen, **loratadine,** and **hydrochlorothiazide/triamterene.** Postingestion salicylate concentrations were: 6 mg/dL at 1 hour, 46 mg/dL at 3 hours, and 81.5 mg/dL at 5 hours. Initial arterial pH was 7.4 and pCO_2 was 37 mm Hg. The patient seized 5 hours postingestion and was then delirious, shouting, and complaining of nausea. Laboratory results at that time were: pH, 7.35; pCO_2, 27 mm Hg; serum bicarbonate, 15 mEq/L; salicylate, 78.8 mg/dL; and acetaminophen, less than 1 µg/mL. Treatment included intravenous fluids and sodium bicarbonate. Recurrent ventricular tachycardia occurred and was treated with additional sodium bicarbonate and lidocaine. Hypotension, fever and purpura developed. Despite hemodialysis, she died approximately 22 hours after the ingestion.

Case 375. A 45-year-old man who had ingested 70 **colchicine** (0.6 mg) tablets 3 to 4 days earlier, presented with diminished oral intake, nausea, vomiting, diarrhea, abdominal pain and evidence of dehydration. Abnormal laboratory results were: WBC, 1,000/µL; platelets 20,000/µL; sodium, 125 mEq/L; creatinine, 1.4 mg/dL: AST, 436 U/L, and creatine kinase, 5,684 U/L. On the third hospital day, he had evidence of mental status alteration, hypoxia, hypotension, worsened renal failure and persistent diarrhea. His white blood cell count was 2,000/µL. Further treatment included granulocyte colony stimulating factor, platelet transfusions, albumin, intravenous fluids and sodium bicarbonate. He became hemodynamically unstable and died on the third hospital day.

Case 392. A 5-month-old girl presented in respiratory arrest. Police reports suggested that the infant's mother had intentionally added the **methadone** to the child's formula in an attempt to sedate the child. The medical examiner determined that the infant formula contained a methadone concentration of 21 µg/mL. The postmortem methadone concentration was 0.3 µg/mL (heart blood) and 1.4 mg/kg (liver).

Case 454. A 37-year-old anesthesiologist with a history of depression and inhalational anesthetic abuse was found apneic and asystolic in his hospital on-call room with a plastic bag over his face. Inside the bag was a gauze pad, which at the time of discovery was dry. An empty bottle of **enflurane** was also present. Forensic reconstruction suggested that the patient saturated the gauze pad with enflurane and placed it in the bag for rebreathing. When the patient lost consciousness, the bag covered his mouth and nose resulting in asphyxiation. Several months earlier, this same physician had been successfully resuscitated after a similar event, had been rehabilitated, and returned to unsupervised work.

Case 456. An 1,800 gram, 2-day-old infant born at 33 weeks gestation age, was unintentionally given 9,000 units of **heparin** intravenously through an umbilical catheter. Approximately 12 hours later, the patient's status deteriorated, and a grade 3 to 4 intracranial bleed was diagnosed. The therapeutic error was discovered the following morning when the patient's prothrombin time was 17 seconds and the PTT unmeasurable. At 26 hours postexposure the extent of the intracranial bleed was noted to be severe, and life support systems were removed.

Case 459. A 10-year-old boy with a history of autism and seizure disorder was being treated with **lamotrigine,** clonazepam, and fluoxetine. Three weeks after the lamotrigine dose was increased, he developed status epilepticus, hyperthermia, and runs of ventricular tachycardia. The patient was comatose with increased tone in the upper and lower extremities. Initial treatment included intubation, cooling, benzodiazepines, phenobarbital, phenytoin, urinary alkalinization, and broad-spectrum antibiotics. Ultimately, the patient received numerous other therapies, including vasopressors, dobutamine, nitroprusside, continuous arteriovenous hemofiltration, and sodium thiosulfate for suspected cyanide toxicity secondary to prolonged nitroprusside therapy. Laboratory studies revealed elevated hepatic transaminases and the following abnormalities: lactate, 8.6 mmol/L; creatine kinase, 990 U/L; platelets, 6,000/µL; PT, 50 seconds; PTT, greater than 100 seconds; and d-dimer, greater than 60 µg/dL. The patient died on the fourth hospital day. Autopsy findings confirmed rhabdomyolysis, hepatic necrosis and disseminated intravascular coagulation resulting from lamotrigine.

