



# 1991 Annual Report of the American Association of Poison Control Centers National Data Collection System

TOBY L. LITOVITZ, MD, KAREN C. HOLM, MA,  
KATHLEEN M. BAILEY, MD, BARBARA F. SCHMITZ, RN, CSPI

From the Data Collection Committee, American Association of Poison Control Centers.

The authors acknowledge the generous contribution of Micromedex, Inc, to the programming and processing of this annual report.

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; Los Angeles County Medical Association Regional Poison Control Center, Los Angeles, CA; San Francisco Bay Area Regional Poison Control Center, San Francisco, CA; University of California Davis Medical Center Regional Poison Control Center, Sacramento, CA; University of California Irvine Regional Poison Center, Orange, CA; San Diego Regional Poison Center, San Diego, CA; Fresno Regional Poison Control Center, Fresno, CA; Santa Clara Valley Medical Center Regional Poison Center, San Jose, CA; Rocky Mountain Poison and Drug Center, Denver, CO; National Capital Poison Center, Washington, DC; Florida Poison Information Center, Tampa, FL; Georgia Poison Center, Atlanta, GA; Idaho Poison Control Center, Boise, ID; Indiana Poison Center, Indianapolis, IN; St Luke's Poison Center, Sioux City, IA; Mid-America Poison Control Center, Kansas City, KS; Kentucky Regional Poison Center of Kosair Children's Hospital, Louisville, KY; Maryland Poison Center, Baltimore, MD; Massachusetts Poison Control System, Boston, MA; Children's Hospital of Michigan Poison Control Center, Detroit, MI; Blodgett Regional Poison Center, Grand Rapids, MI; Saginaw Region Poison Center, Saginaw, MI; Hennepin Regional Poison Center, Minneapolis, MN; Minnesota Regional Poison Center, St Paul, MN; Cardinal Glennon Children's Hospital Regional Poison Center, St Louis, MO; The Poison Center, Omaha, NE; New Hampshire Poison Information Center, Hanover, 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; Long Island Regional Poison Control Center, East Meadow, NY; Hudson Valley Poison Center, Nyack, NY; Finger Lakes Regional Poison Center, Rochester, NY; Central New York Poison Control Center, Syracuse, NY; Western New York Regional Poison Control Center, Buffalo, NY; Triad Poison Center, Greensboro, NC; North Dakota Poison Information Center, Fargo, ND; Central Ohio Poison Center, Columbus, OH; Cincinnati Drug and Poison Information Center, Cincinnati, OH; Western Ohio Poison and Drug Information Center, Dayton, OH; Akron Regional Poison Center, Akron, OH; Greater Cleveland Poison Control Center, Cleveland, OH; Mahoning Valley

Poison Center, Youngstown, OH; Stark County Poison Control Center, Canton, OH; Oregon Poison Center, Portland, OR; Pittsburgh Poison Center, Pittsburgh, PA; The Poison Control Center, Philadelphia, PA; Northwest Regional Poison Center, Erie, PA; Central Pennsylvania Poison Center, Hershey, PA; Lehigh Valley Poison Center, Allentown, PA; Susquehanna Poison Center, Danville, PA; Keystone Region Poison Center, Altoona, PA; Hamot Poison Information Center, Erie, PA; Rhode Island Poison Center, Providence, RI; McKennan Poison Control Center, Sioux Falls, SD; Middle Tennessee Regional Poison and Clinical Toxicology Center, Nashville, TN; Southern Poison Center, Inc, Memphis, TN; North Texas Poison Center, Dallas, TX; Texas State Poison Center, Galveston, TX; Intermountain Regional Poison Control Center, Salt Lake City, UT; Virginia Poison Center, Richmond, VA; Blue Ridge Poison Center, Charlottesville, VA; Seattle Poison Center, Seattle, WA; Mary Bridge Poison Center, Tacoma, WA; Spokane Poison Center, Spokane, WA; Central Washington Poison Center, Yakima, WA; West Virginia Poison Center, Charleston, WV; University of Wisconsin Hospital Regional Poison Center, Madison, WI; Milwaukee Poison Center, Milwaukee, WI; Green Bay Poison Center, Green Bay, WI.

©1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992 by the American Association of Poison Control Centers. Published by permission. All rights reserved.

Reprints are available at a cost of \$10 each. Address requests to AAPCC, 3800 Reservoir Rd, NW, Washington, DC 20007.

**TABLE 1.** Growth of the AAPCC National Data Collection 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
Total			10,649,272	

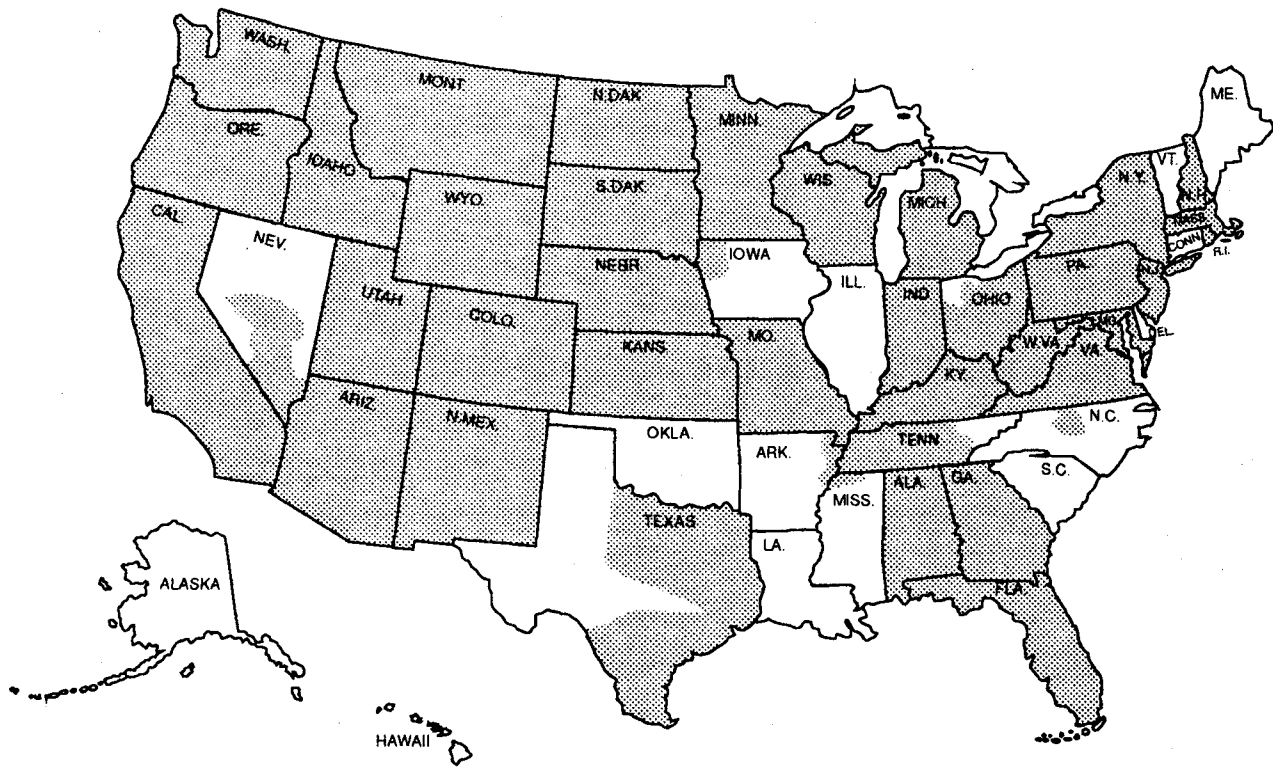


FIGURE 1. Seventy-three poison centers participated in the Data Collection System in 1991. The shaded areas denote regions served by reporting centers.

The American Association of Poison Control Centers (AAPCC) National Data Collection System has demonstrated steady growth since its inception in 1983, with annual increases in the number of participating poison centers, population served by those centers, and reported human exposures (Table 1).<sup>1-8</sup> This report includes 1,837,939 human exposure cases reported by 73 participating poison centers during 1991, an increase of 7.3% over 1990 poisoning reports. The cumulative AAPCC database now contains 10.6 million human poison exposure cases.

#### CHARACTERIZATION OF PARTICIPATING CENTERS

Of the 73 reporting centers, 69 submitted data for the entire year. Thirty-eight of the 73 centers were certified as regional poison centers by the AAPCC. Annual center call volumes (human exposure cases only) ranged from 2,190 to 72,326 (mean, 25,177). Center penetrance ranged from 3.3 to 17.7/1,000 with a mean of 9.2 reported exposures/1,000 population. Penetrance is defined as the number of

human poison exposure cases reported to a center divided by the population served by that center.

A total population of 200.7 million was served by the participating centers including portions of 40 states and the District of Columbia (Figure 1). Noting the 249.6 million 1991 US population, the data presented represent an estimated 80.4% of the human poison exposures that precipitated poison center contacts in the United States during 1991. Extrapolating from the 1,837,939 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 1991. However, extrapolations from the number of reported poisonings to the number of actual poisonings occurring annually in the United States 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 17.7 poisonings/1,000 population reported for one state, then 4.4 million poisonings would have been reported to poison centers in 1991. Because of the annual growth of this data collection system, with increasing center participation from year to year, the data do not directly identify a trend in the overall incidence of poisonings in the United States. However, an analysis of data from 63 centers that participated for the entirety of 1990 and 1991 indicates a 3.3% increase in reported poison exposures from 1990 to 1991 within the regions served by these 63 centers. This increase may actually reflect greater public awareness of poison center services rather than an increase in poisonings.

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

	Site of Caller (%)	Site of Exposure (%)
Residence	80.7	92.0
Workplace	1.5	2.5
Health care facility	15.6	0.6
School	0.7	0.9
Other	1.2	2.1
Unknown	0.4	1.8

#### REVIEW OF THE DATA

Of the 1,837,939 human exposures reported in 1991, 92.0% occurred in the home (Table 2). Two unlikely sites of poisonings, health care facilities and schools, accounted for 11,311 (0.6%) and 16,434 (0.9%) poison exposures, respectively. Poison center peak call volumes were noted from 4:00 to 10:00 pm, although call frequency remained consistently high between 9:00 am and 11:00 pm, with 85% of calls logged during this 14-hour period.

**TABLE 3.** Age and Sex Distribution of Human Poison Exposure Cases

Age (yr)	Male		Female		Unknown		Total		Cumulative Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
<1	75,339	4.1	69,201	3.8	1,638	0.1	146,178	8.0	146,178	8.0
1	181,667	9.9	158,699	8.6	2,030	0.1	342,396	18.6	488,574	26.6
2	185,337	10.1	161,542	8.8	2,044	0.1	348,923	19.0	837,497	45.6
3	86,411	4.7	72,109	3.9	1,005	0.1	159,525	8.7	997,022	54.2
4	37,242	2.0	30,065	1.6	479	0.0	67,786	3.7	1,064,808	57.9
5	20,175	1.1	16,102	0.9	248	0.0	36,525	2.0	1,101,333	59.9
6-12	57,870	3.1	43,892	2.4	938	0.1	102,700	5.6	1,204,033	65.5
13-19	43,069	2.3	61,388	3.3	449	0.0	104,906	5.7	1,308,939	71.2
20-29	57,796	3.1	67,487	3.7	419	0.0	125,702	6.8	1,434,641	78.1
30-39	46,970	2.6	59,746	3.3	274	0.0	106,990	5.8	1,541,631	83.9
40-49	23,531	1.3	33,171	1.8	132	0.0	56,834	3.1	1,598,465	87.0
50-59	10,566	0.6	15,917	0.9	53	0.0	26,536	1.4	1,625,001	88.4
60-69	7,341	0.4	12,177	0.7	45	0.0	19,563	1.1	1,644,564	89.5
70-79	4,647	0.3	8,565	0.5	31	0.0	13,243	0.7	1,657,807	90.2
80-89	2,132	0.1	5,014	0.3	16	0.0	7,162	0.4	1,664,969	90.6
90-99	399	0.0	1,029	0.1	5	0.0	1,433	0.1	1,666,402	90.7
Unknown	69,055	3.8	93,879	5.1	8,603	0.5	171,537	9.3	1,837,939	100.0
Total	909,547	49.5	909,983	49.5	18,409	1.0	1,837,939	100.0	1,837,939	100.0

The age and sex distribution of human poison exposure victims is outlined in Table 3. Children younger than 3 years of age were involved in 45.6% of cases; 59.9% of cases occurred in children younger than 6 years. A male predominance is found among poison exposure victims younger than 13 years, but the gender distribution is reversed in teenagers and adults. Table 4 gives the age and sex distribution for the 764 reported fatalities. Although responsible for the majority of poisoning reports, children younger than 6 years comprised only 5.8% (44) of the fatalities. Of concern, the number of reported pediatric poisoning fatalities increased from 25 deaths in 1990 to 44 deaths in 1991.

A single substance was implicated in 90.7% of reports, and 4.2% of patients were exposed to more than two possibly poisonous drugs or products (Table 5). Most cases of human exposure were acute (97.9%), as were most poison-related fatalities (86.0%). (Chronic exposures were arbitrarily defined as repeated exposures to the same toxic substance or a single exposure lasting longer than 8 hours.)

The vast majority (87.4%) of poison exposures were accidental; suicidal intent was present in 7.2% of cases (Table 6). Of cases with suicidal intent, 28.9% occurred in patients who were 13 through 19 years of age. Accidental poisonings outnumbered intentional poisonings in all age groups except 13- to 17-year-olds, in whom they were nearly equal (Table 7). In contrast, of the 764 human poisoning fatalities reported, 79% of adult deaths (older than 17 years) were intentional (Table 8).

Ingestions accounted for 76.3% of exposure routes (Table 9), followed in frequency by dermal, ophthalmic, inhalation, bites and stings, and parenteral exposures. For the 764 fatalities, ingestion and inhalation were the predominant exposure routes.

Table 10 displays the symptom assessment at the time of the initial call to the participating poison center. In addition to the 28.2% of patients with initial symptoms clearly related to the exposure, symptoms developed during the subsequent course in 18,939 initially asymptomatic patients. Thus, symptoms definitely related to the exposure eventually developed in at least 29.3% of patients.

**TABLE 4.** Distribution of Age and Sex for 764 Fatalities

Age (yr)	Male	Female	Unknown	Total	%	Cumulative Total	Cumulative %
<1	1	4	0	5	0.7	5	0.7
1	9	8	0	17	2.2	22	2.9
2	8	5	0	13	1.7	35	4.6
3	4	1	0	5	0.7	40	5.2
4	1	0	0	1	0.1	41	5.4
5	2	1	0	3	0.4	44	5.8
6-12	2	2	0	4	0.5	48	6.3
13-19	37	27	0	64	8.4	112	14.7
20-29	67	52	0	119	15.6	231	30.2
30-39	98	81	0	179	23.4	410	53.7
40-49	50	64	0	114	14.9	524	68.6
50-59	36	31	0	67	8.8	591	77.4
60-69	34	21	0	55	7.2	646	84.6
70-79	24	29	0	53	6.9	699	91.5
80-89	14	19	0	33	4.3	732	95.8
90-99	6	5	0	11	1.4	743	97.3
Unknown adult	12	8	1	21	2.8	764	100.0
Total	405	358	1	764	100.0		

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

No. of Substances	No. of Cases	% of Cases
1	1,666,684	90.7
2	92,378	5.0
3	67,662	3.7
4	5,693	0.3
5	2,294	0.1
6	935	0.1
7	476	0.0
8	219	0.0
9	136	0.0
≥10	391	0.0
Unknown	1,071	0.1
Total	1,837,939	100.0

**TABLE 6.** Reason for Human Exposure Cases

	Reason	No.	%
<i>Accidental</i>	General	1,443,202	78.5
	Misuse*	98,373	5.4
	Occupational	36,859	2.0
	Environmental	25,588	1.4
	Unknown	2,485	0.1
	Total	1,606,507	87.4
<i>Intentional</i>	Suicidal	131,707	7.2
	Misuse†	27,581	1.5
	Abuse‡	18,884	1.0
	Unknown	16,025	0.9
	Total	194,197	10.6
<i>Adverse Reaction</i>	Drug	19,143	1.0
	Food	7,392	0.4
	Other	3,509	0.2
	Total	30,044	1.6
<i>Unknown</i>		7,191	0.4
Total		1,837,939	100.0

\* Improper use of a substance where therapeutic or beneficial results were intended, eg, an overdose occurring because both parents gave the same medication to a child and neither was aware (at the time) of the other's action or a case in which misreading the label of a product results in an unintended exposure.

† Intentional incorrect use of a substance in which psychotropic effect was not sought, eg, intentional excessive dosing to obtain a more rapid or superior pharmacologic effect for presumed "therapeutic" purposes.

‡ Improper use of a substance in which the patient was seeking a psychotropic effect.

**TABLE 7.** Distribution of Reason for Exposure by Age

Reason	<6 Years		6-12 Years		13-17 Years		18-64 Years		>64 Years		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Accidental	1,093,264	59.5	93,941	5.1	39,874	2.2	223,533	12.2	25,409	1.4	130,486	7.1	1,606,507	87.4
Intentional	2,583	0.1	6,391	0.3	40,286	2.2	114,451	6.2	3,338	0.2	27,148	1.5	194,197	10.6
Adverse reaction	3,437	0.2	1,812	0.1	1,598	0.1	14,361	0.8	1,564	0.1	7,272	0.4	30,044	1.6
Unknown	784	0.0	556	0.0	757	0.0	2,877	0.2	419	0.0	1,798	0.1	7,191	0.4
Total	1,100,068	59.9	102,700	5.6	82,515	4.5	355,222	19.3	30,730	1.7	166,704	9.1	1,837,939	100.0

**TABLE 8.** Distribution of Reason for Exposure and Age for 764 Fatalities

Reason	<6 Years	6-12 Years	13-17 Years	>17 Years	Total
<i>Accidental</i>					
General	30	0	0	8	38
Environmental	6	3	1	20	30
Misuse	3	1	2	29	35
Occupational	0	0	0	12	12
Unknown	0	0	0	2	2
Total	39	4	3	71	117
<i>Intentional</i>					
Suicide	0	0	23	385	408
Misuse	1	0	0	24	25
Abuse	0	0	16	66	82
Unknown	0	0	5	56	61
Total	1	0	44	531	576
<i>Adverse reaction</i>	2	0	0	15	17
<i>Unknown</i>	2	0	1	51	54
Total	44	4	48	668	764

**TABLE 9.** Distribution of Route of Exposure for Human Poison Exposure Cases and 764 Fatalities

Route	All Exposure Cases		Fatal Exposure Cases	
	No.	%	No.	%
Ingestion	1,473,361	76.3	622	75.7
Dermal	143,196	7.4	8	1.0
Ophthalmic	119,027	6.2	2	0.2
Inhalation	107,634	5.6	116	14.1
Bites and stings	72,331	3.7	5	0.6
Parenteral	5,217	0.3	37	4.5
Other	4,917	0.3	3	0.4
Unknown	6,423	0.3	29	3.5
Total	1,932,106	100.0	822	100.0

NOTE. Multiple routes of exposure were observed in many poison exposure victims. Percentage is based on the total number of exposure routes (1,932,106 for all patients; 822 for fatal cases) rather than the total number of human exposures (1,837,939) or fatalities (764).

**TABLE 10.** Symptom Assessment at Time of Initial Call to Poison Center

Symptom Assessment	No.	%
Asymptomatic	1,159,054	63.1
Symptomatic, related to exposure	518,912	28.2
Symptomatic, unrelated to exposure	31,915	1.7
Symptomatic, unknown if related	89,008	4.8
Unknown	39,050	2.1
Total	1,837,939	100.0

**TABLE 11.** Management Site of Human Poison Exposure Cases

Site	No.	%
Non-health care facility	1,316,605	71.6
Health care facility		
Already there when poison center called	244,544	13.3
Referred by poison center	231,053	12.6
Other/unknown	45,737	2.5
Total	1,837,939	100.0

**TABLE 12.** Medical Outcome of Human Poison Exposure Cases by Patient Age

Outcome	<6 Years		6-12 Years		13-17 Years		>17 Years		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
No effect	388,537	21.1	21,437	1.2	15,177	0.8	62,663	3.4	2,607	0.1	490,421	26.7
Minor effect	146,567	8.0	29,288	1.6	30,510	1.7	197,915	10.8	5,257	0.3	409,537	22.3
Moderate effect	5,645	0.3	1,704	0.1	3,920	0.2	29,785	1.6	559	0.0	41,613	2.3
Major effect	548	0.0	105	0.0	426	0.0	4,677	0.3	56	0.0	5,812	0.3
Death	44	0.0	4	0.0	48	0.0	668	0.0	0	0.0	764	0.0
Unknown, nontoxic*	467,021	25.4	34,773	1.9	15,318	0.8	96,793	5.3	10,230	0.6	624,135	34.0
Unknown, potentially toxic†	74,112	4.0	12,221	0.7	14,927	0.8	109,541	6.0	5,925	0.3	216,726	11.8
Unrelated effect	16,611	0.9	3,089	0.2	2,098	0.1	24,664	1.3	458	0.0	46,920	2.6
Unknown	983	0.1	79	0.0	91	0.0	537	0.0	321	0.0	2,011	0.1
Total	1,100,068	59.9	102,700	5.6	82,515	4.5	527,243	28.7	25,413	1.4	1,837,939	100.0

\* No follow-up provided because exposure was assessed as nontoxic.

† Patient lost to follow-up. Exposure was assessed as potentially toxic.

**TABLE 13.** Distribution of Medical Outcome by Reason for Exposure for Human Poison Exposure Victims

Outcome	Accidental		Intentional		Adverse Reaction		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
No effect	455,084	24.8	33,870	1.8	821	0.0	646	0.0	490,421	26.7
Minor effect	327,546	17.8	68,088	3.7	12,346	0.7	1,557	0.1	409,537	22.3
Moderate effect	23,171	1.3	16,179	0.9	1,685	0.1	578	0.0	41,613	2.3
Major effect	1,438	0.1	4,091	0.2	115	0.0	168	0.0	5,812	0.3
Death	117	0.0	576	0.0	17	0.0	54	0.0	764	0.0
Unknown, nontoxic	600,723	32.7	17,120	0.9	5,220	0.3	1,072	0.1	624,135	34.0
Unknown, potentially toxic	157,834	8.6	50,755	2.8	5,815	0.3	2,322	0.1	216,726	11.8
Unrelated effect	38,921	2.1	3,257	0.2	3,989	0.2	753	0.0	46,920	2.6
Unknown	1,673	0.1	261	0.0	36	0.0	41	0.0	2,011	0.1
Total	1,606,507	87.4	194,197	10.6	30,044	1.6	7,191	0.4	1,837,939	100.0

TABLE 14. Therapy Provided in Human Exposure Cases

Therapy	No.
Initial decontamination	
Dilution	653,687
Irrigation/washing	366,557
Activated charcoal	129,203
Cathartic	107,556
Ipecac syrup	95,124
Gastric lavage	58,677
Other emetic	4,239
Measures to enhance elimination	
Alkalinization (with or without diuresis)	7,092
Hemodialysis	692
Forced diuresis	500
Hemoperfusion (charcoal)	124
Exchange transfusion	106
Acidification (with or without diuresis)	99
Hemoperfusion (resin)	38
Peritoneal dialysis	11
Specific antidote administration	
Naloxone	7,136
N-acetylcysteine (oral)	7,075
Atropine	923
Deferoxamine	901
Antivenin	579
Ethanol	540
Hydroxocobalamin	384
N-acetylcysteine (IV)	250
Pralidoxime (2-PAM)	248
Fab fragments	241
Pyridoxine	227
Physostigmine	226
Dimercaprol (BAL)	146
Methylene blue	117
Cyanide antidote kit	99
EDTA	94
Penicillamine	86

The majority of cases reported to poison centers were managed in a non-health care facility (71.6%), usually at the site of exposure, the patient's own home (Table 11). Treatment in a health care facility was rendered or recommended in 25.9% of cases. Of these, 52.0% involved treatment and release, 18.3% involved admission for medical care, and 3.5% involved admission for psychiatric treatment; 7.8% refused referral and 18.3% were lost to follow-up.

Table 12 displays the medical outcome of the human poison exposure victims distributed by age, emphasizing the more severe outcome observed in the older age groups. Table 13 compares medical outcome and reason for exposure, emphasizing the greater frequency of serious outcome in intentional exposures.

Table 14 outlines the use of initial 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 5.2% of cases. In children, ipecac syrup was most often administered outside a health care facility (Table 15). This pattern was reversed in adults.

A summary of the 764 fatal exposures is presented in Table 16. As part of a standard quality assurance activity, 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. Confirmation of the cause of death by a postmortem report was obtained in 22% of cases. The highest blood level of implicated substances is provided where available to the reporting poison center. Cases with prehospital cardiac

TABLE 15. Ipecac Administration by Site and Age

Age (yr)	Non-Health Care Facility		Health Care Facility		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%
<1	1,002	1.1	1,184	1.2	9	0.0	2,195	2.3
1	11,414	12.0	6,876	7.2	55	0.1	18,345	19.3
2	20,522	21.6	11,312	11.9	84	0.1	31,918	33.6
3	9,515	10.0	4,743	5.0	44	0.0	14,302	15.0
4	3,140	3.3	1,557	1.6	10	0.0	4,707	4.9
5	1,083	1.1	579	0.6	4	0.0	1,666	1.8
6-12	1,174	1.2	972	1.0	10	0.0	2,156	2.3
13-17	229	0.2	5,353	5.6	5	0.0	5,587	5.9
>17	782	0.8	12,907	13.6	24	0.0	13,713	14.4
Unknown	201	0.2	331	0.3	3	0.0	535	0.6
Total	49,062	51.6	45,814	48.2	248	0.3	95,124	100.0

or respiratory arrests are indicated. Prehospital arrests occurred in 32% of all fatalities. Selected abstracts are provided in the appendix.

Eleven children died following the accidental ingestion of iron supplements, more than twice the number of pediatric fatalities from iron poisoning reported to this database in 1990. Furthermore, these iron fatalities accounted for 65% of the unintentional pediatric pharmaceutical ingestion fatalities reported in 1991, up from 30% of unintentional pediatric pharmaceutical ingestion fatalities reported in 1983 through 1990. Pediatric deaths from aspiration of hydrocarbons (gasoline, kerosene, lamp oil, charcoal lighter fluid) were also increased in 1991. In adults and teenagers, an increased frequency of deaths from ethylene glycol, toilet bowl cleaners, MAO inhibitors, and isoniazid was also noted in 1991.

Tables 17 and 18 provide comprehensive demographic data on patient age, reason for exposure, medical outcome, and use of a health care facility for all 1,837,939 exposures, presented by category. Table 17 focuses on nonpharmaceuticals; Table 18 presents drugs. Of the 1,939,327 substances logged in Tables 17 and 18, 58.0% were nonpharmaceuticals and 42.0% were pharmaceuticals. The reason for the exposure was intentional for 25.6% of pharmaceutical substances implicated compared with only 4.0% of nonpharmaceutical substances. Correspondingly, treatment in a health care facility was provided in a higher percentage of pharmaceutical substances (39.2%) compared with nonpharmaceutical substances (20.4%). Pharmaceutical exposures also had more severe outcomes. Of substances implicated in fatal cases, 73.4% were pharmaceuticals (compared with only 42.0% in nonfatal cases). Similarly, 76.0% of substances implicated in major outcomes were pharmaceuticals.

Table 19 displays substance category data for accidental exposures, allowing an assessment of the severity of this subset of exposure cases.

A breakdown of plant exposures is provided for those most commonly implicated (Table 20). The reader is cautioned to interpret this as frequency of involvement of plants in calls to poison centers with no correlation to severity of toxicity. Indeed, several of the plants on this list pose little, if any, ingestion hazard.

Table 21 presents the most common substance categories listed by frequency of exposure. Table 22 lists the substance categories with the largest number of reported deaths.

Table 23 demonstrates a continued decline in the use of ipecac-induced emesis in the treatment of poisoning and a corresponding increase in the use of activated charcoal. A remarkable chronologic constancy of selected demographic data elements is demonstrated in Table 24, despite the considerable overall growth of the data collection system.

In closing, we gratefully acknowledge the extensive contribution of time, effort, and case reports by each of the participating poison centers. The quality of the data submitted reflects their meticulous data collection. Further, we applaud the emergency physicians, nurses, and others who gathered and transmitted comprehensive data to the poison centers for inclusion in this database.

**TABLE 16. Summary of Fatal Exposures**

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
<b>Adhesives/glues/cements/paste</b>					
1†*	25 yr	Adhesive spray (isobutane/propane/acetone)	Inhalation	Acc occup	
<b>Alcohols</b>					
2†	54 yr	Canned fuel (methanol)	Ingestion	Int abuse	103 mg/dL
3	55 yr	Canned fuel (methanol)	Ingestion	Int abuse	
4††	28 yr	Ethanol	Ingestion	Int abuse	
5	39 yr	Ethanol	Ingestion	Int unknown	720 mg/dL
6	52 yr	Ethanol	Ingestion	Unknown	
7‡	54 yr	Ethanol	Ingestion	Int unknown	466 mg/dL
8‡	31 yr	Ethanol	Ingestion	Int misuse	152 mg/dL§ 47 µg/mL§ <sup>  </sup> acetaminophen/propoxyphene propoxyphene 0.63 µg/mL§ norpropoxyphene 0.88 µg/mL§
9	30 yr	Ethanol cocaine	Unknown	Unknown	290 mg/dL
10	>17 yr	Ethanol diphenhydramine	Ingestion	Int suicide	373 mg/dL
11	54 yr	Isopropanol	Ingestion	Int unknown	
12	84 yr	Isopropanol (rubbing alcohol with methylsalicylate)	Ingestion	Int suicide	
13	29 yr	Methanol	Ingestion	Int suicide	256 mg/dL
14	33 yr	Methanol	Ingestion	Unknown	243 mg/dL
15	34 yr	Methanol	Ingestion	Int suicide	352 mg/dL
16	34 yr	Methanol	Ingestion	Int suicide	154 mg/dL
17‡	38 yr	Methanol	Ingestion	Int abuse	178 mg/dL
18	46 yr	Methanol	Ingestion	Int suicide	97 mg/dL
19‡	48 yr	Methanol	Ingestion	Int abuse	
20	29 yr	Methanol alprazolam	Ingestion	Int suicide	210 mg/dL
21‡	26 yr	Rubbing alcohol (ethanol 70%)	Ingestion	Int misuse	497 mg/dL
<i>See also cases 51, 52, 53, 64, 73, 87, 99, 128, 129, 143, 144, 158, 181, 193, 222, 229, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 253, 257, 260, 269, 270, 273, 309, 312, 313, 314, 315, 323, 359, 393, 394, 402, 416, 441, 464, 465, 485, 506, 507, 508, 518, 519, 625, 652, 688, 693, 725, 726, 727, 728, 729, 732, 736, 739, 751, 763 (ethanol); 313 (ethanol mouthwash); 678 (isopropanol).</i>					
<b>Arts/crafts/office supplies</b>					
22*	70 yr	Ceramic glaze (lead)	Ingestion	Int suicide	238 µg/dL
<b>Automotive/aircraft/boat products</b>					
23‡	25 yr	Antifreeze (unknown type)	Ingestion	Int suicide	
24†*	20 yr	Automotive antifreeze (methanol)	Ingestion	Acc misuse	143 mg/dL
25	20 yr	Automotive antifreeze (methanol)	Ingestion	Int abuse	117 mg/dL
26	32 yr	Ethylene glycol antifreeze	Ingestion	Unknown	
27‡	39 yr	Ethylene glycol antifreeze	Ingestion	Int suicide	
28‡	53 yr	Ethylene glycol antifreeze	Ingestion	Acc misuse	
29*	56 yr	Ethylene glycol antifreeze	Ingestion	Acc misuse	176 mg/dL
30	61 yr	Ethylene glycol antifreeze	Ingestion	Int suicide	5 mg/dL
31‡	63 yr	Ethylene glycol antifreeze	Ingestion	Acc misuse	
32	>17 yr	Gasoline additive (methanol 99%)	Ingestion	Int abuse	456 mg/dL
33*	27 yr	Radiator flush solution (sodium bichromate 0.7%/sodium silicate 9%/soda ash 3.9%/ammonium hydroxide 3%/sodium metasilicate 1%/trisodium phosphate 1%)	Ingestion	Int suicide	
34	85 yr	Windshield deicing fluid (methanol)	Ingestion	Int suicide	38 mg/dL
35	42 yr	Windshield washer solvent (methanol)	Ingestion	Int suicide	127 mg/dL
36†	53 yr	Windshield washer solvent (methanol)	Ingestion	Int abuse	476 mg/dL§
37*	>17 yr	Windshield washer solvent (methanol)	Ingestion	Int suicide	206 mg/dL
<i>See also cases 316 (ethylene glycol antifreeze); 386 (brake fluid).</i>					
<b>Bites and envenomations</b>					
38‡	5 yr	Hymenoptera	Bite/sting	Acc gen	
39‡	39 yr	Hymenoptera	Bite/sting	Adv rxn	
40‡	42 yr	Hymenoptera	Bite/sting	Acc occup	
41	29 yr	Hymenoptera lidocaine	Bite/sting/ Paren	Adv rxn	
<i>See also case 691 (unknown rattlesnake).</i>					
<b>Chemicals</b>					
42	23 yr	Acrylamide (35%)	Ingestion	Int suicide	
43	30 yr	Antimony gold cyanide complex	Ingestion	Int suicide	
44	24 yr	Cyanide	Ingestion	Unknown	1.06 µg/mL§
45†*	33 yr	Cyanide	Ingestion	Int suicide	82 µg/mL§
46‡	40 yr	Cyanide, potassium	Ingestion	Int suicide	
47†*	53 yr	Cyanide, potassium	Ingestion	Int suicide	
48	54 yr	Cyanide	Ingestion	Int suicide	
49‡	>17 yr	Cyanide, sodium	Unknown	Int suicide	
50‡	>17 yr	Cyanide, sodium	Unknown	Int suicide	

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
51‡	27 yr	Cyanide potassium ethanol	Ingestion	Int suicide	
52‡*	35 yr	Cyanide ethanol	Ingestion	Int suicide	
53‡*	36 yr	Cyanide, sodium ethanol	Ingestion	Int suicide	53.2 µg/mL§ 160 mg/dL§
54	36 yr	Cyanide gold salts	Ingestion	Int suicide	
55	32 yr	Ethylene glycol	Ingestion	Int suicide	40 mg/dL
56	33 yr	Ethylene glycol	Ingestion	Int suicide	
57	37 yr	Ethylene glycol	Ingestion	Int suicide	
58	42 yr	Ethylene glycol	Ingestion	Int unknown	
59	55 yr	Ethylene glycol	Ingestion	Int unknown	73 mg/dL
60	60 yr	Ethylene glycol	Ingestion	Int abuse	>24 h
61	65 yr	Ethylene glycol	Ingestion	Int unknown	
62	70 yr	Ethylene glycol	Ingestion	Unknown	212 mg/dL
63	75 yr	Ethylene glycol	Ingestion	Int suicide	384 mg/dL
64	25 yr	Ethylene glycol ethanol	Unknown	Int unknown	106 mg/dL
65*	72 yr	Formalin	Other	Acc misuse	
66*	50 yr	Hydrofluoric acid (30%)	Derm/Inh/ Ocular	Acc occup	
67	28 yr	Methyl ethyl ketones	Derm/Inh	Acc occup	
68	30 yr	Methyl formaldehyde	Inhalation	Unknown	
69	91 yr	Nitric acid	Ingestion	Int suicide	
70*	4 mo	Phenol (89%)	Parenteral	Acc misuse	255 µg/mL§
71*	2 yr	Sodium hydroxide (50%)	Ingestion	Acc gen	
72	35 yr	Sulfuric acid (90%) caustic soda (NaOH 50%)	Dermal	Acc occup	
73	20 yr	Sulfuric acid ethanol	Derm/Ing/ Inh/Oc	Unknown	65 mg/dL§

See also cases 72 (caustic soda); 242 (ethylene glycol).

#### Cleaning substances

74*	16 mo	Agricultural cleaner (NaOH)	Ingestion	Acc gen	
75*	5 yr	Cleaner/degreaser (trichloroethane 80%/perchloroethylene 20%)	Inhalation	Int misuse	
76‡	17 yr	Cleaner/degreaser (freon 96%/isopropanol 3%)	Inhalation	Int abuse	
77	40 yr	Drain cleaner crystals (NaOH 54%)	Ingestion	Int suicide	
78	44 yr	Drain cleaner crystals (NaOH 54%)	Ingestion	Int suicide	
79	50 yr	Drain cleaner crystals (NaOH 54%)	Ingestion	Int suicide	
80	75 yr	Drain cleaner crystals (NaOH 54%)	Ingestion	Int suicide	
81	47 yr	Drain cleaner crystals (NaOH 54%) toilet bowl cleaner (HCl 9%)	Ingestion	Int suicide	
82	77 yr	Household cleaner (methylammonium chloride/ethylene tetraacetate)	Ingestion	Acc gen	
83	36 yr	Lye (NaOH)	Ingestion	Int suicide	
84‡	61 yr	Mildew stain remover (sodium hypochlorite 2.5%/NaOH 0.5-2%)	Inhalation	Acc environ	
85‡*	15 mo	Phenol disinfectant	Inhalation	Acc gen	
86	70 yr	Pine oil cleaner	Ing/inh	Int suicide	
87	65 yr	Radiator cleaner (acid ethanol)	Ingestion	Acc gen	211 mg/dL
88	71 yr	Rust remover (HF 6-8%) lighter fluid	Ingestion	Int suicide	
89‡*	2 yr	Toilet bowl cleaner (HCl 9%/cationic detergents 60%)	Derm/Ing	Unknown	
90	36 yr	Toilet bowl cleaner (HCl 23%)	Ingestion	Int suicide	
91	55 yr	Toilet bowl cleaner (HCl 23%)	Ingestion	Int suicide	
92	67 yr	Toilet bowl cleaner (HCl 9%)	Ingestion	Int suicide	
93	69 yr	Toilet bowl cleaner (HCl 15-18%)	Ingestion	Int suicide	
94	68 yr	Toilet bowl cleaner (HCl 9%) aspirin	Ingestion	Int suicide	
95	2 yr	Toilet ring remover (ammonium bifluoride 16%)	Ingestion	Acc gen	
96*	55 yr	Water stain remover (HF 4.7%)	Ingestion	Int suicide	fluoride 110 mg/L§
97	72 yr	Window cleaner (methanol)	Ingestion	Acc gen	57 mg/dL

See also cases 739 (rust remover); 81 (toilet bowl cleaner); 741 (unknown brush cleaner).

#### Cosmetics

See case 193 (nail polish remover).