Case 463. A 30-year-old woman was found unresponsive. No response to naloxone was noted, and intubation was required. Initial vital signs were: heart rate, 60 beats/min; blood pressure, 95/50 mm Hg; and respiratory rate, 14 breaths/min. The **valproic acid** concentration was 1,280 μg/mL and the urine drug screen was positive for amphetamines. The patient remained unresponsive despite a decreasing valproic acid concentration (875 μg/mL), and required vasopressor support for hypotension. Pertinent laboratory findings on the fourth hospital day were: valproic acid, 410 μg/mL; ammonia 197 μg/dL; AST, 136 U/L; ALT, 32 U/L; platelets, 84,000/μL; and glucose, 27 mg/dL. An EEG showed diffuse cerebral dysfunction. A prolonged hospital course was complicated by persistent coma, aspiration pneumonia, ventilator-dependence, bowel obstruction, renal failure, thrombocytopenia, endocrine dysfunction, hypoglycemia, and gastrointestinal bleeding.

Case 593. A 39-year-old man with a history of depression ingested his own **isoniazid** and was found in status epilepticus. Diazepam, lorazepam, and phenobarbital were administered without control of the seizures. Neuromuscular paralysis and transfer to a tertiary facility known to stock pyridoxine were performed. There, the patient continued to have seizures despite receiving a lorazepam infusion at 1 mg/hr. Five grams of pyridoxine were administered and the lorazepam infusion was increased to 2 mg/hr, without effect. Phenytoin loading was performed, and seizures abated after 8 hours. A CT scan of the brain revealed a large left cerebellar hemorrhage. A ventriculostomy was placed to control hydrocephalus. Hepatic and renal dysfunction, rhabdomyolysis, and disseminated intravascular coagulation developed. The urine drug screen was positive for **cocaine** metabolites. Because the patient's prognosis for neurologic recovery was poor, supportive care was withdrawn and he died on the fourth hospital day.

Case 594. A 16-year-old girl treated with **zidovudine** and **lamivudine** presented with nausea and vomiting. She had tachypnea and a profound, high anion gap metabolic acidosis. Salicylate and toxic alcohol determinations were negative. Mental status deterioration, hypoxemia, and progressive lactic acidosis (lactate, 10.9 mEq/L) resulted. Treatment included intubation, sodium bicarbonate, carnitine, thiamine, and vitamin C for presumed zidovudine-induced lactic acidosis. Despite this, the patient's status did not improve and she died after a cardiac arrest on the sixth hospital day.

Case 595. A 51-year-old man with multiple medical problems was being treated for severe pustular psoriasis with **methotrexate** 12.5 mg weekly. He was unintentionally given methotrexate daily for approximately 2 weeks. He presented with sore throat, fever, cough, vomiting, and the following vital signs: heart rate, 164 beats/min; blood pressure, 90/60 mm Hg; and temperature, 39°C. Laboratory results were: WBC, 200/μL; hematocrit, 23%; platelets, 11,000/μL; BUN, 90 mg/dL; and creatinine, 3.5 mg/dL. Treatment included intubation for severe oral mucositis, intravenous fluids, vasopressors, granulocyte colony stimulating factor, broad-spectrum antibiotics, leucovorin, and continuous venovenous hemodiafiltration. The serum methotrexate concentration on day 2 was 0.29 μmol/L (toxic $>$ 0.1). The patient remained hypotensive, developed a myocardial infarction, and expired 4 days after admission. The autopsy revealed multifocal hemorrhages in the lungs and epicardium, centrilobular hepatic necrosis, pulmonary aspiration, cardiomyopathy, lymphocytic ablation, and cellular atypia.

Case 597. A 3-year-old boy developed status epilepticus after multiple bouts of coffee ground emesis. Seizures were recalcitrant to therapy with lorazepam, phenobarbital, phenytoin, and midazolam. The following morning it was discovered that the child had access to **sustained-release theophylline.** A blood theophylline concentration was 114 μg/mL. Other treatment included mechanical ventilation, multiple dose activated charcoal, and hemodialysis. Postdialysis, the theophylline concentration was 23 μg/mL. The patient was pronounced dead 60 hours after presentation. The postmortem examination revealed cerebral herniation and necrosis.

Case 615. A 23-month-old girl ingested an unknown number of 0.3 mg **clonidine** tablets. In the ED, the child was stuporous with a heart rate of 57 beats/min. Atropine was administered and resulted in an increased heart rate to 200 beats/min, followed by slowing to 125 beats/min. Both improvement in the level of consciousness and agitation were noted after naloxone administration. During intubation, bradycardia progressed to pulseless electrical activity, and frothy sputum was noted. Resuscitative efforts were not successful. The autopsy revealed moderate congestion and edema of the lungs. The postmortem blood clonidine concentration was 46 ng/mL.

Case 638. A 43-year-old male physician became hypotensive and unresponsive after paramedics administered nitroglycerin sublingually for complaints of chest pain. Empty vials of sildenafil and **diltiazem** were discovered later after scene investigation. In the ED, the patient suffered a respiratory arrest, was resuscitated, but appeared to exhibit signs of brain death. A cardiac arrest occurred on the sixth hospital day. Antemortem toxicology results revealed lethal concentrations of diltiazem and the presence of diphenhydramine. Sildenafil was not detected.

Case 662. A 20-month-old boy was noted to be ''fussy and crying'' after ingesting his grandmother's **sustained release nifedipine** (possibly in addition to other unknown cardiac medications). He began ''shaking'' while being bathed. In the ED, intact nifedipine tablets were found in the infant's throat during intubation, and he died shortly after arrival to the ED. Nifedipine concentrations were 560 μg/mL (blood) and 3,990 μg/mL (gastric contents).

Case 669. A week after an abdominal aortic aneurysm repair, an 80-year-old man, received an application of a large amount of **nitroglycerin** ointment, in lieu of antifungal ointment, to the abdomen wall area. One hour later, the patient experienced an episode of hypotension that responded to fluids and removal of the nitroglycerin ointment. Hypotension recurred 7 hours later and responded to treatment with fluids and vasopressors. The skin was further decontaminated with soap and water. Over the next 12 hours, the patient experienced a bowel infarction and died.

Case 670. A 69-year-old man ingested an unknown number of **procainamide** 250 mg capsules along with **ethanol.** In the ED, he had a systolic blood pressure of 50 mm Hg, a heart rate of 60 beats/min, and displayed an

idioventricular rhythm. The serum procainamide concentration was 52 μg/mL and blood ethanol was 221 mg/dL. Treatment included temporary pacemaker insertion, intravenous sodium bicarbonate, and dopamine. One hour after admission, he was awake and alert with a systolic blood pressure of 120 mm Hg. Four hours after admission he developed recurrent episodes of ventricular tachycardia and hypotension, and could not be resuscitated.

Case 671. A 48-year-old legally blind woman with a history of asthma, atrial fibrillation, valvular replacement, and Wolff-Parkinson-White Syndrome, unintentionally ingested five 300 mg **propafenone** tablets after mistaking them for prednisone while reading her medication labels in Braille. She received prehospital oral activated charcoal. En route to the ED, she developed bradycardia and seized. Treatment included external pacing, intubation, dopamine, sodium bicarbonate, atropine, and glucagon. Asystolic cardiac arrest resulted in prolonged resuscitative efforts. Severe diffuse anoxic brain injury was noted on CT and life support was withdrawn. A prehospital blood propafenone concentration was 4.88 μg/mL.