#### Food poisoning

98\* 33 yr Palytoxin Ingestion Acc gen

#### Foreign bodies, toys and miscellaneous

99‡\* 29 yr Foreign body Ing/Inh Int abuse

(Continued on following page)



TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels	
		cocaine			0.34 µg/mL§	
					benzoylecgonine 3.14 µg/mL§	
		ethanol			46 mg/dL§	
Fumes, gases and vapors						
100†*	2 yr	Carbon monoxide	Inhalation	Acc environ	47%§	
101*	2 yr	Carbon monoxide	Inhalation	Acc environ	25.4%§	
102‡	3 yr	Carbon monoxide/smoke inhalation	Inhalation	Acc environ	28%§	
103‡	5 yr	Carbon monoxide	Inhalation	Acc environ	54%	
104†*	6 yr	Carbon monoxide	Inhalation	Acc environ	72%§	
105†*	10 yr	Carbon monoxide	Inhalation	Acc environ	40%	
106*	11 yr	Carbon monoxide	Inhalation	Acc environ	0.5%	
107†*	16 yr	Carbon monoxide	Inhalation	Acc environ		
108‡	23 yr	Carbon monoxide	Inhalation	Int suicide	38%	
109	24 yr	Carbon monoxide/smoke inhalation	Inhalation	Acc environ	38%	
110‡	24 yr	Carbon monoxide	Inhalation	Acc environ	60.6%§	
111‡	28 yr	Carbon monoxide	Inhalation	Acc environ	64%	
112‡	29 yr	Carbon monoxide	Inhalation	Unknown		
113‡	32 yr	Carbon monoxide	Inhalation	Int suicide	39%	
114‡	33 yr	Carbon monoxide	Inhalation	Acc environ	23.4%	
115‡	33 yr	Carbon monoxide	Inhalation	Int suicide	51.9%	
116‡	36 yr	Carbon monoxide	Inhalation	Int suicide	65%	
117‡	37 yr	Carbon monoxide	Inhalation	Int suicide		
118‡	42 yr	Carbon monoxide/smoke inhalation	Inhalation	Acc environ	14.5%	2 h
119	53 yr	Carbon monoxide	Inhalation	Int suicide		
120	62 yr	Carbon monoxide	Inhalation	Acc environ	1.9%	
121	76 yr	Carbon monoxide/smoke inhalation	Inhalation	Acc environ		
122‡	78 yr	Carbon monoxide	Inhalation	Int suicide	70%	
123†‡	79 yr	Carbon monoxide	Inhalation	Acc environ	72%§	
124†‡	82 yr	Carbon monoxide	Inhalation	Acc environ	75%§	
125	82 yr	Carbon monoxide/smoke inhalation	Inhalation	Acc environ	36.1%	
126	>17 yr	Carbon monoxide	Inhalation	Acc environ		
127‡	>17 yr	Carbon monoxide	Inhalation	Int suicide		
128	37 yr	Carbon monoxide ethanol	Ing/Inh	Int suicide	25% 289 mg/dL 55%	
129	44 yr	Carbon monoxide ethanol	Ing/Inh	Int suicide	>200 mg/dL	
130†*	14 yr	Chlorine generated by bleach and acid cleaner	Inhalation	Acc misuse		
131†*	64 yr	Chlorine generated by bleach and acid drain cleaner	Inhalation	Acc environ		
132‡	76 yr	Foam rubber/thermal degradation products	Inhalation	Acc environ		
133‡	25 yr	Hydrogen sulfide	Inhalation	Acc occup		
134‡	34 yr	Hydrogen sulfide	Derm/Inh	Acc occup		
135†*	38 yr	Hydrogen sulfide	Derm/Inh	Acc occup		
136	>17 yr	Hydrogen sulfide	Inhalation	Acc occup		
137‡	>17 yr	Hydrogen sulfide methane methanethiol	Inhalation	Acc environ		
138†*	39 yr	Methane	Inhalation	Acc occup		
139	35 yr	Methane sewage	Inhalation	Acc occup		
140‡	18 yr	Propane	Inhalation	Unknown		
141†*	2 yr	Smoke inhalation	Inhalation	Acc environ		
142‡	3 yr	Smoke inhalation carbon monoxide	Inhalation	Acc environ		
143‡	53 yr	Smoke inhalation carbon monoxide ethanol	Ing/Inh	Acc environ	35.3% 34.4% 336 mg/dL	2 h
144‡	40 yr	Smoke inhalation ethanol carbon monoxide	Ing/Inh	Acc environ	314 mg/dL§ 20.5%§	
145	81 yr	Smoke inhalation freon/thermal degradation products	Inhalation	Int misuse		
See also cases 142, 143, 144 (carbon monoxide); 145 (freon/degradation products); 137 (methane); 137 (methanethiol).						
Heavy metals						
146	44 yr	Chromium, hexavalent	Unknown	Acc occup		
147*	40 yr	Mercuric chloride	Ingestion	Int suicide	>20 µg/dL	
148†*	32 yr	Thallium	Ingestion	Int misuse	15 µg/dL	
Herbicides						
149*	25 yr	Paraquat	Ingestion	Acc gen		
150*	30 yr	Paraquat	Ingestion	Int suicide		
151	38 yr	Paraquat	Derm/Inh	Acc environ		
152*	41 yr	Paraquat	Ingestion	Int suicide	5 µg/mL	20 h

(Continued on following page)

13

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
<b>Hydrocarbons</b>					
153‡	14 yr	Buffer solution (trichloroethane)	Inhalation	Int abuse	
154‡	14 yr	Butane	Inhalation	Int abuse	
155‡	16 yr	Butane	Inhalation	Int abuse	
156	16 yr	Butane	Inhalation	Int abuse	
157‡	18 yr	Butane	Inhalation	Int abuse	
158‡	15 yr	Butane ethanol	Ing/Inh	Int abuse	
159*†	17 mo	Charcoal lighter fluid	Ing/Inh	Acc gen	
160‡	14 yr	Charcoal lighter fluid	Inhalation	Int abuse	
161‡	15 yr	Chewing gum remover, aerosol (unknown halogenated hydrocarbon)	Ing/Inh	Int unknown	
162‡	13 yr	Fabric protector, aerosol (trichloroethane)	Inhalation	Int abuse	
163‡	13 yr	Fabric protector, aerosol (trichloroethane)	Inhalation	Int abuse	7.4 µg/mL§
164‡	15 yr	Fabric protector, aerosol (trichloroethane)	Inhalation	Int abuse	5.3 µg/mL§
165‡	17 yr	Fabric protector, aerosol (trichloroethane)	Inhalation	Int abuse	3.3 µg/mL§
166‡	17 yr	Fabric protector, aerosol (trichloroethane)	Inhalation	Int abuse	
167‡	36 yr	Fabric protector, aerosol (trichloroethane)	Inhalation	Int unknown	
168*	3 yr	Fabric protector (mineral spirits)	Ing/Inh	Acc gen	
169‡	13 yr	Freon	Inhalation	Int unknown	
170‡	18 yr	Freon	Inhalation	Int abuse	
171‡	19 yr	Freon	Inhalation	Int abuse	
172‡	19 yr	Freon marijuana	Inhalation	Int abuse	
173*	82 yr	Furniture polish (mineral seal oil 99%)	Ing/Inh	Int suicide	
174*	15 mo	Gasoline	Ing/Inh	Acc gen	
175*†	2 yr	Gasoline	Ing/Inh	Acc gen	
176‡	18 yr	Gasoline	Ing/Inh	Int unknown	
177*†	16 yr	Halon	Inhalation	Int abuse	
178*†	11 mo	Kerosene	Ing/Inh	Acc gen	
179*	11 mo	Kerosene	Ing/Inh	Acc gen	
180*	2 yr	Kerosene	Ing/Inh	Acc gen	
181‡	70 yr	Kerosene ethanol	Ingestion	Int abuse	138 mg/dL
182*	11 mo	Lamp oil (liquid paraffin)	Ing/Inh	Acc gen	
183‡	15 yr	Leather cleaner (trichloroethane)	Inhalation	Int abuse	
184‡	13 yr	Nail polish drying solution (freon)	Inhalation	Int abuse	
185‡	83 yr	Paint thinner (mineral spirits 100%)	Ing/Inh	Int suicide	
186	87 yr	Waterless hand cleaner (mineral seal oil 40-50%)	Ing/Inh	Acc misuse	
See also case 88 (lighter fluid).					
<b>Insecticides and pesticides</b>					
187	80 yr	Acephate activated charcoal	Ing/Inh	Int suicide	
188*†	40 yr	Aluminum phosphide pellets	Ingestion	Int suicide	
189†	85 yr	Chlorpyrifos	Inhalation	Acc environ	
190	48 yr	Diazinon	Ingestion	Int suicide	2.5 µg/mL
191‡	61 yr	Diazinon	Ingestion	Unknown	
192	58 yr	Diazinon (25%) acetaminophen/codeine meprobamate	Ingestion	Int suicide	
193‡	21 yr	Diazinon/ xylene nail polish remover ethanol	Ingestion	Int suicide	1.5 µg/mL§ 10 mg/dL§ 0.11 mg/dL§
194	77 yr	Dimethoate	Ingestion	Int suicide	
195‡	66 yr	Lindane lotion	Ingestion	Int unknown	
196*	49 yr	Malathion	Ingestion	Int suicide	10 µg/mL§ malaoxon 0.5 µg/mL§
197	75 yr	Malathion	Unknown	Unknown	
198	81 yr	Malathion	Ingestion	Int unknown	
199‡	40 yr	Malathion diazepam cocaine	Ingestion	Int suicide	
200	33 yr	Organophosphate insecticide	Ingestion	Int suicide	
<b>Mushrooms</b>					
201*	90 yr	<i>Amanita</i> , species unknown	Ingestion	Acc gen	
202*	70 yr	Unknown mushroom	Ingestion	Acc gen	
<b>Plants</b>					
203*	95 yr	<i>Gloriosa superba</i>	Ingestion	Acc misuse	
204*†	32 yr	Peyote	Ingestion	Int abuse	
See also cases 398 (hemlock); 764 (honeysuckle tea).					

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels	
<b>Rodenticides</b>						
205‡	60 yr	Mole killer (sulfur 10%/red phosphorus 3%/sodium nitrate 43%)	Unknown	Acc environ		
<i>See also case 520 (brodifacoum).</i>						
<b>Sporting equipment</b>						
206*	23 mo	Gun bluing (selenium dioxide/nitric acid/phosphoric acid)	Ingestion	Acc gen		
<b>Unknown nondrug substances</b>						
<i>See also case 139 (sewage).</i>						
<b>Analgesics</b>						
207	14 yr	Acetaminophen	Ingestion	Int unknown	240 µg/mL	
208‡	29 yr	Acetaminophen	Ingestion	Unknown	37 µg/mL§	
209†*	30 yr	Acetaminophen	Ingestion	Int misuse	103 µg/mL	
210	32 yr	Acetaminophen	Ingestion	Int suicide	71 µg/mL	
211	34 yr	Acetaminophen	Ingestion	Int suicide	20 µg/mL	3.5 d
212	34 yr	Acetaminophen	Ingestion	Int suicide		
213†	35 yr	Acetaminophen	Ingestion	Int misuse	40 µg/mL	
214†	36 yr	Acetaminophen	Ingestion	Int misuse		
215†	37 yr	Acetaminophen	Ingestion	Int unknown	155 µg/mL	
216†	40 yr	Acetaminophen	Ingestion	Unknown		
217	40 yr	Acetaminophen	Ingestion	Int suicide	70 µg/mL	3-4 d
218	41 yr	Acetaminophen	Ingestion	Int suicide		
219	42 yr	Acetaminophen	Ingestion	Int suicide	130 µg/mL	>42 h
220	44 yr	Acetaminophen	Ingestion	Int suicide	18 µg/mL	48 h
221	45 yr	Acetaminophen	Ingestion	Int misuse		
222	52 yr	Acetaminophen	Ingestion	Int suicide	82 µg/mL	72 h
223	70 yr	Acetaminophen	Ingestion	Int suicide	360 µg/mL	>24 h
224	78 yr	Acetaminophen	Ingestion	Unknown	56 µg/mL	
225†	77 yr	Acetaminophen	Ingestion	Int unknown	168 µg/mL	
226	46 yr	acetaminophen/hydrocodone Acetaminophen	Ingestion	Unknown		
227	65 yr	acetaminophen/hydrocodone acetaminophen/oxycodone Acetaminophen	Ingestion	Int suicide	>200 µg/mL	19 h
228	26 yr	acetaminophen/propoxyphene Acetaminophen	Ingestion	Int suicide	9 µg/mL	72 h
229†	32 yr	Acetaminophen captopril ethanol	Ingestion	Int suicide	75 µg/mL	
230†	30 yr	Acetaminophen cough and cold preparation (acetaminophen/dextromethorphan/ doxylamine/pseudoephedrine)	Ingestion	Int misuse	53 µg/mL	
231	91 yr	Acetaminophen diphenhydramine	Ingestion	Acc misuse	317 µg/mL	15-17 h
232	24 yr	Acetaminophen ethanol	Ingestion	Int suicide	41 µg/mL	40-48 h
233	27 yr	Acetaminophen ethanol	Ingestion	Int suicide	137 µg/mL	>48 h
234	30 yr	Acetaminophen ethanol	Ingestion	Int suicide	169 µg/mL	
235†	31 yr	Acetaminophen ethanol	Ingestion	Int misuse	91 µg/mL	
236†	43 yr	Acetaminophen ethanol	Ingestion	Int misuse	58 µg/mL	
237†	46 yr	Acetaminophen ethanol	Ingestion	Int unknown	108 µg/mL	
238†	51 yr	Acetaminophen ethanol	Ingestion	Int unknown	150 µg/mL	
239	53 yr	Acetaminophen ethanol	Ingestion	Int suicide	86 µg/mL	
240†	55 yr	Acetaminophen ethanol	Ingestion	Int unknown		
241†	32 yr	Acetaminophen ethanol salicylates	Ingestion	Int misuse	10 µg/mL 11 mg/dL	
242	35 yr	Acetaminophen ethylene glycol cough and cold preparation (acetaminophen/ dextromethorphan/doxylamine/pseudoephedrine)	Ingestion	Int abuse		
243	37 yr	Acetaminophen isoniazid	Ingestion	Int suicide	96 µg/mL	

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
244	48 yr	Acetaminophen meprobamate	Ingestion	Int suicide	57 µg/mL
245	44 yr	trimethogenzamide Acetaminophen metoprolol	Ingestion	Int suicide	14.6 µg/mL
246†*	18 mo	thioridazine Acetaminophen opiates	Ingestion	Unknown	152 µg/mL
247	46 yr	Acetaminophen perphenazine	Ingestion	Int suicide	59 µg/mL
248†	45 yr	Acetaminophen phenobarbital/hyoscyamine/atropine/hyoscyine	Ingestion	Int suicide	47 µg/mL
249	36 yr	metoclopramide Acetaminophen	Ingestion	Int suicide	155 µg/mL
250†	47 yr	phenylpropanolamine diphenoxylate/atropine Acetaminophen	Ingestion	Int misuse	
251‡	47 yr	pseudoephedrine amoxicillin Acetaminophen/codeine	Ingestion	Int suicide	
252†	30 yr	acetaminophen/oxycodone Acetaminophen/codeine	Ingestion	Int unknown	8 µg/mL <sup>  </sup>
253†	41 yr	chlordiazepoxide heroin Acetaminophen/codeine	Ingestion	Int misuse	14 µg/mL <sup>  </sup>
254‡	25 yr	ethanol Acetaminophen/codeine	Ingestion	Int suicide	
255	38 yr	ibuprofen Acetaminophen/diphenhydramine	Ingestion	Int suicide	
256	70 yr	amphetamines Acetaminophen/diphenhydramine	Ingestion	Int suicide	700 µg/mL <sup>  </sup> 6 h
257	38 yr	clonidine Acetaminophen/diphenhydramine	Ingestion	Int suicide	38 µg/mL <sup>  </sup>
258‡	37 yr	ethanol unknown narcotic Acetaminophen/hydrocodone	Ingestion	Int suicide	
259	>17 yr	doxepin Acetaminophen/oxycodone	Ingestion	Int suicide	
260	37 yr	chlordiazepoxide chlorpromazine diazepam Acetaminophen/oxycodone	Ingestion	Int suicide	
261	41 yr	diazepam ethanol Acetaminophen/phenyltoloxamine	Ingestion	Int suicide	30 µg/mL <sup>  </sup> 17 mg/dL
262‡	16 yr	aspirin, enteric coated methadone Acetaminophen/propoxyphene	Ingestion	Int suicide	
263‡	33 yr	Acetaminophen/propoxyphene	Ingestion	Acc misuse	propoxyphene 1.2 µg/mL§ norpropoxyphene 3.5 µg/mL§
264	43 yr	Acetaminophen/propoxyphene	Ingestion	Int suicide	387 µg/mL <sup>  </sup> >9 h propoxyphene 9.0 µg/mL >9 h
265	75 yr	Acetaminophen/propoxyphene	Ingestion	Int suicide	101 µg/mL <sup>  </sup> 20 h
266	21 yr	Acetaminophen/propoxyphene	Ingestion	Int suicide	137 µg/mL <sup>  </sup>
267†	21 yr	acetaminophen Acetaminophen/propoxyphene	Ingestion	Unknown	40.2 µg/mL <sup>  </sup>
268‡	39 yr	aspirin/oxycodone acetaminophen/codeine Acetaminophen/propoxyphene	Ingestion	Unknown	propoxyphene 0.48 µg/mL§ pseudoephedrine 660 µg/mL§
269‡	23 yr	carbinoxamine/pseudoephedrine (sustained release) trimethobenzamide Acetaminophen/propoxyphene	Ingestion	Int suicide	960 µg/mL§ 127 µg/mL <sup>  </sup> 5 h
270†‡	57 yr	ethanol Acetaminophen/propoxyphene	Ingestion	Int suicide	291 µg/mL <sup>  </sup> 250 mg/dL
271	78 yr	ethanol Acetaminophen/propoxyphene	Ingestion	Int suicide	
272	36 yr	lorazepam Acetaminophen/propoxyphene	Ingestion	Int suicide	propoxyphene 0.35 µg/mL
273‡	47 yr	pentazocine/naloxone Acetaminophen/propoxyphene	Ingestion	Int suicide	301 µg/mL <sup>  </sup> propoxyphene 2.78 µg/mL§ 6.9 µg/mL§
274	14 yr	theophylline ethanol Aspirin	Ingestion	Int suicide	105 mg/dL§ 115 mg/dL 15 h
275	15 yr	Aspirin	Ingestion	Int suicide	97 mg/dL

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels	
276	16 yr	Aspirin	Ingestion	Int suicide	129 mg/dL	16 h
277	16 yr	Aspirin	Ingestion	Int suicide		
278	17 yr	Aspirin	Ingestion	Int suicide	128 mg/dL	13 h
279	23 yr	Aspirin	Ingestion	Int suicide	99 mg/dL§	
280	26 yr	Aspirin	Ingestion	Int suicide	90 mg/dL	16 h
281	27 yr	Aspirin	Ingestion	Int suicide		
282	28 yr	Aspirin	Ingestion	Int suicide		
283	38 yr	Aspirin	Ingestion	Int suicide	>80 mg/dL	24 h
284†	38 yr	Aspirin powder	Ingestion	Acc misuse	80 mg/dL	
285‡	40 yr	Aspirin	Ingestion	Int suicide	54 mg/dL§	
286†‡	41 yr	Aspirin	Ingestion	Int unknown	3 mg/dL	
287	44 yr	Aspirin	Ingestion	Int unknown	141 mg/dL	
288	45 yr	Aspirin	Ingestion	Int suicide	88 mg/dL	12-16 h
289	46 yr	Aspirin	Ingestion	Int suicide	128 mg/dL	
290	50 yr	Aspirin	Ingestion	Int suicide	74 mg/dL	48 h
291	56 yr	Aspirin, enteric coated	Ingestion	Int suicide	57 mg/dL	12 h
292†	59 yr	Aspirin powder	Ingestion	Int suicide	75 mg/dL	
293‡	59 yr	Aspirin	Ingestion	Int suicide	59 mg/dL	
294	67 yr	Aspirin	Ingestion	Unknown	113 mg/dL	
295	68 yr	Aspirin	Ingestion	Int unknown	124 mg/dL	
296	68 yr	Aspirin	Ingestion	Int suicide		
297	69 yr	Aspirin	Ingestion	Int suicide	97 mg/dL	
298†	69 yr	Aspirin	Ingestion	Int suicide	27 mg/dL	
299	73 yr	Aspirin	Ingestion	Int suicide	116 mg/dL	8-12.5 h
300†	76 yr	Aspirin	Ingestion	Int abuse	69 mg/dL	
301†	77 yr	Aspirin	Ingestion	Unknown	61 mg/dL	
302†	80 yr	Aspirin	Ingestion	Int suicide	64 mg/dL	
303†	84 yr	Aspirin	Ingestion	Int unknown	58 mg/dL	
304	85 yr	Aspirin	Ingestion	Int suicide	63 mg/dL	
305†	88 yr	Aspirin, enteric coated	Ingestion	Acc misuse	54 mg/dL	
306	90 yr	Aspirin	Ingestion	Int suicide	56 mg/dL§	
307†	28 yr	Aspirin	Ingestion	Int suicide	75 mg/dL	
		acetaminophen			150 µg/mL	
308	54 yr	Aspirin	Ingestion	Int suicide	18 mg/dL	>30 h
		acetaminophen			33 µg/mL	>30 h
		caffeine				
309	53 yr	Aspirin	Ingestion	Int suicide	50 mg/dL	14 h
		acetaminophen			98 µg/mL	8 h
		ethanol				
310	68 yr	Aspirin	Ingestion	Int unknown	90 mg/dL§	
		clonidine				
311‡	52 yr	Aspirin	Ingestion	Int suicide		
		cough and cold preparation (acetaminophen/dextromethorphan/ doxylamine/pseudoephedrine)				
312	27 yr	Aspirin	Ingestion	Int suicide	107 mg/dL	
		ethanol			340 mg/dL	
313	65 yr	Aspirin	Ingestion	Int suicide	127 mg/dL	0.75 h
		ethanol mouthwash (29%)				
314†	70 yr	Aspirin	Ingestion	Unknown	24 mg/dL	
		ethanol				
315	76 yr	Aspirin	Ingestion	Int suicide	64 mg/dL	2.5 h
		ethanol				
316	52 yr	Aspirin	Ingestion	Int suicide	49 mg/dL	
		ethylene glycol antifreeze			485 mg/dL	
317	67 yr	Aspirin	Ingestion	Int suicide	99 mg/dL	
		ibuprofen				
		diphenhydramine				
318	25 yr	Aspirin, enteric coated	Ingestion	Int suicide	79 mg/dL	
		phenytoin				
319	41 yr	Aspirin	Ingestion	Int suicide	7 mg/dL	
		pseudoephedrine				
		fluoxetine				
320*	60 yr	Aspirin	Ing/Paren	Int suicide	100 mg/dL	
		succinylcholine				
321	41 yr	Aspirin/butalbital/codeine/caffeine	Ingestion	Int suicide	58 mg/dL¶	
		cimetidine				
		fluoxetine				
322	38 yr	Aspirin/propoxyphene/caffeine	Ingestion	Int suicide		
		diazepam				
323‡	37 yr	Aspirin/propoxyphene/caffeine	Ingestion	Int suicide	propoxyphene 2.7 µg/mL§	
		ethanol			189 mg/dL§	
		penicillin				
324‡	25 yr	Codeine	Ingestion	Int unknown		
		glutethimide				
325	78	Codeine	Ingestion	Int suicide	3.8 µg/mL	>5 h