Case 700. A 2-year-old boy was found dead in his bed. He had been ill with a viral infection for an unknown period of time, and received three doses of a cough syrup containing **hydrocodone** bitartrate and **guaifenesin.** The autopsy revealed cerebral and pulmonary edema and a serum postmortem hydrocodone concentration of 80 ng/mL (therapeutic, $<$20 ng/mL). The cause of death was respiratory arrest, acute pneumonia, and medication effect.

Case 702. A 23-year-old woman with a history of bulimia ingested 20 diet capsules containing **sustained-release phenylpropanolamine** and 12 cold capsules containing **acetaminophen, diphenhydramine, pseudoephedrine** and **dextromethorphan,** then self-induced vomiting at home. On presentation to the ED 30 minutes later, her blood pressure was 156/91 mm Hg, heart rate was 60 beats/min and she was awake. She was treated with activated charcoal and whole bowel irrigation. An episode of transient hypertension (blood pressure, 165/120 mm Hg) with type I second degree AV block was followed by tachycardia with normalization of the blood pressure. The patient required intubation for pulmonary edema, despite the absence of ECG changes or enzymatic evidence of myocardial ischemia. Subsequent complications included severe tachycardia, ventricular dysrhythmias, and cardiac arrest. Autopsy findings included pulmonary edema, numerous small foci of fibrosis in the myocardium, and a focal hemorrhage in the left basal ganglia. Antemortem blood toxicology results were: acetaminophen, 14.8 μg/mL; fluoxetine, 0.51 μg/mL; pseudoephedrine, 0.33 μg/mL; and phenylpropanolamine, 0.95 μg/mL.

Case 703. A 14-month-old boy presented 20 minutes after ingesting an unknown number of **iron** tablets with evidence of gastrointestinal bleeding and disseminated intravascular coagulation. Treatment included intubation, exploratory laparotomy to remove iron tablets, blood product transfusions, and an intravenous deferoxamine infusion. Laboratory results were: initial serum iron, 15,000 μg/dL; 3-hour serum iron, 18,750 μg/dL; 6-hour serum iron, 4,000 μg/dL; hemoglobin, 5.4 gm/dL; and WBC, 26,000/μL. The patient died 16 hours after arrival.

Case 704. A 73-year-old woman with multiple chronic medical illnesses was hospitalized to rule out bowel obstruction. After receiving two bottles of oral **magnesium citrate,** the patient suffered ventricular fibrillation and cardiac arrest. Resuscitative efforts included intubation, dopamine, calcium, and furosemide. Laboratory findings after the arrest included: BUN, 20 mg/dL; creatinine, 1.2 mg/dL; magnesium, 6.6 mEq/L; and a normal ECG. An abdominal CT scan ruled out bowel perforation, however, the chest radiograph showed white-out of the right lung, suggesting aspiration of the magnesium citrate. Complications included renal failure, cyanosis, and unresponsiveness with fixed dilated pupils. The patient died on the third hospital day.

Case 705. A 6-year-old boy was found staring and unresponsive, with arms flexed and legs extended, 1 hour after the administration of a **trimethobenzamide** suppository for vomiting and headache. He was choking at the time and may have aspirated vomitus. In the ED, he was unresponsive, in acute respiratory distress, with hypoxia, tachycardia, and muscle rigidity. Chest radiograph showed multilobar infiltrates. Treatment included high flow oxygen, intubation, and diphenhydramine, without improvement in rigidity. There was no improvement in mental status. Hemodynamic deterioration occurred and he died the following day. Ante- and postmortem cultures, including cerebrospinal fluid, were negative. Death was attributed to either a dystonic reaction or seizure resulting in aspiration of gastric contents.

Case 715. A 38-year-old depressed, diabetic woman took an unknown number of pills. She initially refused to reveal what medications had been ingested. Six hours after a medical evaluation, she was discharged to a mental health facility. Two hours later, she became somnolent with slurred speech and was returned to the ED. It was then determined that she may have overdosed on **metformin,** an unidentified **sulfonylurea,** cephalexin, acetaminophen/hydrocodone, clonazepam, and ibuprofen. Laboratory results at that time were: glucose, 10 mg/dL; lactic acid, 20 mEq/L; arterial pH, 6.9; serum bicarbonate, 6 mEq/L. Treatment included 50% dextrose, sodium bicarbonate infusion, and hemodialysis against a bicarbonate bath. The patient became comatose. Postdialysis laboratory results were: pH, 6.97; lactic acid, 27 mEq/L; creatinine 1.9 mg/dL; and glucose, 300 mg/dL. Additional treatment included infusions of dextrose and bicarbonate, insulin, thiamine, and high-dose vasopressors. Despite this, lactic acidosis was refractory, and additional attempts at hemodialysis were not tolerated secondary to hypotension.

Case 716. A 29-year-old body-builder with a history of drug and alcohol abuse experienced sudden loss of consciousness and cardiopulmonary arrest after taking **1,4-butanediol** at a party with friends. He had apparently ''passed out'' 2 weeks before this event after an ingestion of the same product. He had fixed, dilated pupils on arrival to the ED, and within 2 hours began to have uncontrollable seizures and upward ocular deviation. Refractory seizures continued for 9 hours and were treated with lorazepam, phenytoin, and midazolam. His subsequent course was complicated by CT evidence of generalized edema, increased intracranial pressure, and diabetes insipidus.

Case 717. A 4-year-old boy with a history of AML treated with intrathecal methotrexate and possibly other chemotherapeutic agents, was given 300 to 650 mg of **disodium edetate** through a central venous line. He developed cardiorespiratory arrest. The ionized calcium level was 0.55 mmol/L.

Case 718. A 52-year-old man with a history of chronic **ethanol** abuse was brought to the ED presumably in a postictal state. He had been taking 4 mouthfuls of **gamma butyrolactone** every 4 hours for 8 months, according to his wife. Four days earlier, after his wife discarded his gamma butyrolactone supply, he began consuming large amounts of water and another dietary supplement obtained through the internet that also contained gamma butyrolactone. Admission laboratories were remarkable for a sodium of 107 mEq/L. He was treated with phenytoin. Within 24 hours, the patient developed coma with fixed, dilated pupils, and was noted to have cerebral edema. Despite intensive therapy, life support was withdrawn after a brain scan revealed no cerebral blood flow.

Case 725. A 38-year-old man with a history of depression was found dead in his bedroom. Five discarded enema bottles were present; two of these contained small amounts of residual dark fluid. Autopsy findings showed two partially-folded **transdermal nicotine patches** lodged in the esophagus and three patches in the stomach. The postmortem peripheral blood nicotine concentration was 106 μg/mL.

Case 736. A 30-year-old man maintained on methadone for heroin abuse underwent a rapid opioid detoxification procedure. Anesthesia was induced with propofol, midazolam, and ketamine. **Naltrexone** pellets were implanted subcutaneously on his abdomen, and parenteral opiate antagonists were administered. The patient was then discharged to a hotel room. A visiting nurse administered somatostatin, acetaminophen, diphenhydramine, and trazodone the next day. He was found unresponsive on the third day and transported to an emergency department. He was in respiratory distress and required intubation. Vital signs were: blood pressure, 170/100 mm Hg; heart rate, 140 beats/min; and temperature, 40°C. Subsequent complications included variceal bleeding, probable aspiration pneumonia, prerenal azotemia, multiple seizures, and cardiac arrest.