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
326	14 yr	triazolam	Ingestion	Int suicide	118 ng/mL
		acetaminophen			144 µg/mL
327*	39 yr	Colchicine	Ingestion	Int suicide	>5 h
		allopurinol			>5 h
328	20 yr	ibuprofen	Ingestion	Int suicide	400 µg/mL
		ibuprofen			300 ng/mL§
329‡	27 yr	cyclobenzaprine	Ingestion	Int unknown	0.54 µg/mL
		phenylpropanolamine			
330‡	36 yr	Methadone	Parenteral	Int unknown	
		heroin			
331	39 yr	Morphine	Ingestion	Int suicide	0.057 µg/mL§
332	34 yr	Morphine	Ingestion	Unknown	
		codeine			
333‡	21 yr	acetaminophen	Ingestion	Int suicide	16 µg/mL
		Morphine			
334‡	18 yr	diazepam	Ingestion	Int abuse	
		Morphine			
335	60 yr	hydromorphone	Ingestion	Unknown	
		alprazolam			
336	30 yr	Opiates	Unknown	Unknown	
		amphetamines			
337‡	41 yr	barbiturates	Ingestion	Int misuse	
		Opiates			
338‡	42 yr	benzodiazepines	Ingestion	Unknown	
		Opiates			
339*	21 yr	benzodiazepines	Ingestion	Int suicide	270 µg/mL
340‡*	19 mo	Phenylbutazone (equine)	Ingestion	Acc gen	1.3 µg/mL
		Propoxyphene			norpropoxyphene 6.8 µg/mL
341†‡	25 yr	Propoxyphene	Ingestion	Int unknown	2.81 µg/mL
342	35 yr	Propoxyphene	Ingestion	Int suicide	
343‡	44 yr	Propoxyphene	Ingestion	Int suicide	
344‡	83 yr	Propoxyphene	Ingestion	Int suicide	
345‡	29 yr	Propoxyphene	Ingestion	Int suicide	
		acetaminophen			
346	51 yr	coumadin	Ingestion	Int suicide	179 µg/mL
		Propoxyphene			
347†	67 yr	ethchlorvynol	Ingestion	Adv rxn	
		salicylates			
348	66 yr	Propoxyphene	Ingestion	Int unknown	2.5 mEq/L
		nortriptyline			
349	55 yr	lithium	Ingestion	Int suicide	111 mg/dL
		Salicylates			
350‡	30 yr	diphenhydramine	Paren/Unk	Int abuse	
		cyclic antidepressants			
351‡	67 yr	Salsalate	Ingestion	Adv rxn	
		amitriptyline			
352‡*	35 yr	Sufentanil	Parenteral	Int abuse	1.1 µg/mL§
		benzodiazepines			1.1 ng/mL§
		marijuana			fentanyl <0.5 ng/mL§
		Tolmetin sodium	Ingestion	Adv rxn	

See also cases 266, 307, 308, 309, 325, 332, 345, 560, 666, 682, 683, 734 (acetaminophen); 442 (acetaminophen/butalbital/caffeine); 192, 267, 383, 580, 654, 665 (acetaminophen/codeine); 225, 226, 636 (acetaminophen/hydrocodone); 226, 251, 267, 649, 656 (acetaminophen/oxycodone); 8, 227, 556 (acetaminophen/propoxyphene); 94, 228, 261, 354, 359, 439, 503 (aspirin); 385 (aspirin/butalbital/caffeine); 650 (aspirin/oxycodone); 332, 596, 660, 666, 667, 668 (codeine); 676 (fentanyl); 603 (flurbiprofen); 334 (hydromorphone); 254, 317, 326 (ibuprofen); 686 (magnesium salicylate); 261, 731, 732 (methadone); 623, 649 (naproxen); 246, 360, 409, 653, 734, 735, 736 (opiates); 272 (pentazocine/naloxone); 405, 406, 467, 738 (propoxyphene); 241, 346 (salicylates); 352 (sufentanil); 257 (unknown narcotic).

## Anesthetics

352‡\* 35 yr Ketamine  
sufentanil

See also case 41 (lidocaine).

## Anticholinergics

353 27 yr Amantadine  
benztropine

354 54 yr Orphenadrine  
aspirin

See also cases 669 (amantadine); 353, 392, 484, 669 (benztropine); 419 (hydroxyzine); 477 (oxybutynin); 641 (trihexphenidyl).

(Continued on following page)

**TABLE 16.** Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels	
<b>Anticoagulants</b>						
355†	70 yr	Coumadin	Ingestion	Unknown		
356*	79 yr	Heparin	Parenteral	Int misuse		
<i>See also case 345 (coumadin).</i>						
<b>Anticonvulsants</b>						
357	29 yr	Carbamazepine	Ingestion	Int suicide		
358*	35 yr	Carbamazepine	Ingestion	Int suicide	72.5 µg/mL	18 h
359	25 yr	Carbamazepine ethanol aspirin	Ingestion	Int suicide	30.3 µg/mL 122 mg/dL 51 mg/dL	
360	38 yr	Carbamazepine quazepam opiates	Ingestion	Int suicide	21.9 µg/mL	
361*	20 mo	Phenytoin	Parenteral	Acc misuse	86 µg/mL	
362	42 yr	Valproic acid	Unknown	Unknown	274 µg/mL	
363†*	4 yr	Valproic acid ethosuximide	Ingestion	Adv rxn	154 µg/mL 60 µg/mL	
<i>See also cases 388, 416, 487, 513 (carbamazepine), 363 (ethosuximide), 318, 521 (phenytoin).</i>						
<b>Antidepressants</b>						
364	24 yr	Amitriptyline	Ingestion	Int suicide		
365	28 yr	Amitriptyline	Ingestion	Int suicide		
366‡	29 yr	Amitriptyline	Ingestion	Int suicide	>4,000 ng/mL§	
367	32 yr	Amitriptyline	Ingestion	Int suicide	nortriptyline 2,361 ng/mL§	2 h
368	32 yr	Amitriptyline	Ingestion	Int suicide	984 ng/mL	
369‡	35 yr	Amitriptyline	Ingestion	Int unknown	>1,000 ng/mL 2,900 ng/mL§	
370‡	40 yr	Amitriptyline	Ingestion	Int suicide	nortriptyline 2,100 ng/mL§	
371	40 yr	Amitriptyline	Ingestion	Int suicide		
372	42 yr	Amitriptyline	Ingestion	Int suicide		
373	43 yr	Amitriptyline	Ingestion	Int suicide	501 ng/mL	
374‡	43 yr	Amitriptyline	Ingestion	Int suicide	nortriptyline 278 ng/mL 6,050 ng/mL§	
375	47 yr	Amitriptyline	Ingestion	Int suicide	nortriptyline 3,020 ng/mL§	
376	48 yr	Amitriptyline	Ingestion	Int suicide	3,694 ng/mL	
377	51 yr	Amitriptyline	Ingestion	Int suicide	11,390 ng/mL nortriptyline 3,040 ng/mL	
378	69 yr	Amitriptyline	Ingestion	Int suicide	463 ng/mL	
379	71 yr	Amitriptyline	Ingestion	Int suicide	2,544 ng/mL	
380	72 yr	Amitriptyline	Ingestion	Int suicide	666 ng/mL nortriptyline 372 ng/mL	
381	>17 yr	Amitriptyline	Ingestion	Int suicide		
382	28 yr	Amitriptyline acebutolol lithium	Ingestion	Int suicide		
383	34 yr	Amitriptyline acetaminophen/codeine aspirin/carisoprodol	Ingestion	Int suicide	10 µg/mL <sup>l</sup> 2 mg/dL <sup>l</sup>	2 h 2 h
384‡	45 yr	Amitriptyline amitriptyline/perphenazine	Ingestion	Int suicide	1,900 ng/mL§	
385‡	35 yr	Amitriptyline aspirin/butalbital/caffeine cocaine	Ingestion	Int suicide	nortriptyline 800 ng/mL§	
386	13 yr	Amitriptyline brake fluid (glycol ethers 100%)	Ingestion	Int suicide		
387	69 yr	Amitriptyline bupropion	Ingestion	Int suicide		
388‡	43 yr	Amitriptyline carbamazepine fluoxetine	Ingestion	Int suicide		
389	27 yr	Amitriptyline	Ingestion	Int unknown	6,800 ng/mL nortriptyline 4,800 ng/mL	
390	34 yr	Amitriptyline cocaine	Ingestion	Int suicide		
391‡	49 yr	Amitriptyline amphetamine diazepam prednisone	Ingestion	Int suicide		
392	24 yr	Amitriptyline diltiazem benzotropine	Ingestion	Int suicide		

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
393	26 yr	Amitriptyline	Ingestion	Int suicide	
394†	59 yr	Amitriptyline ethanol	Ingestion	Int suicide	
395†	35 yr	Amitriptyline fluoxetine	Ingestion	Int suicide	
396†	50 yr	Amitriptyline fluoxetine	Ingestion	Int suicide	455 ng/mL
397	70 yr	Amitriptyline flurazepam	Ingestion	Int suicide	
398†	53 yr	Amitriptyline hemlock fluoxetine	Ingestion	Int suicide	
399†	43 yr	Amitriptyline methylphenidate	Ingestion	Int suicide	
400	34 yr	Amitriptyline nortriptyline	Ingestion	Int suicide	
401†	58 yr	Amitriptyline nortriptyline	Ingestion	Int suicide	
402†	23 yr	Amitriptyline	Ingestion	Int suicide	6,510 ng/mL§ nortriptyline 1,810 ng/mL§ 0.18 µg/mL§ 150 mg/dL§ tricyclic 1,300 ng/mL
403	34 yr	Amitriptyline perphenazine ethanol phenobarbital (veterinary)	Ingestion	Int suicide	
404	67 yr	Amitriptyline promethazine chloral hydrate	Ingestion	Int suicide	
405	64 yr	Amitriptyline propoxyphene chlordiazepoxide	Ingestion	Int suicide	0.7 µg/mL nordiazepam 0.5 µg/mL
406	31 yr	Amitriptyline propoxyphene oxazepam	Ingestion	Int suicide	
407	33 yr	Amitriptyline propranolol phenobarbital/ergotamine/bellafoline	Ingestion	Int suicide	
408†	18 yr	Amitriptyline thioridazine	Ingestion	Int suicide	
409	50 yr	Amitriptyline trazodone opiates	Ingestion	Int suicide	
410	36 yr	Amitriptyline/ perphenazine chlorpromazine	Ingestion	Unknown	1,690 ng/mL§ nortriptyline 1,890 ng/mL§
411	20 yr	Amoxapine	Ingestion	Int suicide	
412	30 yr	Amoxapine	Ingestion	Int suicide	
413	42 yr	Amoxapine	Ingestion	Int suicide	697 ng/mL
414*	49 yr	Amoxapine	Ingestion	Int suicide	
415	35 yr	Amoxapine amitriptyline fluoxetine	Ingestion	Int unknown	
416	37 yr	Amoxapine carbamazepine ethanol	Ingestion	Int suicide	
417*	45 yr	Bupropion	Ingestion	Int suicide	
418*	47 yr	Bupropion	Ingestion	Int suicide	
419	46 yr	Clomipramine hydroxyzine alprazolam	Ingestion	Int suicide	8,030 ng/mL§ 5.28 µg/mL§ 149 ng/mL§
420*	2 yr	Desipramine	Ingestion	Acc gen	
421	15 yr	Desipramine	Ingestion	Int suicide	
422	16 yr	Desipramine	Ingestion	Int suicide	
423	16 yr	Desipramine	Ingestion	Int suicide	425 ng/mL
424†	17 yr	Desipramine	Ingestion	Int suicide	
425	17 yr	Desipramine	Ingestion	Int unknown	
426	17 yr	Desipramine	Ingestion	Int suicide	2,215 ng/mL§
427	22 yr	Desipramine	Ingestion	Unknown	
428	25 yr	Desipramine	Ingestion	Int suicide	
429	25 yr	Desipramine	Ingestion	Int misuse	
430	27 yr	Desipramine	Ingestion	Int suicide	19,400 ng/mL§
431	28 yr	Desipramine	Ingestion	Int suicide	
432	33 yr	Desipramine	Ingestion	Int suicide	
433†	36 yr	Desipramine	Ingestion	Int suicide	1,820 ng/mL§

(Continued on following page)



TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
434	38 yr	Desipramine	Ingestion	Int suicide	1,172 ng/mL
435	40 yr	Desipramine	Ingestion	Int suicide	879 ng/mL
436	41 yr	Desipramine	Ingestion	Int suicide	3,000 ng/mL
437	47 yr	Desipramine	Ingestion	Int suicide	
438†	47 yr	Desipramine alprazolam	Ingestion	Unknown	
439	17 yr	Desipramine aspirin	Ingestion	Int suicide	3,010 ng/mL
440	47 yr	Desipramine buspirone glyburide	Ingestion	Int suicide	
441	31 yr	Desipramine ethanol	Ingestion	Int suicide	6,500 ng/mL§
442	36 yr	Desipramine lithium	Ingestion	Int suicide	0.7 mEq/L
443†	47 yr	Desipramine acetaminophen/butalbital/caffeine lithium	Ingestion	Int suicide	10 µg/mL <sup>  </sup> 4 h
444	39 yr	Desipramine trazodone	Ingestion	Int suicide	20,700 ng/mL§
445†	30 yr	Desipramine propranolol propranolol amitriptyline	Ingestion	Int suicide	1,533 ng/mL§ 0.782 ng/mL§ 48 ng/mL§ nortriptyline 120 ng/mL§
446	50 yr	Desipramine theophylline captopril	Ingestion	Int suicide	
447†	45 yr	Desipramine trifluoperazine	Ingestion	Acc unknown	
448†	16 yr	Doxepin	Ingestion	Int suicide	2,480 ng/mL
449†	17 yr	Doxepin	Ingestion	Int suicide	110 ng/mL§ nordoxepin 130 ng/mL§
450	22 yr	Doxepin	Ingestion	Int suicide	
451	26 yr	Doxepin	Ingestion	Int suicide	
452	29 yr	Doxepin	Ingestion	Int suicide	7,800 ng/mL§
453†	31 yr	Doxepin	Ingestion	Int suicide	
454	38 yr	Doxepin	Ingestion	Unknown	5,200 ng/mL§ nordoxepin 1,900 ng/mL§
455†	40 yr	Doxepin	Ingestion	Int suicide	
456†	47 yr	Doxepin	Ingestion	Int suicide	
457	53 yr	Doxepin	Ingestion	Int suicide	
458	68 yr	Doxepin	Ingestion	Int suicide	
459†	44 yr	Doxepin barbiturates benzodiazepines	Ingestion	Int suicide	
460	55 yr	Doxepin chlordiazepoxide	Ingestion	Int unknown	
461	30 yr	Doxepin clonazepam lithium	Ingestion	Int suicide	0.75 mEq/L
462†	23 yr	Doxepin cocaine	Ingestion	Int suicide	1,800 ng/mL 0.03 µg/mL
463	39 yr	Doxepin estrogen	Ingestion	Int suicide	
464	45 yr	Doxepin ethanol	Ingestion	Int suicide	
465†	38 yr	Doxepin ethanol alprazolam	Ingestion	Int abuse	
466	48 yr	Doxepin fluoxetine clonazepam	Ingestion	Int suicide	7,300 ng/mL
467	33 yr	Doxepin propoxyphene	Ingestion	Int suicide	
468†	37 yr	Doxepin triazolam	Ingestion	Int suicide	6,800 ng/mL*
469	72 yr	Fluoxetine alprazolam doxepin	Ingestion	Int suicide	
470†	18 yr	Imipramine	Ingestion	Int suicide	
471†	33 yr	Imipramine	Ingestion	Int suicide	6,190 ng/mL§ desipramine 2,810 ng/mL§
472†	36 yr	Imipramine	Ingestion	Int suicide	
473†	36 yr	Imipramine	Ingestion	Int suicide	3,500 ng/mL*
474†	41 yr	Imipramine	Ingestion	Int suicide	

(Continued on following page)

TABLE 16. Summary of Fatal Exposures

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
475	44 yr	Imipramine	Ingestion	Int suicide	
476†	38 yr	Imipramine cocaine	Ingestion	Int suicide	
477	33 yr	benzodiazepines Imipramine oxybutynin	Ingestion	Int suicide	
478	20 yr	Imipramine baclofen	Ingestion	Int suicide	>5,000 ng/mL
479†	57 yr	Imipramine trazodone	Ingestion	Int suicide	10,400 ng/mL§ desipramine 15,370 ng/mL§
480†	51 yr	Lithium temazepam	Ingestion	Int suicide	4.2 mEq/L
481†	69 yr	Lithium	Ingestion	Adv rxn	3.2 mEq/L
482*	70 yr	Lithium	Ingestion	Int suicide	9.5 mEq/L
483	49 yr	Lithium amitriptyline fluoxetine	Ingestion	Int suicide	2.5 mEq/L
484	46 yr	Lithium benztropine fluphenazine	Ing/Paren	Int suicide	2.8 mEq/L
485	57 yr	Lithium ethanol	Ingestion	Int unknown	5.1 mEq/L 250 mg/dL
486	31 yr	Lithium haloperidol fluoxetine	Ingestion	Int suicide	5.6 mEq/L
487	31 yr	Lithium phenobarbital carbamazepine	Ingestion	Int suicide	9.8 mEq/L 29.3 µg/mL 30 µg/mL 859 ng/mL
488†	16 yr	Nortriptyline	Ingestion	Int suicide	
489	20 yr	Nortriptyline	Ingestion	Int suicide	
490	21 yr	Nortriptyline	Ingestion	Int suicide	
491	24 yr	Nortriptyline	Ingestion	Int suicide	
492	28 yr	Nortriptyline	Ingestion	Int suicide	
493	32 yr	Nortriptyline	Ingestion	Int suicide	738 ng/mL
494†	35 yr	Nortriptyline	Ingestion	Int suicide	2,197 ng/mL
495	36 yr	Nortriptyline	Ingestion	Int suicide	
496†	37 yr	Nortriptyline	Ingestion	Int suicide	
497	45 yr	Nortriptyline	Ingestion	Int suicide	
498	47 yr	Nortriptyline	Ingestion	Int suicide	
499	48 yr	Nortriptyline	Ingestion	Int suicide	
500	55 yr	Nortriptyline	Ingestion	Int suicide	
501	69 yr	Nortriptyline	Ingestion	Int suicide	
502	19 yr	Nortriptyline alprazolam	Ingestion	Int suicide	
503	47 yr	Nortriptyline aspirin	Ingestion	Int suicide	47 mg/dL
504	55 yr	Nortriptyline clonidine	Ingestion	Unknown	970 ng/mL§
505†	40 yr	Nortriptyline cocaine	Ing/Unk	Int suicide	1,110 ng/mL§
506†	22 yr	Nortriptyline ethanol	Ingestion	Int suicide	9,600 ng/mL§ 80 mg/dL§
507†	25 yr	Nortriptyline ethanol	Ingestion	Int suicide	>10,000 ng/mL§ 254 mg/dL§
508†	34 yr	Nortriptyline ethanol	Ingestion	Int suicide	5,800 ng/mL§ 199 mg/dL§
509	34 yr	Nortriptyline loxapine	Ingestion	Int suicide	
510	32 yr	Nortriptyline phenobarbital carisoprodol	Ingestion	Int suicide	
511†	39 yr	Nortriptyline temazepam	Ingestion	Int suicide	
512	40 yr	Nortriptyline thioridazine mesoridazine	Ingestion	Int suicide	2,800 ng/mL§ 9,400 ng/mL§ 840 ng/mL
513††	22 yr	Phenelzine dantrolene carbamazepine	Ingestion	Unknown	
514††	50 yr	Phenelzine lithium	Ingestion	Adv rxn	0.4 mEq/L
515	31 yr	Tranylcypromine	Ingestion	Int suicide	