Case 745. A 73-year-old woman with a history of diabetes presented unresponsive after possibly ingesting up to 90 mL of **chloral hydrate** syrup. Her blood pressure on arrival was 125/58 mm Hg. Within 30 minutes, she developed frequent premature ventricular contractions which were treated with lidocaine. Bradycardia followed and was treated with atropine. After a ''do not resuscitate'' status was established, she experienced asystole and died.

Case 780. A 2-month-old boy was found dead at home by paramedics summoned by his mother. The autopsy revealed a urinary **cocaine** metabolite concentration of 2,506 ng/mL, and mild to moderate pulmonary congestion, without evidence of foul play or SIDS. Death was caused by cocaine toxicity possibly resulting from inhalation of free-base cocaine smoke. The death was ruled a homicide.

Case 834. A 20-year-old woman who recently arrived from Colombia was found unconscious, lying in emesis, in her hotel room. After naloxone was given in the ED, she became more responsive. She was febrile and had a blood pressure of 135/72 mm Hg and a heart rate of 120 to 130 beats/min. An abdominal radiograph showed numerous foreign bodies and a chest radiograph showed aspiration pneumonia. The urine drug screen was positive for opiates, marijuana, methadone, and cocaine. Whole bowel irrigation resulted in the passage of 99 intact bags containing pure **heroin** over the course of several days. Intermittent naloxone and intubation were required to maintain ventilation. Multiple complications developed, including adult respiratory distress syndrome, hypotension, subcutaneous emphysema, agitation, tachycardia, and ultimately asystole on the 17th hospital day.

Case 866. A 23-year-old man, with a history of intentional abuse of an unknown amount of ''Ecstasy'' (**methylenedioxymethamphetamine**) 2 days previously, was found in a hotel room incoherent, yet able to follow commands, with right-sided paralysis and aphasia. Vital signs were within normal limits, except that he was febrile. Drug screens were positive for barbiturates and amphetamines. Urine, blood, and CSF cultures were negative. A CT scan approximately 36 hours after admission showed a large left nonhemorrhagic infarct. Subsequent neurologic deterioration resulted in decerebrate posturing, with dilated, sluggishly reactive pupils. A repeat CT scan the next day revealed a thrombus in the left main carotid artery and a small gyral hemorrhage. The patient died 4 days later from cerebral edema and herniation.

Case 867. A 22-year-old man presented unresponsive after abusing **methylenedioxymethamphetamine** (MDMA, Ecstasy), **ethanol** and **alprazolam** with a friend. Vital signs were: temperature, 41.7°C; heart rate, 192 beats/min; and blood pressure, 93/65 mm Hg. Complications included hypoglycemia, rhabdomyolysis, and disseminated intravascular coagulation. Treatment included intubation, dextrose, sodium bicarbonate, fresh frozen plasma, phytonadione and vasopressors. He remained unresponsive and hemodynamically unstable, and was declared brain dead 36 hours after admission. Antemortem methylenedioxyamphetamine and methylenedioxymethamphetamine serum concentrations were 0.02 μg/mL and 0.82 μg/mL, respectively.

Case 868. A 17-year-old girl intentionally ingested an unknown substance in a suicide attempt. She presented to the hospital with chest pain, dizziness, vertigo, and drowsiness. She was afebrile with a blood pressure of 103/50 mm Hg, heart rate of 60 beats/min and respiratory rate of 40 breaths/min. The ECG showed third-degree AV block. Treatment included fluids, atropine, and antibiotics. Laboratory results were: potassium, 8.9 mEq/L; digoxin, 4.2 ng/mL; and WBC, 20,900/μL. She developed a ventricular dysrhythmia that did not respond to ACLS protocols. Using a different assay, the medical examiner reported the digoxin concentration as 2.0 ng/mL. This finding suggested the presence of a nondigoxin **cardiac glycoside (topical aphrodisiac).**