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
516*	39 yr	Tranlycypromine	Ingestion	Int suicide	
517	39 yr	Tranlycypromine	Ingestion	Int suicide	
518‡	29 yr	trifluoperazine thioridazine			
		Trazodone	Ingestion	Int suicide	12.7 µg/dL§
		diazepam			233 µg/dL§
		ethanol			30 mg/dL§
519	29 yr	Unknown tricyclic antidepressant	Ingestion	Int suicide	3,800 ng/mL§
		ethanol			170 mg/dL§
		cocaine			benzoyllecgonine 0.13 µg/mL§
520	37 yr	Unknown tricyclic antidepressant	Ingestion	Int suicide	
		isosorbide			
		rodenticide (brodifacoum 0.005%)			
521‡	62 yr	Unknown tricyclic antidepressant	Ingestion	Int suicide	tricyclic 840 ng/mL
		phenytoin			
522‡	30 yr	Unknown tricyclic antidepressant	Ing/Inh	Int abuse	
		unknown benzodiazepine			
		phencyclidine			
See also cases 349, 415, 445, 483 (amitriptyline); 384, 723 (amitriptyline/perphenazine); 387, 558 (bupropion); 348 (cyclic antidepressants); 258, 469, 651, 653, 676(doxepin); 319, 321, 388, 395, 396, 398, 415, 466, 483, 486, 527, 620, 657 (fluoxetine); 680 (imipramine); 347, 382, 442, 443, 461, 514, 582 (lithium); 347, 400, 401, 590 (nortriptyline); 737 (phenelzine); 401, 409, 443, 478, 479, 670 (trazodone).					
<b>Antihistamines</b>					
523*	19 yr	Dimenhydrinate	Ingestion	Int suicide	diphenhydramine 10.8 µg/mL
					24 h
See also cases 321 (cimetidine); 10, 231, 317, 348, 636, 646, 684, 731 (diphenhydramine); 564 (ranitidine).					
<b>Antimicrobials</b>					
524*	16 yr	Isoniazid	Ingestion	Int suicide	
525*	21 yr	Isoniazid	Ingestion	Int suicide	52 µg/mL
526*	33 yr	Isoniazid	Ingestion	Int suicide	
527	42 yr	Isoniazid	Ingestion	Int suicide	
		baclofen			
		fluoxetine			
528	19 yr	Isoniazid	Ingestion	Int suicide	340 µg/dL
		Iron			
See also cases 250 (amoxicillin); 243 (isoniazid); 323, 598 (penicillin); 594 (trimethoprim/sulfamethoxazole).					
<b>Asthma therapies</b>					
529†*	12 mo	Theophylline	Parenteral	Adv rxn	68 µg/mL
530†	10 yr	Theophylline	Ing/Paren	Acc misuse	49 µg/mL
531‡	15 yr	Theophylline	Ingestion	Unknown	48 µg/mL§
532	20 yr	Theophylline (sustained release)	Ingestion	Int suicide	102 µg/mL
533	21 yr	Theophylline (sustained release)	Ingestion	Int suicide	195 µg/mL
534	23 yr	Theophylline	Ingestion	Int suicide	
535	32 yr	Theophylline (sustained release)	Ingestion	Int suicide	111 µg/mL
536	50 yr	Theophylline (sustained release)	Ingestion	Int suicide	
537	58 yr	Theophylline	Ingestion	Int suicide	72 µg/mL
538†	59 yr	Theophylline (sustained release)	Ingestion	Adv rxn	44 µg/mL
539	61 yr	Theophylline (sustained release)	Ingestion	Int suicide	240 µg/mL
540	63 yr	Theophylline	Ingestion	Int suicide	204 µg/mL
541	67 yr	Theophylline	Ingestion	Unknown	48 µg/mL
542†	67 yr	Theophylline	Ingestion	Acc misuse	54 µg/mL
543†	67 yr	Theophylline (sustained release)	Ingestion	Adv rxn	
544†	69 yr	Theophylline (sustained release)	Ingestion	Unknown	39 µg/mL
545†	69 yr	Theophylline (sustained release)	Ingestion	Acc misuse	113 µg/mL
546†	71 yr	Theophylline	Ingestion	Unknown	66 µg/mL
547†	73 yr	Theophylline	Ingestion	Unknown	56 µg/mL
548†	74 yr	Theophylline	Ingestion	Acc misuse	52 µg/mL
549	74 yr	Theophylline	Ingestion	Int suicide	39 µg/mL
550†	75 yr	Theophylline	Ingestion	Acc misuse	59 µg/mL
551	76 yr	Theophylline	Ingestion	Unknown	45 µg/mL
552†	77 yr	Theophylline	Ingestion	Acc misuse	47 µg/mL
553†	77 yr	Theophylline	Ingestion	Adv rxn	40 µg/mL
554‡	81 yr	Theophylline	Ingestion	Int unknown	56 µg/mL
555†	82 yr	Theophylline (sustained release)	Ingestion	Acc gen	43 µg/mL
556	25 yr	Theophylline (sustained release)	Ingestion	Int suicide	179 µg/mL
		acetaminophen/propoxyphene			165 µg/mL <sup>ii</sup>
		nifedipine			
557‡	>17 yr	Theophylline (sustained release)	Ingestion	Int suicide	
		albuterol			
		lorazepam			
558*	59 yr	Theophylline (sustained release)	Ingestion	Int suicide	229 µg/mL
		bupropion			12.5 h

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels	
559‡	18 yr	Theophylline (sustained release) prednisone	Ingestion	Int suicide	120 µg/mL	8 h
560	47 yr	Theophylline verapamil acetaminophen	Ingestion	Int unknown	68 µg/mL	
<i>See also cases 273, 446, 581, 584, 585, 624, 627 (theophylline).</i>						
Cardiovascular drugs						
561	53 yr	Amrinone	Parenteral	Acc misuse		
562†*	65 yr	Atenolol	Ingestion	Acc misuse	802 ng/mL	
563	49 yr	Atenolol	Ingestion	Int unknown		
		clonazepam nitroglycerin				
564	19 yr	Captopril/hydrochlorothiazide ranitidine hydrochlorothiazide	Ingestion	Int suicide		
565	45 yr	Digoxin	Ingestion	Int unknown	25 ng/mL	
566†	59 yr	Digoxin	Ingestion	Acc misuse	4.4 ng/mL	
567†	66 yr	Digoxin	Ingestion	Int suicide		
568†*	66 yr	Digoxin	Ingestion	Acc misuse	19.4 ng/mL	
569†	67 yr	Digoxin	Ingestion	Adv rxn	7.9 ng/mL	
570*	68 yr	Digoxin	Ingestion	Int suicide	34 ng/mL	3 h
571	70 yr	Digoxin	Parenteral	Acc misuse	7.7 ng/mL	
572†	74 yr	Digoxin	Ingestion	Adv rxn	3.1 ng/mL	
573†	80 yr	Digoxin	Ingestion	Acc misuse	6.6 ng/mL	
574†	80 yr	Digoxin	Ingestion	Acc unknown	1.0 ng/mL	
575†	84 yr	Digoxin	Ingestion	Unknown	5.4 ng/mL	
576†	86 yr	Digoxin	Ingestion	Int misuse		
577†	88 yr	Digoxin	Ingestion	Adv rxn	4.6 ng/mL	
578†	91 yr	Digoxin	Ingestion	Acc misuse	4.6 ng/mL	
579	97 yr	Digoxin	Ingestion	Int suicide	32.7 ng/mL	
580‡	72 yr	Digoxin acetaminophen/codeine	Ingestion	Int suicide	23 µg/mL <sup>ll</sup> codeine 1.14 µg/mL <sup>§</sup>	
581	79 yr	Digoxin glipizide theophylline	Ingestion	Int suicide	8.7 ng/mL 7.4 µg/mL	
582†	70 yr	Digoxin lithium	Ingestion	Acc misuse	2.5 ng/mL 4.0 mEq/L	
583	50 yr	Digoxin propafenone	Ingestion	Int suicide	13 ng/mL	
584‡	79 yr	Digoxin theophylline (sustained release)	Ingestion	Unknown	4.7 ng/mL 28 µg/mL	
585†	84 yr	Digoxin theophylline	Ingestion	Acc misuse	5.7 ng/mL 47 µg/mL	
586*	31 yr	Diltiazem	Ingestion	Int suicide		
587	91 yr	Diltiazem	Ingestion	Int suicide		
588	80 yr	Diltiazem	Ingestion	Int suicide		
		benzodiazepines				
589	43 yr	Diltiazem captopril albuterol	Ingestion	Int suicide		
590	45 yr	Diltiazem isradipine nortriptyline	Ingestion	Int suicide		
591‡*	41 yr	Mexiletine	Ingestion	Int suicide	22.2 µg/mL <sup>§</sup>	
592†	31 yr	Moricizine procainamide	Ingestion	Adv rxn	9.7 µg/mL n-acetylprocainamide 17.5 µg/mL	
593†	>17 yr	Nadolol	Ingestion	Int unknown		
594	43 yr	Nadolol	Ingestion	Int unknown		
		trimethoprim/sulfamethoxazole				
595*	18 mo	Nifedipine	Ingestion	Acc gen	590 ng/mL	
596	16 yr	Nifedipine codeine	Ingestion	Int unknown		
597	45 yr	Nifedipine hydrochlorothiazide/triamterene	Ingestion	Int suicide		
598	51 yr	Nifedipine penicillin methyldopa	Ingestion	Int suicide		
599	65 yr	Nitroglycerin tablets	Other	Int misuse		
600	80 yr	Procainamide	Ingestion	Adv rxn	17.7 µg/mL n-acetylprocainamide 56 µg/mL	
601‡	16 yr	Propranolol	Ingestion	Int suicide		
602	33 yr	Propranolol	Ingestion	Int suicide	17.64 µg/mL <sup>§</sup>	

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
		diazepam			0.84 µg/mL§ nordiazepam 6.08 µg/mL§
603	43 yr	Propranolol	Ingestion	Int unknown	
		flurbiprofen			
604	38 yr	Propranolol	Ingestion	Int suicide	
		thioridazine			
		levothyroxine			
605	88 yr	Quinidine	Ingestion	Int suicide	13.7 µg/mL
606	40 yr	Quinidine	Ing/Inh	Int suicide	
		captopril			
		cocaine			
607	14 yr	Verapamil (sustained release)	Ingestion	Int suicide	4.57 µg/mL
608	26 yr	Verapamil (sustained release)	Ingestion	Int suicide	
609	35 yr	Verapamil (sustained release)	Ingestion	Int suicide	1.27 µg/mL§
610†	46 yr	Verapamil	Ingestion	Int suicide	
611	48 yr	Verapamil (sustained release)	Ingestion	Int suicide	
612‡	62 yr	Verapamil	Ingestion	Int suicide	
613†	65 yr	Verapamil (sustained release)	Ingestion	Acc misuse	
614	68 yr	Verapamil	Ingestion	Unknown	
615†	84 yr	Verapamil	Ingestion	Acc misuse	
616	93 yr	Verapamil	Ingestion	Int suicide	
617‡	>17 yr	Verapamil	Ingestion	Int suicide	
618‡	39 yr	Verapamil	Ingestion	Int suicide	26.7 µg/mL§ 48.1 ng/mL
		alprazolam			
619	45 yr	Verapamil	Ingestion	Unknown	
		clonidine			
620	52 yr	Verapamil	Ingestion	Int suicide	
		fluoxetine			
621	55 yr	Verapamil	Ingestion	Int unknown	
		niacin			
622‡	35 yr	Verapamil	Ingestion	Int suicide	
		propranolol			
623‡	17 yr	Verapamil	Ingestion	Int suicide	
		propranolol			
		naproxen			
624	33 yr	Verapamil (sustained release)	Ingestion	Int suicide	
		theophylline			
		enalapril			
625‡	57 yr	Unknown beta blocker	Ingestion	Int suicide	
		verapamil			
		ethanol			235 mg/dL >5 h
<p>See also cases 382 (acetabutoiol); 557, 589 (albuterol); 229, 446, 589, 606 (captopril); 256, 310, 504, 619 (clonidine); 392 (diltiazem); 624, 679 (enalapril); 520 (isosorbide); 590 (isradipine); 245 (metoprolol); 556, 651, 658 (nifedipine); 563 (nitroglycerin); 592 (procainamide); 583 (propafenone); 407, 444, 445, 622, 623, 643, 679 (propranolol); 751 (quinidine); 560, 625 (verapamil).</p>					
<p>Cough and cold products</p>					
626	40 yr	Cough and cold preparation (acetaminophen/dextromethorphan/doxylamine/pseudoephedrine)	Ingestion	Int unknown	48 µg/mL <sup>  </sup>
627	27 yr	Pseudoephedrine theophylline	Ingestion	Int suicide	70 µg/mL
<p>See also cases 230, 242, 311 (acetaminophen/dextromethorphan/doxylamine/pseudoephedrine); 268 (carbinoxamine/pseudoephedrine); 329 (chlorpheniramine); 250, 319 (pseudoephedrine).</p>					
<p>Diuretics</p>					
<p>See cases 564 (hydrochlorothiazide); 597 (hydrochlorothiazide/triamterene).</p>					
<p>Electrolytes and minerals</p>					
628*	9 mo	Ferrous sulfate tablets	Ingestion	Acc gen	3,730 µg/dL >5 h
629*	12 mo	Ferrous sulfate tablets	Ingestion	Acc gen	4,023 µg/dL >3 h
630*	14 mo	Ferrous sulfate tablets	Ingestion	Acc gen	2,088 µg/dL 1-2 h
631*	18 mo	Ferrous sulfate tablets	Ingestion	Acc gen	1,651 µg/dL 9 h
632*	2 yr	Ferrous sulfate tablets	Ingestion	Acc gen	14,000 µg/dL
633*	2 yr	Ferrous sulfate tablets	Ingestion	Acc gen	6,350 µg/dL
634*	3 yr	Ferrous sulfate tablets	Ingestion	Acc gen	20,763 µg/dL
635*	3 yr	Ferrous sulfate tablets	Ingestion	Acc gen	377 µg/dL
636*	19 yr	Ferrous sulfate tablets	Ingestion	Int suicide	4,289 µg/dL
		diphenhydramine			
		acetaminophen/hydrocodone			43 µg/mL <sup>  </sup>
637*	15 mo	Iron tablets	Ingestion	Acc gen	>400 µg/dL
638*	21 yr	Iron tablets	Ingestion	Int suicide	2,400 µg/dL 2.5 h
639*	71 yr	Magnesium	Parenteral	Acc misuse	16.5 mg/dL
640†	>17 yr	Zinc sulfate	Ingestion	Int unknown	
<p>See also cases 528 (iron); 760, 761 (prenatal vitamins with iron).</p>					

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
<b>Gastrointestinal preparations</b>					
641*	18 mo	Activated charcoal trihexyphenidyl	Ing/Inh	Acc gen	
<i>See also cases 187 (activated charcoal); 249 (diphenoxylate/atropine); 248 (metoclopramide).</i>					
<b>Hormones and hormone antagonists</b>					
642	47 yr	Chlorpropamide	Ingestion	Int suicide	
643‡	68 yr	Chlorpropamide propranolol	Ingestion	Int suicide	
644*	2 yr	Insulin	Parenteral	Acc misuse	487 µU/mL
645	24 yr	Insulin	Parenteral	Int suicide	
646	46 yr	Insulin diphenhydramine	Ing/Paren	Int suicide	
<i>See also cases 463 (estrogen); 440 (glyburide); 581 (glipizide); 604 (levothyroxine); 391, 559 (prednisone).</i>					
<b>Miscellaneous drugs</b>					
647*	75 yr	Glycine	Other	Acc misuse	
<i>See also cases 326 (allopurinol); 598 (methyl dopa); 320 (succinylcholine); 689 (vecuronium bromide).</i>					
<b>Muscle relaxants</b>					
648	17 yr	Methocarbamol	Ingestion	Int suicide	
<i>See also cases 383 (aspirin/carisoprodol); 477, 527 (baclofen); 510, 659, 738 (carisoprodol); 328 (cyclobenzaprine); 513 (dantrolene).</i>					
<b>Sedative/hypnotic and antipsychotic agents</b>					
649	82 yr	Alprazolam acetaminophen/oxycodone naproxen	Ingestion	Int suicide	
650	37 yr	Alprazolam aspirin/oxycodone	Ingestion	Int suicide	
651	80 yr	Alprazolam doxepin nifedipine	Ingestion	Int unknown	
652‡	>17 yr	Benzodiazepines ethanol	Ingestion	Int suicide	250 mg/dL
653‡	52 yr	Chloral hydrate doxepin opiates	Ingestion	Int suicide	
654	81 yr	Chlordiazepoxide acetaminophen/codeine	Ingestion	Unknown	0.7 µg/mL
655	13 yr	Chlorpromazine	Ingestion	Acc misuse	
656‡	39 yr	Chlorpromazine diazepam acetaminophen/oxycodone	Ingestion	Int suicide	
657‡	20 yr	Chlorpromazine fluoxetine benzodiazepines	Ingestion	Int suicide	167 ng/mL
658‡	40 yr	Chlorpromazine nifedipine	Ingestion	Int suicide	
659‡	33 yr	Clonazepam carisoprodol	Ingestion	Int suicide	
660‡	29 yr	Diazepam codeine meprobamate	Ingestion	Unknown	0.1 µg/mL§ 1.3 µg/mL§ 22.5 µg/mL§
661	90 yr	Ethchlorvynol	Ingestion	Int suicide	9.9 mg/dL
662‡	20 yr	Ethchlorvynol diazepam	ingestion	Int suicide	>12 h
663	81 yr	Ethchlorvynol diazepam	Ingestion	Int suicide	
664‡	40 yr	Fluphenazine	Ingestion	Int suicide	
665	31 yr	Glutethimide acetaminophen/codeine	Ing/Paren	Int unknown	9.5 µg/mL§ codeine 0.08 µg/mL§ morphine 0.01 µg/mL§
666‡	26 yr	cocaine Glutethimide codeine acetaminophen	Ingestion	Int unknown	6.78 µg/mL§ 1.33 µg/mL§ 10.9 µg/mL§
667‡	28 yr	Glutethimide codeine diazepam	Ingestion	Int suicide	8 µg/mL
668	18 yr	Glutethimide codeine phencyclidine	Ingestion	Int abuse	

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
669‡	33 yr	Haloperidol amantadine benztropine	Ingestion	Int suicide	
670‡	35 yr	Haloperidol trazodone clonazepam	Ingestion	Int suicide	
671‡	>17 yr	Loxapine	Ingestion	Int suicide	
672‡*	42 yr	Meprobamate	Ingestion	Int suicide	
673	50 yr	Meprobamate	Ingestion	Int unknown	170 µg/mL
674‡	>17 yr	Meprobamate	Ingestion	Unknown	78.8 µg/mL§
675	29 yr	Mesoridazine	Ingestion	Int suicide	
676‡	40 yr	Midazolam doxepin fentanyl	Ing/Paren	Int suicide	0.01 ng/mL
677	86 yr	Pentobarbital	Ingestion	Int suicide	11.5 µg/mL
678‡	65 yr	Pentobarbital isopropanol	Ingestion	Int suicide	38.2 µg/mL acetone 285 µg/mL
679	75 yr	Perphenazine enalapril propranolol	Ingestion	Int suicide	
680‡‡	52 yr	Perphenazine imipramine	Ingestion	Int suicide	286 ng/mL desipramine 555 ng/mL
681	93 yr	Phenobarbital	Ingestion	Int suicide	
682	32 yr	Phenobarbital acetaminophen	Ingestion	Int suicide	125 µg/mL 82 µg/mL
683	40 yr	Phenobarbital acetaminophen butalbital	Ingestion	Int suicide	71 µg/mL 222 µg/mL
684‡	36 yr	Secobarbital diphenhydramine	Ingestion	Int suicide	
685‡	34 yr	Sleep aid (doxylamine)	Ingestion	Unknown	
686	27 yr	Sleep aid (doxylamine) magnesium salicylate	Ingestion	Int suicide	44.0 mg/dL
687‡*	13 yr	Temazepam	Ingestion	Int suicide	3.6 µg/mL§
688‡	34 yr	Temazepam	Ingestion	Int suicide	4,769 ng/mL oxazepam 404 ng/mL 237 mg/dL
689‡	39 yr	ethanol Thiopental vecuronium	Parenteral	Int suicide	
690	63 yr	Triazolam	Ingestion	Int suicide	

See also cases 20, 334, 419, 438, 465, 469, 502, 618 (alprazolam); 336, 459 (barbiturates); 337, 338, 350, 459, 476, 522, 588, 657, 725, 735 (benzodiazepines); 440 (buspirone); 683 (butalbital); 404 (chloral hydrate); 252, 258, 329, 405, 460 (chlordiazepoxide); 259, 410, 514, 747 (chlorpromazine); 461, 466, 563, 670 (clonazepam); 199, 259, 260, 322, 333, 391, 518, 602, 656, 662, 663, 667 (diazepam); 346 (ethchlorvynol); 484 (fluphenazine); 397 (flurazepam); 324 (glutethimide); 486 (haloperidol); 271, 557, 757 (lorazepam); 509 (loxapine); 192, 244, 660 (meprobamate); 512 (mesoridazine); 406 (oxazepam); 247, 402 (perphenazine); 487, 510 (phenobarbital); 403 (phenobarbital, veterinary); 407 (phenobarbital/ergotamine/bellafoline); 248 (phenobarbital/hyoscyamine/atropine/hyoscine); 404 (promethazine); 360 (quazepam); 479, 511, 740 (temazepam); 245, 408, 512, 517, 604 (thioridazine); 757 (thiothixene); 325, 468 (triazolam); 447, 517 (trifluoperazine); 244, 268 (trimethobenzamide).

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
Serums, toxoids, and vaccines					
691*	52 yr	Crotalid antivenin unknown rattlesnake bite	Bite/sting/ Paren	Adv rxn	
Stimulants and street drugs					
692	35 yr	Amphetamine	Unknown	Unknown	
693‡	20 yr	Amphetamine ethanol	Ingestion	Int abuse	325 mg/dL
694‡	15 yr	Cocaine	Unknown	Int abuse	benzoylecgonine 0.14 µg/mL§
695	23 yr	Cocaine	Inhalation	Int suicide	
696	24 yr	Cocaine	Unknown	Int abuse	
697	24 yr	Cocaine	Parenteral	Int abuse	
698‡	24 yr	Cocaine	Inhalation	Int abuse	
699	25 yr	Cocaine	Unknown	Int abuse	
700	25 yr	Cocaine (crack)	Inhalation	Int abuse	
701‡	27 yr	Cocaine (crack)	Inhalation	Int abuse	
702	28 yr	Cocaine	Inhalation	Int abuse	
703	29 yr	Cocaine	Ingestion	Int abuse	
704	30 yr	Cocaine	Unknown	Int unknown	
705	31 yr	Cocaine	Inhalation	Int abuse	
706	32 yr	Cocaine	Inhalation	Int abuse	
707‡	32 yr	Cocaine	Unknown	Int abuse	
708	33 yr	Cocaine	Ingestion	Int misuse	
709	33 yr	Cocaine	Ingestion	Int unknown	
710	34 yr	Cocaine	Inhalation	Int abuse	

(Continued on following page)

TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
711‡	34 yr	Cocaine	Inhalation	Int abuse	
712	35 yr	Cocaine (crack)	Inhalation	Int abuse	
713‡	36 yr	Cocaine	Unknown	Int unknown	
714‡	37 yr	Cocaine	Ingestion	Int misuse	
715‡	37 yr	Cocaine	Inhalation	Int abuse	
716‡	38 yr	Cocaine	Parenteral	Int abuse	
717	38 yr	Cocaine	Inhalation	Int abuse	
718	40 yr	Cocaine (crack)	Ingestion	Int misuse	1.53 µg/mL§ benzoylecgonine 1.37 µg/mL§ 0.21 µg/mL§ benzoylecgonine 0.88 µg/mL§
719‡	41 yr	Cocaine	Parenteral	Int abuse	
720	50 yr	Cocaine	Ingestion	Int misuse	
721	57 yr	Cocaine	Unknown	Int abuse	0.05 µg/mL§ benzoylecgonine 1.25 µg/mL§
722‡	>17 yr	Cocaine	Unknown	Unknown	
723	35 yr	Cocaine amitriptyline/perphenazine	Ing/Unk	Int unknown	
724‡	34 yr	Cocaine amphetamine	Ing/Paren	Int unknown	
725	>17 yr	Cocaine benzodiazepines ethanol	Unknown	Int unknown	
726	25 yr	Cocaine (crack) ethanol	Ing/Inh	Int abuse	119 mg/dL
727	28 yr	Cocaine ethanol	Ing/Inh	Int abuse	benzoylecgonine 0.79 µg/mL§ 100 mg/dL
728‡	30 yr	Cocaine ethanol	Ing/Unk	Int abuse	benzoylecgonine 1.25 µg/mL§ 290 mg/dL§
729	31 yr	Cocaine (crack) ethanol	Ing/Inh	Int abuse	
730	34 yr	Cocaine marijuana	Unknown	Int abuse	
731‡	43 yr	Cocaine methadone diphenhydramine	Ingestion	Int suicide	
732‡	29 yr	Cocaine methadone ethanol	Ing/Paren	Int abuse	
733‡	30 yr	Cocaine methamphetamine	Ingestion	Int abuse	benzoylecgonine 2.14 µg/mL§ 0.53 µg/mL§ amphetamine 0.12 µg/mL§
734	30 yr	Cocaine opiates acetaminophen	Unknown	Int unknown	60 µg/mL
735‡	24 yr	Cocaine opiates benzodiazepines	Ing/Paren	Int abuse	
736‡	30 yr	Cocaine opiates ethanol	Unknown	Int abuse	260 mg/dL
737	25 yr	Cocaine phenelzine	Ingestion	Int suicide	
738‡	32 yr	Cocaine propoxyphene	Ingestion	Unknown	6.1 µg/mL§ 3.2 µg/mL§ norpropoxyphene 3.4 µg/mL§ 2.3 µg/mL§
739	>17 yr	carisoprodol Cocaine rust remover (HF 6-8%) ethanol	Ingestion	Int suicide	200 mg/dL
740	38 yr	Cocaine temazepam	Ing/Unk	Int suicide	
741‡	31 yr	Cocaine unknown brush cleaner	Inhalation	Int abuse	
742‡	27 yr	Diet aid (caffeine/benzocaine) cocaine	Ing/Inh	Int unknown	
743‡	23 yr	Heroin	Parenteral	Int abuse	
744‡	23 yr	Heroin	Parenteral	Int suicide	morphine 0.075 mg/dL§
745‡	27 yr	Heroin	Parenteral	Int unknown	
746‡	37 yr	Heroin	Parenteral	Int abuse	
747‡	34 yr	Heroin chlorpromazine cocaine	Ing/Paren	Int abuse	
748	31 yr	Heroin cocaine (crack)	Parenteral	Int abuse	

(Continued on following page)



TABLE 16. Summary of Fatal Exposures (Cont'd)

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
749‡	37 yr	Heroin cocaine	Inh/Paren	Int abuse	
750‡	45 yr	Heroin cocaine	Unknown	Int abuse	
751†‡	40 yr	Heroin ethanol quinidine	Ing/Paren	Int abuse	
752	35 yr	LSD cocaine (crack)	Ing/Inh	Int abuse	
753†*	26 yr	Methamphetamine	Inhalation	Int abuse	
754	35 yr	Methamphetamine	Unknown	Int abuse	
755*	27 yr	Methamphetamine amphetamine cocaine	Parenteral	Int abuse	2,440 ng/mL§ 80 ng/mL§
756†*	21 yr	Phendimetrazine	Ingestion	Unknown	
757‡	28 yr	Unknown street drug thiothixene lorazepam	Ingestion	Int suicide	
See also cases 255, 336, 390, 724, 755 (amphetamines); 308 (caffeine); 9, 99, 199, 385, 389, 390, 462, 476, 505, 519, 606, 665, 742, 747, 748, 749, 750, 752, 755 (cocaine); 252, 330 (heroin); 172, 350, 730 (marijuana); 733 (methamphetamines); 399 (methylphenidate); 522, 668 (phencyclidine); 249, 328 (phenylpropanolamine).					
Topical					
758*	2 yr	Oil of wintergreen (methylsalicylate 98%)	Ingestion	Acc gen	79.7 mg/dL 5-6 h
Veterinary drugs					
759‡	27 yr	Xylazine	Parenteral	Int abuse	
Vitamins					
760*	17 mo	Prenatal vitamins with iron (65 mg/tab)	Ingestion	Acc gen	18,150 µg/dL
761*	18 mo	Prenatal vitamins with iron (65 mg/tab)	Ingestion	Acc gen	>1,000 µg/dL
762†*	37 yr	Vitamin A	Ingestion	Int misuse	
See also case 621 (niacin).					
Unknown drugs					
763	51 yr	Unknown drug ethanol	Ingestion	Int suicide	230 mg/dL
764	28 yr	Unknown drugs honeysuckle tea	Ingestion	Unknown	

‡ Prehospital (cardiac and/or respiratory) arrest.  
\* Abstract of case provided in appendix.  
† Chronic exposure.  
§ Level obtained postmortem.  
‡ Acetaminophen level.  
¶ Salicylate level.  
\* Level includes metabolite and parent compound.

TABLE 17. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
<b>Adhesives/glues</b>													
Cyanoacrylates	10,230	4,028	1,555	4,484	10,104	100	15	2,216	1,696	3,092	271	8	0
Epoxy	766	345	23	386	750	5	8	277	201	262	27	2	0
Toluene/xylene	2,660	2,062	339	251	2,596	59	1	340	837	648	26	1	0
Nontoxic	1,518	1,165	227	118	1,486	21	5	72	323	96	2	0	0
Unknown	7,002	3,728	811	2,349	6,753	130	107	1,085	1,811	1,357	102	7	1
<b>*Category Total</b>	<b>22,176</b>	<b>11,328</b>	<b>2,955</b>	<b>7,588</b>	<b>21,689</b>	<b>315</b>	<b>136</b>	<b>3,990</b>	<b>4,868</b>	<b>5,455</b>	<b>428</b>	<b>18</b>	<b>1</b>
<b>Alcohols</b>													
Ethanol (beverage)	15,007	989	1,427	12,380	2,336	12,219	244	12,332	1,752	5,859	1,314	262	50
Ethanol (other)	13,481	2,640	1,183	9,406	4,475	8,672	150	9,183	2,075	4,434	1,100	212	8
Higher alcohols	162	70	11	77	158	4	0	72	38	49	8	1	0
Isopropanol	5,672	3,917	323	1,388	5,080	560	6	1,438	2,205	1,213	118	29	1
Methanol	985	300	113	545	865	105	1	546	307	260	48	15	10
Rubbing ethanol: with methylsalicylate	33	24	1	8	29	3	0	9	14	5	2	0	0
Rubbing ethanol: without methylsalicylate	349	283	17	46	332	14	0	54	184	48	4	0	1
Rubbing isopropanol: with methylsalicylate	206	170	8	27	197	9	0	52	98	43	4	0	1
Rubbing isopropanol: without methylsalicylate	12,749	9,865	643	2,154	11,657	1,042	8	2,632	4,613	2,242	168	39	1

(Continued on following page)

TABLE 17. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
Rubbing alcohol: unknown type	335	248	23	62	298	37	0	83	114	54	5	0	0
Other alcohol	119	52	11	56	66	50	1	69	21	38	5	2	0
Unknown alcohol	1,198	239	126	804	443	716	23	841	121	319	79	26	0
<i>*Category total</i>	50,296	18,797	3,886	26,953	25,936	23,431	433	27,311	11,542	14,564	2,855	586	72
<i>Arts/crafts/office supplies</i>													
Artist paints, non-water color	831	631	82	111	819	12	0	63	258	71	4	1	0
Chalk	2,021	1,885	71	58	2,005	11	3	80	394	58	3	1	0
Clay	1,303	1,173	58	68	1,294	7	1	50	244	72	4	0	0
Crayon	1,846	1,683	89	67	1,827	17	0	49	314	66	1	0	0
Glazes	318	147	31	132	307	9	1	76	108	24	1	1	1
Office supplies: miscellaneous	233	124	22	84	228	4	1	47	63	51	4	0	0
Pencil	3,255	1,925	1,000	293	3,202	50	2	225	465	412	11	0	0
Pens/ink	12,966	10,446	1,909	545	12,794	145	18	467	3,137	568	18	0	0
Typewriter correction fluid	1,745	1,165	342	220	1,635	106	0	198	509	319	10	1	0
Water color	2,159	1,842	170	145	2,143	13	2	72	530	100	0	0	0
Other	5,182	4,275	362	503	5,122	47	7	305	1,063	337	17	2	0
Unknown	432	326	66	39	429	3	0	41	105	42	2	0	0
<i>*Category total</i>	32,291	25,622	4,202	2,265	31,805	424	35	1,673	7,190	2,120	75	6	1
<i>Auto/aircraft/boat products</i>													
Ethylene glycol	3,209	713	251	2,181	3,028	161	2	1,369	883	864	141	41	8
Glycols: other	1,528	552	107	849	1,486	34	3	591	408	605	35	3	1
Glycol and methanol	89	37	14	36	87	2	0	27	20	35	4	0	0
Hydrocarbons	2,451	1,102	236	1,072	2,391	55	2	706	677	962	68	0	0
Methanol	1,246	530	106	579	1,149	96	0	620	459	372	42	14	7
Nontoxic	85	71	4	9	84	1	0	12	20	19	1	0	0
Other	1,889	760	240	865	1,839	42	4	710	359	904	83	0	1
Unknown	289	114	44	128	277	11	0	134	66	121	14	2	0
<i>*Category Total</i>	10,786	3,879	1,002	5,719	10,341	402	11	4,169	2,892	3,882	388	60	17
<i>Batteries</i>													
Automotive batteries	1,751	211	147	1,352	1,724	18	1	716	188	849	133	7	0
Disc batteries: alkaline (MnO <sub>2</sub> )	231	152	48	29	226	5	0	133	119	54	5	0	0
Disc batteries: lithium	47	25	5	17	46	1	0	30	16	13	0	0	0
Disc batteries: mercuric oxide	109	64	8	37	105	3	0	90	75	4	1	0	0
Disc batteries: nickel cadmium	10	3	0	7	10	0	0	4	3	1	0	0	0
Disc batteries: silver oxide	63	53	4	6	62	1	0	53	47	5	1	0	0
Disc batteries: zinc-air	5	3	0	2	5	0	0	4	3	0	0	0	0
Disc batteries: other	13	5	5	2	13	0	0	10	4	3	0	0	0
Disc batteries: unknown	2,173	1,717	318	121	2,146	22	0	1,640	1,203	108	5	5	0
Dry cell batteries	3,706	2,264	809	609	3,616	81	0	649	970	1,241	84	1	0
Other batteries	158	86	33	37	155	3	0	32	37	46	1	0	0
Unknown batteries	68	35	13	17	65	1	0	24	20	22	3	0	0
<i>*Category total</i>	8,334	4,618	1,390	2,236	8,173	135	1	3,385	2,685	2,346	233	13	0
<i>Bites and envenomations</i>													
Coelenterate	578	87	204	283	573	0	2	121	8	198	30	0	0
Fish	1,289	35	163	1,065	1,279	3	7	490	24	618	113	0	0
Other/unknown marine animal	140	66	19	53	140	0	0	41	17	33	12	0	0
<i>Insects</i>													
Ant/fire ant	2,687	1,165	351	1,159	2,654	4	28	415	71	1,411	108	3	0
Bee/wasp/hornet	23,224	5,832	5,358	11,809	22,992	7	215	3,986	562	12,449	743	14	4
Caterpillar	1,431	282	401	741	1,427	0	4	64	28	474	10	0	0
Centipede/millipede	76	25	15	36	76	0	0	11	6	48	3	0	0
Mosquito	297	143	60	93	291	0	5	69	4	152	9	0	0
Scorpion	6,765	563	1,182	4,970	6,758	1	4	689	181	4,387	224	10	0
Tick	3,526	1,065	813	1,610	3,515	1	4	957	587	619	28	0	0
Other insect	7,019	1,804	1,260	3,880	6,923	8	76	2,075	310	3,463	235	8	0
<i>Mammals</i>													
Bat	95	15	22	55	94	0	1	68	20	22	2	0	0
Cat	594	125	117	345	589	0	3	318	129	167	16	0	0
Dog	1,386	318	558	497	1,380	2	2	927	530	264	19	1	0
Fox	8	0	2	4	8	0	0	6	1	2	0	0	0
Human	135	47	31	54	116	16	1	73	35	47	1	0	0
Raccoon	58	4	9	44	58	0	0	37	4	16	1	0	0
Rodents/lagomorphs	1,456	445	535	453	1,441	4	9	318	132	486	4	0	0
Skunk	200	28	49	116	196	4	0	18	45	73	3	0	0
Other mammal	512	138	133	228	510	0	1	225	59	127	3	0	0
Reptile: other/unknown	847	426	246	166	833	11	3	127	110	257	11	0	0
<i>Snakes</i>													
Copperhead	386	39	73	271	381	3	0	367	16	186	123	8	0
Coral	27	2	7	18	26	0	0	25	7	7	2	2	0
Cottonmouth	66	4	14	48	65	1	0	62	5	27	15	2	0
Crotalid: unknown	9	1	5	3	9	0	0	6	1	5	1	1	0
Rattlesnake	603	42	90	460	585	14	2	547	37	177	231	44	1
Exotic snake: poisonous	86	6	19	61	82	1	2	73	12	36	11	5	0
Exotic snake: nonpoisonous	287	19	87	177	287	0	0	114	12	147	4	0	0
Exotic snake: unknown if poisonous	2	0	1	1	2	0	0	1	0	1	0	0	0

(Continued on following page)

TABLE 17. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn	None	Minor	Moderate	Major	Death	
Nonpoisonous snake	1,039	138	539	350	1,032	3	4	194	124	468	4	0	0
Unknown snake	1,903	229	708	940	1,893	6	4	1,054	270	867	94	12	0
<b>Spiders</b>													
Black widow	2,591	293	341	1,935	2,580	1	8	910	302	1,259	297	8	0
Brown recluse	1,484	172	179	1,105	1,476	0	7	846	43	535	185	10	0
Other spider	422	78	65	268	407	0	15	84	19	218	14	1	0
Tarantula	66	9	20	35	64	1	1	14	2	41	3	0	0
Unknown insect or spider	15,647	3,070	2,633	9,800	15,551	10	71	3,651	523	8,276	693	10	0
<i>*Category total</i>	76,941	16,715	16,309	43,133	76,293	101	479	18,983	4,236	37,563	3,252	139	5
<b>Building/construction products</b>													
Caulking compounds and putties	2,521	2,077	88	346	2,492	21	3	195	761	236	15	2	0
Cement, concrete (excluding glues)	1,219	410	68	723	1,208	7	2	582	171	427	159	4	0
Insulation: asbestos	497	61	32	391	490	1	3	150	41	76	2	0	0
Insulation: fiberglass	1,347	616	139	570	1,331	8	7	306	231	475	34	0	0
Insulation: urea/formaldehyde	158	62	20	76	153	1	0	42	25	40	5	0	0
Insulation: other	204	81	19	100	203	0	1	33	34	61	8	0	0
Insulation: unknown	127	72	7	46	127	0	0	22	35	23	3	0	0
Soldering flux	393	181	50	155	389	4	0	153	99	132	18	0	0
Other construction product	1,485	961	73	439	1,472	8	3	257	307	271	28	1	0
Unknown construction product	126	32	14	78	126	0	0	55	20	43	10	0	0
<i>*Category total</i>	8,077	4,553	510	2,924	7,991	50	19	1,795	1,724	1,784	282	7	0
<b>Chemicals</b>													
Acetone	1,137	462	91	560	1,078	46	4	364	233	367	39	3	0
Acids: hydrochloric	2,623	241	323	1,992	2,561	49	2	1,140	235	1,357	179	6	0
Acids: hydrofluoric	1,375	93	45	1,190	1,358	13	0	1,168	72	694	302	13	3
Acids: other	4,388	771	482	3,043	4,274	89	16	2,141	607	2,068	304	21	2
Acids: unknown	517	67	63	378	489	26	1	308	31	231	44	4	0
Alkali	6,112	2,608	603	2,793	5,977	102	17	2,453	1,195	2,323	489	40	2
Ammonia	5,748	2,053	653	2,908	5,519	208	10	2,152	778	2,545	292	10	0
Borates/boric acid	2,936	1,899	156	842	2,784	134	7	598	789	351	23	3	0
Chlorates	64	17	19	26	64	0	0	28	10	26	5	0	0
Cyanide	489	22	26	425	434	39	5	383	89	157	25	7	12
Dioxin	27	4	0	21	26	1	0	18	7	5	1	0	0
Formaldehyde/formalin	1,380	295	190	864	1,303	51	15	623	279	545	47	3	2
Glycol: ethylene	613	161	60	382	522	76	0	322	149	144	21	30	11
Glycol: other	1,326	750	84	473	1,279	30	7	425	321	319	44	1	0
Ketones	1,016	300	34	656	1,002	8	3	555	167	435	57	1	1
Methylene chloride	996	166	70	730	971	17	3	533	110	474	66	1	0
Nitrates and nitrites	919	292	246	362	861	48	6	294	256	237	24	1	0
Phenol/creosote	1,338	217	118	972	1,305	17	10	620	133	626	110	2	1
Strychnine	20	2	4	14	9	11	0	15	3	4	1	2	0
Toluene diisocyanate	481	64	30	374	466	7	2	219	64	196	39	0	0
Other chemical	17,780	6,643	1,791	9,037	16,360	945	250	6,825	3,502	4,724	572	91	2
Unknown chemical	2,381	1,198	245	903	2,325	28	24	578	430	488	44	0	1
<i>*Category total</i>	53,666	18,325	5,333	28,945	50,967	1,945	382	21,762	9,460	18,316	2,728	239	37
<b>Cleaning substances (household)</b>													
Ammonia cleaners (all purpose)	4,642	2,493	319	1,799	4,502	128	6	903	1,056	1,560	116	6	0
Automatic dishwasher granules	5,445	4,960	118	348	5,426	14	2	206	2,363	932	21	0	0
Automatic dishwasher liquids	2,135	1,835	58	230	2,125	8	1	136	922	368	16	1	0
Automatic dishwasher rinse agents	591	546	13	31	589	1	1	12	221	49	3	0	0
Automatic dishwasher: other/ unknown	1,148	943	44	155	1,140	8	0	124	448	261	16	1	0
Bleaches: borate	600	380	29	188	580	4	16	92	173	175	15	0	0
Bleaches: hypochlorite	39,830	18,997	3,030	17,318	38,551	1,121	72	8,583	7,470	15,063	834	28	0
Bleaches: nonhypochlorite	980	554	63	348	950	18	10	175	232	295	12	1	0
Bleaches: other/unknown	450	292	29	122	432	15	0	67	104	141	13	0	0
Carpet/upholstery/leather/vinyl cleaner	2,797	2,231	134	408	2,753	26	15	209	845	551	14	1	0
Cleaners: anionic/nonionic	9,182	7,405	387	1,323	9,005	159	13	798	3,027	1,742	60	2	0
Cleaners: other/unknown	2,155	1,434	127	578	2,103	45	3	364	661	545	42	2	0
Disinfectants: hypochlorite	3,950	1,596	455	1,855	3,871	53	20	1,051	733	1,792	145	5	0
Disinfectants: phenol	4,054	2,883	225	904	3,836	198	10	678	1,092	1,118	77	2	1
Disinfectants: pine oil	11,589	8,895	556	2,043	11,136	407	23	2,377	4,276	2,691	130	14	2
Disinfectants: other/unknown	1,920	1,128	134	641	1,857	56	4	594	504	612	63	3	0
Drain cleaners: acid	873	117	91	639	841	29	1	376	78	458	95	10	1
Drain cleaners: alkali	2,698	640	215	1,796	2,462	215	4	1,214	375	1,234	226	29	5
Drain cleaners: other/unknown	234	60	21	147	222	10	0	95	28	93	21	2	0
Fabric softeners: aerosol/spray	52	25	4	22	47	2	3	8	16	10	2	0	0
Fabric softeners: liquid	678	539	31	101	669	6	2	62	227	117	5	0	0
Fabric softeners: solid sheet	367	344	9	12	363	0	3	16	105	25	2	0	0
Fabric softeners: other/unknown	28	17	4	7	27	1	0	3	5	5	0	0	0
Glass cleaners: ammonia	2,661	2,136	192	306	2,609	45	2	225	698	648	12	0	0
Glass cleaners: anionic/nonionic	26	19	0	5	23	3	0	4	9	7	1	0	0

(Continued on following page)

TABLE 17. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
Glass cleaners: isopropanol	1,847	1,556	102	176	1,815	25	2	156	600	339	8	1	0
Glass cleaners: other/unknown	5,968	5,006	374	548	5,852	109	2	451	1,880	1,261	28	1	0
Hand dishwashing: anionic/nonionic	9,582	6,938	630	1,958	9,437	113	20	460	2,278	3,105	45	1	0
Hand dishwashing: other/unknown	1,595	1,111	97	375	1,562	26	2	181	285	400	7	0	0
Laundry additives													
Bluing/brightening agents (no detergent)	88	75	6	6	88	0	0	10	36	5	0	0	0
Detergent booster	38	26	2	10	36	1	1	12	12	13	3	0	0
Enzyme/microbiologic additive	46	26	6	12	46	0	0	3	12	6	2	0	0
Water softener	26	13	0	13	26	0	0	1	4	5	1	0	0
Other/unknown	240	195	7	34	235	1	3	45	63	71	7	1	0
Laundry detergents: granules	8,690	7,736	232	677	8,578	55	53	1,240	2,753	2,754	141	3	0
Laundry detergents: liquids	3,488	2,703	166	596	3,392	51	41	463	837	1,035	42	4	0
Laundry detergents: soaps	147	102	11	30	143	4	0	14	30	32	0	0	0
Laundry detergents: other/unknown	190	139	9	38	183	3	3	51	35	51	7	1	0
Laundry prewash/soil, stain removers													
Liquid solvent-based	182	150	5	25	182	0	0	18	59	56	2	0	0
Spray solvent-based	703	557	35	106	700	3	0	82	213	230	7	1	0
Other/unknown solvent-based	338	233	18	84	333	3	2	30	119	49	1	0	0
Dry surfactant-based	428	398	8	19	426	2	0	14	129	44	3	0	0
Liquid surfactant-based	1,755	1,516	48	185	1,743	10	1	160	531	372	26	0	0
Spray surfactant-based	193	165	7	19	193	0	0	17	49	71	0	1	0
Other/unknown surfactant-based	633	608	8	14	630	1	2	28	196	93	4	0	0
Other/unknown	38	18	6	14	36	2	0	5	8	17	0	0	0
Miscellaneous cleaner: acid	680	307	35	320	661	15	0	228	158	285	37	0	1
Miscellaneous cleaner: alkali	6,641	3,502	442	2,601	6,460	151	10	2,305	1,606	2,390	380	25	1
Miscellaneous cleaner: anionic/nonionic	8,064	5,844	461	1,693	7,814	129	107	1,290	2,139	2,097	101	5	0
Miscellaneous cleaner: cationic	3,529	2,205	238	1,044	3,409	99	12	874	1,074	971	112	9	1
Miscellaneous cleaner: ethanol	313	250	18	45	308	5	0	48	101	92	3	0	0
Miscellaneous cleaner: glycols	1,570	1,220	96	250	1,546	18	3	200	425	392	14	2	0
Miscellaneous cleaner: isopropanol	896	717	51	123	883	12	0	135	332	166	7	0	0
Miscellaneous cleaner: methanol	70	53	2	14	68	2	0	21	25	18	0	1	1
Miscellaneous cleaner: phenol	16	6	3	6	14	1	0	6	4	4	0	0	0
Miscellaneous cleaner: other/unknown	3,080	1,967	225	851	2,990	74	7	665	858	826	47	4	1
Oven cleaner: acid	10	1	0	9	9	0	1	5	1	4	3	0	0
Oven cleaner: alkali	3,457	1,062	305	2,015	3,384	55	10	1,584	370	1,669	366	10	0
Oven cleaner: detergent type	1	1	0	0	1	0	0	1	0	0	0	0	0
Oven cleaner: other/unknown	355	100	39	209	337	10	6	140	51	138	33	1	0
Rust remover: alkali	56	22	1	33	56	0	0	8	18	17	3	1	0
Rust remover: anionic/nonionic	2	1	0	1	1	0	0	1	0	0	0	0	0
Rust remover: hydrofluoric acid	1,586	144	89	1,322	1,558	22	4	1,135	170	928	216	3	2
Rust remover: other acid	295	156	14	119	288	6	1	72	83	83	9	1	0
Rust remover: other/unknown	280	54	19	188	270	6	3	78	48	135	10	0	0
Spot/dry cleaning: anionic/nonionic	353	245	29	75	347	2	3	56	84	113	4	0	0
Spot/dry cleaning: glycol	101	70	4	27	101	0	0	10	29	22	0	0	0
Spot/dry cleaning: carbon tetrachloride	1	0	1	0	1	0	0	0	0	0	0	0	0
Spot/dry cleaning: perchloroethylene	111	63	5	42	106	5	0	50	34	33	2	0	0
Spot/dry cleaning: other halogenated hydrocarbon	178	89	8	81	169	9	0	53	40	52	6	0	0
Spot/dry cleaning: isopropanol	13	8	3	2	13	0	0	2	4	5	0	0	0
Spot/dry cleaning: other nonhalogenated hydrocarbon	203	130	12	57	192	10	1	52	69	69	4	1	0
Spot/dry cleaning: other/unknown	163	97	11	55	154	5	4	38	56	49	0	0	0
Starch/fabric finishes/cizing	1,075	906	57	107	1,047	20	6	50	275	130	3	0	0
Toilet bowl cleaner: acid	3,605	1,537	297	1,700	3,466	131	2	1,073	890	1,536	178	11	6
Toilet bowl cleaner: alkali	305	217	11	68	300	4	1	46	95	58	1	0	0
Toilet bowl cleaner: other/unknown	2,087	1,732	59	277	2,052	29	1	208	709	274	19	0	0
Wall/floor/tile cleaner: acid	3,323	1,628	192	1,471	3,262	48	9	820	905	1,239	137	2	0
Wall/floor/tile cleaner: alkali	6,605	3,973	377	2,181	6,494	84	14	1,591	1,610	2,727	187	4	1
Wall/floor/tile cleaner: anionic/nonionic	209	150	8	49	206	2	1	38	54	52	1	0	0
Wall/floor/tile cleaner: cationic	702	497	37	162	676	18	3	118	201	116	7	0	0

(Continued on following page)

TABLE 17. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
Wall/floor/tile cleaner: ethanol	6	1	1	4	5	1	0	1	0	2	0	0	0
Wall/floor/tile cleaner: glycols	563	417	33	105	553	5	2	60	192	113	4	0	0
Wall/floor/tile cleaner: isopropanol	17	13	1	3	17	0	0	3	7	3	0	0	0
Wall/floor/tile cleaner: methanol	7	0	1	6	7	0	0	4	1	3	0	0	0
Wall/floor/tile cleaner: other/ unknown	588	342	43	200	568	17	1	186	184	193	17	0	1
<i>*Category total</i>	186,416	119,467	11,293	53,780	181,548	3,976	555	35,068	48,699	57,505	4,186	201	24
<i>Industrial cleaners</i>													
Acids	1,044	152	77	789	1,022	21	0	583	105	570	111	5	0
Alkali	1,987	418	182	1,340	1,947	34	3	1,268	236	964	252	18	1
Anionic/nonionic	346	116	28	194	332	11	2	124	51	161	16	0	0
Cationic	475	79	60	325	443	32	0	246	67	246	43	5	0
Other/unknown	1,562	316	147	1,077	1,517	32	3	799	226	729	127	4	1
<i>*Category total</i>	5,414	1,081	494	3,725	5,261	130	8	3,020	685	2,670	549	32	2
<i>Cosmetics/personal care products</i>													
Bath oil, bubble bath	6,374	5,903	222	227	6,257	39	76	270	1,858	917	16	0	0
Creams, lotions, make-up	14,310	12,166	577	1,471	13,941	211	136	793	3,680	1,165	49	2	0
Dental: false teeth cleaning	1,116	245	69	791	1,078	34	1	127	375	154	4	1	0
Dental: toothpaste with fluoride	1,623	1,351	108	158	1,555	29	34	120	497	403	15	0	0
Dental: toothpaste without fluoride	178	128	14	32	169	5	4	18	38	29	1	0	0
Dental: other	1,115	790	76	240	1,081	15	18	157	300	268	8	1	0
Deodorants	9,727	8,712	387	591	9,579	126	16	460	2,411	1,164	28	1	0
Depilatories	517	223	55	232	437	30	50	152	89	210	27	1	0
Douches	305	207	15	81	288	7	9	35	92	30	0	0	0
Eye products	1,136	969	27	137	1,121	4	10	65	245	105	9	0	0
Hair coloring agents	1,372	698	73	577	1,267	21	83	359	288	441	73	3	0
Hair rinses, conditioners, relaxers	3,100	2,516	180	388	3,007	59	34	634	938	687	77	1	0
Hair shampoos	9,594	7,979	530	1,046	9,323	219	40	764	2,584	2,165	59	2	0
Hair sprays	5,565	3,885	865	774	5,174	372	12	624	1,512	1,584	61	4	0
Hair care: other	3,009	2,043	187	750	2,847	77	79	712	786	770	106	3	0
Lipsticks and lip balms, with camphor	512	464	22	24	505	4	2	27	128	73	0	0	0
Lipsticks and lip balms, without camphor	2,359	2,271	44	34	2,338	11	9	48	477	78	1	0	0
Mouthwash: ethanol	3,917	2,082	592	1,203	3,296	584	12	878	1,217	823	66	12	1
Mouthwash: nonethanol	609	391	102	112	541	58	9	171	213	152	6	0	0
Mouthwash: fluoride	1,418	1,105	253	55	1,395	17	6	72	556	112	0	0	0
Mouthwash: unknown	86	28	42	16	76	10	0	15	15	37	1	2	0
Nail polish	9,894	9,143	397	316	9,803	82	5	664	2,952	2,006	30	0	0
Nail polish removers: acetone	3,468	2,932	215	307	3,397	64	1	427	1,499	619	14	1	0
Nail polish removers: other	1,340	1,119	92	121	1,310	29	0	146	555	256	8	0	0
Nail polish removers: unknown	6,152	4,987	417	708	5,962	172	9	858	2,115	1,119	27	0	1
Nail products, miscellaneous	2,354	1,802	135	401	2,328	17	7	480	709	702	48	1	0
Perfume, cologne, aftershave	33,706	31,131	1,100	1,358	33,249	401	34	2,192	12,374	4,712	60	3	0
Peroxide	10,384	6,273	885	3,135	10,073	261	30	837	2,551	2,043	78	10	0
Powders: talc	3,278	2,990	127	147	3,228	44	5	384	829	943	17	2	0
Powders: without talc	808	774	18	16	805	2	1	25	181	172	2	0	0
Soaps	9,993	8,297	442	1,198	9,769	135	83	656	2,811	1,931	49	1	0
Suntan/sunscreen products	4,105	3,427	308	348	4,044	14	46	342	859	1,247	24	0	0
<i>*Category total</i>	153,424	127,031	8,576	16,994	149,243	3,153	861	13,512	45,734	27,117	964	51	2
<i>Deodorizers</i>													
Air fresheners	11,419	10,173	545	662	11,319	74	19	755	3,985	1,748	34	1	0
Diaper pail deodorizers	1,714	1,684	8	16	1,711	3	0	58	673	93	0	1	0
Toilet bowl deodorizers	1,190	1,143	19	25	1,188	0	1	102	501	96	2	0	0
Other	2,494	1,994	110	357	2,447	28	14	439	779	504	33	1	0
Unknown	211	160	20	28	203	6	1	36	64	46	0	0	0
<i>*Category total</i>	17,028	15,154	702	1,088	16,868	111	35	1,390	6,002	2,487	69	3	0
<i>Dyes</i>													
Fabric	877	707	65	100	861	7	8	84	287	62	0	0	0
Food dye (eg, Easter egg)	1,117	992	73	46	1,096	14	6	36	270	52	0	0	0
Leather	132	117	6	9	131	0	1	4	48	7	0	0	0
Other	448	311	55	80	435	4	7	65	148	55	5	0	0
Unknown	110	80	9	19	100	2	7	18	45	14	1	0	0
<i>*Category total</i>	2,684	2,207	208	254	2,623	27	29	207	798	190	6	0	0
<i>Essential oils</i>	3,221	2,320	443	437	3,053	123	43	529	846	1,279	36	1	0
<i>Fertilizers</i>													
Household plant food	4,876	3,569	439	829	4,855	17	4	153	1,503	238	4	0	0
Outdoor fertilizers	1,987	1,409	186	377	1,966	11	5	142	602	218	16	0	0
Plant hormones	87	43	13	29	86	1	0	14	20	16	1	1	0
Other	377	249	35	87	372	3	0	48	99	53	4	0	0
Unknown	1,649	1,169	163	300	1,633	8	7	149	472	230	13	0	0

(Continued on following page)

TABLE 17. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
<b>*Category total</b>	8,976	6,439	836	1,622	8,912	40	16	506	2,696	755	38	1	0
<i>Fire extinguishers</i>	2,409	283	504	1,575	2,294	101	1	859	374	1,117	62	1	0
<i>Food products/food poisoning</i>	46,482	12,932	5,614	27,143	40,205	466	5,610	5,559	5,537	11,360	764	22	1
<i>Foreign bodies/toys/miscellaneous</i>													
Ashes	693	640	15	36	689	4	0	40	180	82	3	0	0
Bubble blowing solutions	3,786	3,583	147	40	3,774	8	3	101	775	1,095	8	0	0
Charcoal	837	695	36	95	813	17	5	42	227	70	6	1	2
Christmas ornaments	1,529	1,398	60	63	1,523	3	3	90	369	114	2	0	0
Coins	4,953	4,225	612	101	4,919	28	2	1,783	1,551	417	25	6	0
Desiccants	13,430	12,038	785	537	13,347	67	5	480	2,154	131	4	2	0
Feces/urine	2,269	2,002	61	189	2,241	19	2	105	521	110	1	0	0
Glass	1,182	573	123	472	1,157	14	9	183	259	146	0	1	0
Incense, punk	313	289	12	12	312	1	0	27	97	31	1	0	0
Soil	2,076	1,843	42	186	2,067	5	3	160	512	186	5	0	0
Thermometer	13,509	7,753	3,637	1,997	13,420	76	5	733	2,584	293	4	2	0
Toys	4,440	3,679	618	120	4,388	46	4	237	1,078	358	10	0	0
Other	15,209	10,137	2,916	2,049	14,958	180	54	2,140	3,594	2,132	76	4	1
Unknown	246	158	40	44	241	3	1	51	82	31	2	0	0
<b>*Category total</b>	64,472	49,013	9,104	5,941	63,849	471	96	6,172	13,983	5,196	147	16	3
<i>Fumes/gases/vapors</i>													
Carbon dioxide	397	51	92	247	374	17	3	174	39	147	20	2	0
Carbon monoxide	9,136	1,151	1,114	6,679	8,780	314	4	5,367	991	3,862	641	92	37
Chloramine	2,465	88	93	2,270	2,410	50	2	789	111	1,472	128	4	0
Chlorine: acid mixed with hypochlorite	528	16	35	471	515	13	0	186	14	386	38	1	2
Chlorine: other	5,740	621	918	4,089	5,671	46	13	2,134	355	3,322	391	6	0
Hydrogen sulfide	897	79	71	723	887	4	0	359	141	375	48	14	5
Methane and natural gas	2,200	368	222	1,573	2,138	53	1	910	283	988	63	9	3
Polymer fume fever	10	1	0	9	10	0	0	3	2	8	0	0	0
Propane and other simple asphyxiants	1,691	152	351	1,143	1,487	196	3	780	158	709	108	6	1
Other	2,040	219	295	1,477	1,992	33	10	1,005	267	924	100	5	1
Unknown	941	80	115	727	919	11	5	380	82	431	24	1	0
<b>*Category total</b>	26,045	2,826	3,306	19,408	25,183	737	41	12,087	2,443	12,624	1,561	140	49
<i>Fungicides</i>													
Carbamate fungicide	356	120	15	215	351	2	1	126	75	92	11	2	0
Mercurial fungicide	3	0	0	3	3	0	0	0	0	0	0	0	0
Nonmercurial fungicide	339	62	24	239	334	4	1	157	45	131	10	1	0
Phthalimide fungicide	315	198	23	92	312	2	1	48	91	33	3	0	0
Other/unknown	434	180	38	211	423	7	3	117	96	115	5	0	0
<b>*Category total</b>	1,447	560	100	760	1,423	15	6	448	307	371	29	3	0
<i>Heavy metals</i>													
Aluminum	833	466	65	283	819	7	4	145	151	116	9	0	0
Arsenic (excluding pesticides)	499	83	32	370	404	48	4	305	92	92	16	2	0
Barium	17	4	2	10	14	0	3	4	1	6	1	0	0
Cadmium	86	20	6	58	85	1	0	50	18	22	5	0	0
Copper	894	209	288	384	827	61	4	293	186	290	17	2	0
Fireplace flame colors	11	10	0	1	11	0	0	0	5	1	0	0	0
Gold	6	1	1	4	6	0	0	2	1	0	0	0	0
Lead	2,591	1,328	316	919	2,507	46	7	979	475	257	44	7	0
Manganese	34	5	9	19	29	1	4	18	7	14	0	1	0
Mercury	2,339	1,054	351	898	2,176	111	31	555	615	203	17	7	1
Metal fume fever	972	22	33	905	969	1	1	385	15	511	74	2	0
Selenium	66	27	2	37	59	4	3	21	19	16	1	0	0
Thallium	28	15	5	8	23	2	1	11	4	4	0	1	1
Other	845	335	72	415	794	24	19	312	172	199	29	1	1
Unknown	20	6	3	11	18	1	0	6	2	3	1	0	0
<b>*Category total</b>	9,241	3,585	1,185	4,322	8,741	307	81	3,086	1,763	1,734	214	23	3
<i>Herbicides</i>													
Carbamate herbicide	119	11	14	91	115	2	2	62	8	63	4	0	0
2,4-D or 2,4,5-T	1,743	589	181	931	1,687	29	17	498	394	494	44	5	0
Diquat	102	33	25	42	102	0	0	45	27	25	4	0	0
Paraquat	134	11	11	110	126	6	1	96	27	38	5	3	4
Paraquat/diquat	1	0	1	0	0	1	0	0	0	0	0	0	0
Triazine herbicide	467	129	31	293	459	3	4	163	89	151	12	1	0
Urea herbicide	54	19	3	30	54	0	0	19	14	15	1	0	0
Other	3,284	929	326	1,963	3,207	38	24	896	708	905	71	5	0
Unknown	303	97	54	143	295	3	2	101	64	96	6	0	0
<b>*Category total</b>	6,207	1,818	646	3,603	6,045	82	50	1,880	1,331	1,787	147	14	4
<i>Hydrocarbons</i>													
Benzene	148	18	9	108	147	0	1	85	14	39	10	0	0
Carbon tetrachloride	71	10	3	57	66	2	1	40	11	24	5	2	0
Diesel fuel	1,274	364	106	777	1,236	35	2	372	227	567	35	0	0
Freon and other propellants	5,236	742	478	3,882	5,069	146	8	1,502	1,035	1,757	129	14	6

(Continued on following page)

TABLE 17. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
Gasoline	20,317	7,189	3,374	9,491	19,270	990	10	4,053	4,456	9,196	354	16	3
Halogenated hydrocarbon: other	1,598	283	246	1,035	1,411	172	6	790	220	734	83	10	10
Kerosene	3,305	2,397	197	683	3,239	57	4	1,276	1,076	1,165	129	7	4
Lighter fluid/naphtha	4,192	2,845	274	1,033	4,002	169	3	1,494	1,443	1,366	127	7	3
Lubricating oils/motor oils	4,020	3,091	237	655	3,964	47	0	565	1,717	664	30	3	0
Mineral seal oil	1,253	1,159	27	64	1,230	22	0	175	700	149	13	0	2
Mineral spirits/varsol	5,929	3,488	539	1,827	5,702	202	11	1,411	1,730	1,953	117	9	2
Toluene/xylene	2,387	630	206	1,499	2,191	177	6	1,104	427	986	117	12	0
Turpentine	1,537	740	182	601	1,355	169	2	523	356	512	32	5	0
Other	4,955	2,705	442	1,741	4,753	176	12	1,436	1,452	1,359	168	6	5
Unknown	7,314	4,984	420	1,838	7,138	146	12	2,102	2,564	2,081	211	13	1
*Category total	63,536	30,645	6,740	25,291	60,773	2,510	78	16,928	17,428	22,552	1,560	104	36
<i>Insecticides/pesticides (excluding rodenticides)</i>													
Arsenic pesticides	1,044	870	54	108	1,017	25	1	276	483	96	12	1	0
Borates/boric acid	3,020	2,582	105	301	2,957	55	5	357	1,018	183	8	0	0
Carbamate only	5,044	2,909	326	1,726	4,901	106	23	1,173	1,475	939	76	9	0
Carbamate with other pesticide	585	246	56	276	563	19	3	155	148	171	12	0	0
Chlorinated hydrocarbon only	3,400	1,783	396	1,185	3,212	124	50	1,286	1,156	728	67	10	1
Chlorinated hydrocarbon with other pesticide	195	84	14	92	184	6	5	46	42	53	5	0	0
Metalddehyde	263	205	7	49	257	5	0	56	127	26	3	1	0
Nicotine	26	14	2	10	24	2	0	6	8	7	1	0	0
Organophosphate only	12,474	4,678	921	6,726	12,043	313	67	4,097	3,276	3,229	379	57	14
Organophosphate with carbamate	2,879	1,337	267	1,245	2,751	107	17	564	803	688	37	2	0
Organophosphate with chlorinated hydrocarbon	261	74	22	161	252	6	2	80	54	83	7	2	0
Organophosphate with other pesticide	1,249	530	96	606	1,209	34	5	311	335	379	21	2	0
Organophosphate/carbamate/chlorinated hydrocarbon	80	23	8	49	77	1	1	31	22	19	4	0	0
Piperonyl butoxide alone	130	42	14	73	113	16	1	51	21	49	4	1	0
Piperonyl butoxide with pyrethrins	4,823	1,954	555	2,255	4,623	123	65	1,256	953	1,576	137	2	0
Pyrethrins only	4,477	1,764	447	2,207	4,286	102	80	1,352	825	1,355	162	4	0
Repellants (insect)	5,044	3,670	816	525	4,921	66	50	710	1,402	1,539	55	6	0
Rotenone	144	56	19	67	141	3	0	31	48	32	5	0	0
Veterinary insecticide	3,944	2,523	310	1,078	3,842	60	36	626	1,263	883	50	3	0
Other	2,784	1,920	155	668	2,723	33	24	384	836	320	28	5	1
Unknown	3,127	1,087	313	1,666	2,987	98	25	1,008	548	847	75	3	0
*Category total	54,993	28,351	4,903	21,073	53,083	1,304	460	13,856	14,843	13,202	1,148	108	16
<i>Lacrimators</i>													
Capsicum/peppers	537	264	177	93	520	15	0	106	30	363	18	0	0
Lacrimators: CN	5,830	1,823	1,950	1,999	5,385	365	2	1,127	281	3,682	87	3	0
Lacrimators: CS	457	165	199	84	437	18	0	85	24	320	6	1	0
Lacrimators: DM	4	2	0	2	4	0	0	1	3	0	0	0	0
Other	88	20	13	48	87	0	1	25	2	51	11	0	0
Unknown	438	121	137	162	413	22	0	87	38	294	8	1	0
*Category total	7,354	2,395	2,476	2,378	6,846	420	3	1,431	378	4,710	130	5	0
<i>Matches/fireworks/explosives</i>													
Explosives	212	132	44	34	197	14	0	58	70	34	2	0	0
Fireworks	618	478	101	37	604	13	0	76	226	98	8	0	0
Matches	2,488	2,369	49	56	2,464	17	4	94	729	64	4	0	0
Other	139	74	27	36	125	10	0	49	43	39	10	1	0
Unknown	8	6	0	2	8	0	0	1	4	0	1	0	0
*Category total	3,465	3,059	221	165	3,398	54	4	278	1,072	235	25	1	0
<i>Moth repellants</i>													
Paradichlorobenzene	359	307	11	41	354	3	2	29	141	34	0	0	0
Naphthalene	2,391	2,003	104	274	2,358	31	1	492	1,195	187	11	1	0
Other	6	5	0	1	6	0	0	1	1	0	0	0	0
Unknown	3,350	2,881	171	282	3,301	38	7	707	1,502	213	5	0	0
*Category total	6,106	5,196	286	598	6,019	72	10	1,229	2,839	434	16	1	0
<i>Mushrooms</i>													
Coprine	13	10	0	3	11	0	2	4	6	2	2	0	0
Cyclopeptide	47	12	4	30	38	6	2	39	4	10	15	1	1
Gastrointestinal irritants	225	124	28	69	204	10	10	92	98	54	30	2	1
Hallucinogenic	242	45	36	153	72	169	0	162	36	84	24	0	0
Ibotenic acid	16	5	1	8	12	3	0	14	1	4	3	1	0
Miscellaneous, nontoxic	189	91	13	84	162	5	21	48	73	39	10	0	0
Monomethylhydrazine	131	7	9	109	112	0	19	74	29	34	40	0	0
Muscarine	3	0	1	2	3	0	0	0	2	0	1	0	0
Orellanine	2	1	1	0	2	0	0	2	2	0	0	0	0

(Continued on following page)

TABLE 17. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Nonpharmaceuticals (Cont'd)

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
Other potentially toxic	42	30	5	7	42	0	0	19	22	9	0	0	0
Unknown	8,572	7,150	608	781	8,220	289	50	2,030	5,238	931	130	11	1
<i>*Category total</i>	9,482	7,475	706	1,246	8,878	482	104	2,484	5,511	1,167	255	15	3
<i>Paints and stripping agents</i>													
Paint: anti-algae	18	0	0	18	18	0	0	7	1	6	1	0	0
Paint: anti-corrosion	73	20	9	43	71	1	1	23	8	30	5	1	0
Paint: oil-base	2,304	1,017	326	932	2,232	62	7	487	576	746	45	3	0
Paint: water-base	3,109	2,480	126	481	3,090	13	2	235	945	302	15	0	0
Stains	1,233	586	117	517	1,197	27	5	268	286	384	21	0	0
Stripping agent: methylene chloride	1,302	269	80	916	1,263	33	6	517	142	735	83	3	0
Stripping agent: other	546	169	36	325	534	9	1	203	103	234	35	0	0
Stripping agent: unknown	586	163	55	355	568	17	0	203	90	268	33	1	0
Varnishes, lacquers	919	380	85	441	895	13	9	201	173	288	15	0	0
Wood preservatives	410	88	40	276	404	4	1	121	77	148	12	0	0
Other paint/varnish/lacquer	1,380	674	167	525	1,328	47	2	340	258	430	36	1	0
Unknown paint/varnish/lacquer	12,361	8,184	947	3,105	12,104	214	29	1,849	2,280	1,901	147	11	0
<i>*Category total</i>	24,241	14,030	1,988	7,934	23,704	440	63	4,454	4,939	5,472	448	20	0
<i>Photographic products</i>													
Developers, fixing baths, stop baths	372	32	95	239	364	5	3	145	66	171	15	0	0
Photographic coating fluids	10	7	0	3	10	0	0	3	3	0	0	0	0
Other photographic product	407	273	35	95	399	8	0	50	117	56	4	0	0
Unknown photographic product	25	9	3	13	25	0	0	7	5	6	0	0	0
<i>*Category total</i>	814	321	133	350	798	13	3	205	191	233	19	0	0
<i>Plants</i>													
Amygdalin/cyanogenic glycosides	3,597	2,837	447	282	3,528	33	31	253	1,258	155	12	1	0
Anticholinergic	755	251	236	257	416	323	3	422	160	182	133	5	0
Cardiac glycosides	2,824	2,161	371	275	2,742	69	10	502	1,331	249	20	1	0
Colchicine	14	9	0	4	11	2	1	5	3	2	1	1	1
Depressants	39	31	1	7	36	2	1	3	15	4	0	0	0
Dermatitis	18,445	10,988	2,149	5,108	17,983	187	264	1,795	3,640	5,404	422	3	0
Gastrointestinal irritants	20,243	17,415	1,181	1,543	19,831	285	110	1,344	7,964	1,795	91	6	0
Hallucinogenic	308	210	39	57	246	52	8	74	120	34	8	0	0
Nicotine	295	116	56	122	275	8	12	122	63	121	21	0	0
Nontoxic plant	23,892	21,409	1,282	1,075	23,632	132	112	632	5,053	1,009	35	3	0
Oxalate	19,152	17,598	812	673	19,002	124	17	741	8,057	2,694	57	1	0
Solanine	2,378	1,968	211	174	2,330	22	25	488	1,296	281	15	0	0
Stimulants	405	310	40	51	387	15	2	127	227	47	6	0	1
Toxalbumins	260	168	36	52	251	9	0	108	125	47	8	0	0
Other	2,526	2,032	254	227	2,426	54	40	281	884	274	37	0	0
Unknown	17,431	14,526	1,579	1,198	17,042	202	156	1,740	6,496	1,939	106	5	2
<i>*Category total</i>	112,564	92,029	8,694	11,105	110,138	1,519	792	8,637	36,692	14,237	972	26	4
<i>Polishes and waxes</i>	7,171	5,978	310	840	7,041	108	9	865	2,799	1,407	51	6	0
<i>Radioisotopes</i>	124	11	9	104	115	3	5	48	17	16	1	0	0
<i>Rodenticides</i>													
ANTU	49	38	5	6	42	5	0	34	4	1	0	0	0
Anticoagulant (standard)	2,145	1,951	44	139	2,066	74	3	659	783	75	5	1	0
Anticoagulant: long-acting	10,826	9,956	207	599	10,439	365	4	4,333	4,583	383	33	9	1
Cyanide	1	0	0	1	1	0	0	0	0	1	0	0	0
Monofluoroacetate	5	4	0	1	5	0	0	5	3	0	1	0	0
Strychnine	174	32	16	122	95	69	4	120	34	37	8	10	0
Vacor	2	1	0	1	2	0	0	1	0	0	1	0	0
Other	900	685	31	171	838	48	4	457	244	82	5	2	1
Unknown	1,428	1,187	38	194	1,296	120	2	779	565	92	8	2	0
<i>*Category total</i>	15,530	13,854	341	1,234	14,784	681	17	6,388	6,216	671	61	24	2
<i>Sporting equipment</i>	846	492	213	135	804	36	0	227	290	129	14	1	1
<i>Swimming pool/aquarium</i>	5,310	2,970	655	1,625	5,250	35	20	881	1,377	1,522	104	4	0
<i>Tobacco products</i>	10,009	9,286	245	453	9,846	130	22	2,270	3,960	2,486	83	4	0
<i>Other/unknown nondrug substance</i>	6,544	3,125	930	2,391	6,226	167	76	1,525	1,688	1,301	84	7	0
<i>Total no. nonpharmaceutical substances</i>	1,124,122	667,770	107,448	337,337	1,066,146	44,516	10,594	229,097	276,035	281,996	23,984	1,902	283
<i>% of nonpharmaceutical substances</i>		59.4	9.6	30.0	94.8	4.0	0.9	20.4	24.6	25.1	2.1	0.2	0.0
<i>% of all substances</i>	58.0	34.5	5.5	17.4	55.0	2.3	0.5	11.8	14.3	14.6	1.2	0.1	0.0

NOTE. Patients with totally unknown age, reason, or medical outcome were omitted from the respective tabulations.

ABBREVIATIONS: Acc, accidental; Adv Rxn, adverse reaction; Int, intentional.

\* Medical outcome data were also collected in categories labeled "unknown, non-toxic," "unknown, potentially toxic," and "unrelated effect." Thus, the numbers listed here do not represent the total poison exposure experience.



**TABLE 18. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals**

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
<b>Analgesics</b>													
<b>Acetaminophen only</b>													
Adult formulation	25,556	8,170	7,125	10,015	12,128	13,021	246	16,088	8,013	4,474	835	114	24
Pediatric formulation	47,117	44,583	2,114	304	46,544	460	89	6,089	14,641	1,405	56	5	0
Unknown formulation	10,212	4,624	2,107	3,309	5,654	4,392	69	5,712	2,967	1,586	349	69	26
<b>Acetaminophen in combination with</b>													
Aspirin (with other ingredients)	293	106	55	128	146	135	11	143	79	89	5	3	0
Aspirin (no other ingredients)	1,444	367	381	682	623	749	61	841	361	399	34	3	0
Codeine	7,330	1,520	1,014	4,673	2,744	4,014	494	4,821	1,689	2,301	274	52	9
Oxycodone	2,442	397	263	1,749	875	1,352	175	1,578	484	736	125	22	4
Propoxyphene	4,225	662	468	3,038	1,315	2,686	168	3,170	900	1,336	301	64	15
Other narcotic	4,117	530	437	3,087	1,296	2,376	407	2,630	743	1,388	158	30	2
Other drug (adult formulation)	5,160	1,004	850	3,233	1,814	3,140	158	3,589	1,226	1,591	261	50	2
Other drug (pediatric formulation)	205	36	32	135	64	127	12	149	49	67	9	1	0
<b>Aspirin only</b>													
Adult formulation	6,228	2,121	1,569	2,486	2,894	3,183	113	3,695	1,780	1,471	322	39	21
Pediatric formulation	565	500	43	20	520	37	8	110	201	34	4	1	0
Unknown formulation	10,967	2,413	3,309	5,083	3,560	7,108	161	8,100	2,618	3,089	796	98	33
<b>Aspirin in combination with</b>													
Codeine	824	152	97	562	284	488	44	589	171	271	56	8	0
Oxycodone	574	95	47	424	200	320	47	372	106	170	37	5	2
Propoxyphene	103	12	9	81	32	70	1	82	27	39	4	1	3
Other narcotic/analog	309	59	34	213	118	160	29	184	68	81	13	4	1
Other drug (adult formulation)	3,365	707	601	2,016	1,146	2,075	111	2,381	755	1,194	178	36	0
Other drug (pediatric formulation)	3	1	1	1	1	1	1	2	2	1	0	0	0
<b>Narcotics</b>													
Codeine	1,752	789	302	634	1,122	483	123	780	466	391	56	12	8
Meperidine	620	113	52	445	234	321	57	431	110	197	50	10	0
Methadone	329	41	15	266	105	198	15	295	31	92	42	24	4
Morphine	509	76	41	377	205	262	27	371	76	125	38	21	4
Oxycodone	149	21	15	107	42	89	15	100	22	42	9	2	0
Pentazocine	304	37	19	243	103	151	47	216	51	105	24	4	0
Propoxyphene	1,008	145	108	739	293	645	49	782	199	318	75	26	11
Other/unknown	1,328	324	147	835	555	590	149	822	248	413	103	34	12
<b>Nonaspirin salicylates</b>													
<b>Other nonsteroidal anti-inflammatory drugs</b>													
Colchicine	99	31	8	58	64	29	6	59	20	24	10	2	1
Ibuprofen, OTC	18,640	11,912	2,775	3,818	13,415	4,959	207	6,181	6,926	2,075	179	12	2
Ibuprofen, R <sub>x</sub>	6,550	1,950	1,106	3,399	2,959	3,423	124	3,801	1,896	1,297	141	16	1
Ibuprofen-unknown if OTC or R <sub>x</sub>	6,386	2,224	1,302	2,750	3,002	3,173	160	3,507	2,018	1,171	137	29	1
Indomethacin	918	308	110	494	462	368	82	508	267	251	35	3	0
Other	11,267	4,600	1,417	5,107	6,248	4,301	638	5,472	3,727	2,268	272	43	3
Unknown	12	4	1	7	5	4	3	5	4	2	2	0	0
Phenacetin	4	3	0	1	4	0	0	2	0	2	0	0	0
Phenazopyridine	889	636	78	170	709	130	48	343	354	181	29	4	0
Salicylamide	91	61	4	25	74	11	6	28	31	18	0	0	0
Other analgesic	75	22	7	45	41	31	2	43	16	23	4	4	0
Unknown analgesic	130	30	34	62	38	83	7	89	25	31	0	0	0
<b>*Category total</b>	<b>183,013</b>	<b>91,795</b>	<b>28,209</b>	<b>61,204</b>	<b>112,219</b>	<b>65,422</b>	<b>4,219</b>	<b>84,594</b>	<b>53,629</b>	<b>30,947</b>	<b>5,058</b>	<b>857</b>	<b>190</b>
<b>Anesthetics</b>													
<b>Inhalation anesthetics</b>													
Nitrous oxide	142	27	36	78	81	43	18	59	11	39	6	1	0
Other/unknown	200	26	23	148	173	22	1	80	33	83	8	0	0
Ketamine and analogs	18	0	0	18	10	8	0	15	3	5	2	1	1
Local and topical anesthetic	5,133	4,043	294	764	4,865	140	114	1,149	2,226	786	58	14	1
Other/unknown anesthetic	23	13	0	10	20	0	1	8	5	9	0	0	0
<b>*Category total</b>	<b>5,516</b>	<b>4,109</b>	<b>353</b>	<b>1,018</b>	<b>5,151</b>	<b>213</b>	<b>134</b>	<b>1,311</b>	<b>2,278</b>	<b>922</b>	<b>74</b>	<b>16</b>	<b>2</b>
<b>Anticholinergic drugs</b>													
	3,549	958	348	2,197	1,650	1,644	188	2,424	852	1,165	364	77	4
<b>Anticoagulants</b>													
Heparin	56	6	8	41	50	3	3	31	14	19	2	0	1
Warfarin (excluding rodenticides)	683	386	43	245	527	137	17	345	248	77	24	4	1
Other/unknown	28	18	0	9	25	2	1	14	6	3	0	0	0
<b>*Category total</b>	<b>767</b>	<b>410</b>	<b>51</b>	<b>295</b>	<b>602</b>	<b>142</b>	<b>21</b>	<b>390</b>	<b>271</b>	<b>99</b>	<b>26</b>	<b>4</b>	<b>2</b>
<b>Anticonvulsants</b>													
Carbamazepine	5,275	1,841	836	2,540	3,009	1,995	178	3,698	1,531	1,742	641	156	6
Phenytoin	4,170	912	346	2,872	2,073	1,730	243	3,070	958	1,330	434	61	3
Succinimides	119	61	32	25	100	13	6	47	28	28	3	0	1
Valproic acid	1,454	474	272	684	972	420	46	748	487	324	82	22	2
Other	139	33	9	95	116	19	3	49	38	45	1	1	0
Unknown	13	3	0	10	7	4	2	6	3	3	0	0	0

(Continued on following page)

TABLE 18. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
<b>*Category total</b>	11,170	3,324	1,495	6,226	6,277	4,181	478	7,618	2,864	3,472	1,161	240	12
<b>Antidepressants</b>													
Amitriptyline	6,566	877	630	4,963	1,673	4,645	136	5,741	946	2,086	1,167	607	48
Amoxapine	308	35	21	247	73	220	10	266	39	113	60	29	6
Desipramine	1,867	288	384	1,167	612	1,169	64	1,556	441	563	234	99	28
Doxepin	3,339	279	269	2,746	708	2,518	60	2,951	441	1,198	532	264	25
Imipramine	3,497	747	747	1,960	1,320	1,999	124	2,786	842	1,156	396	173	11
Maprotiline	134	16	17	100	49	78	6	117	28	36	22	9	0
Nortriptyline	3,049	290	373	2,335	743	2,161	106	2,572	493	1,074	398	168	28
Protriptyline	65	10	5	49	16	42	6	56	13	20	9	0	0
Other cyclic antidepressant	1,233	66	114	1,034	233	875	99	1,037	221	457	163	40	3
Unknown cyclic antidepressant	352	21	42	283	48	281	8	344	26	124	91	46	4
Cyclic antidepressant with benzodiazepine	268	50	16	198	81	182	4	230	59	74	36	17	0
Cyclic antidepressant with phenothiazine	837	124	69	631	232	577	15	720	146	286	128	52	4
Lithium	4,149	380	489	3,193	1,289	2,504	254	3,463	901	1,373	462	129	12
MAO inhibitors	670	76	22	555	223	303	132	546	122	219	85	39	5
Trazodone	3,129	237	251	2,578	721	2,256	114	2,557	603	1,255	225	50	5
Other antidepressant	6,366	652	837	4,750	1,507	4,517	285	5,098	1,622	2,033	452	119	9
Unknown antidepressant	42	2	6	31	6	36	0	39	11	8	3	0	0
<b>*Category total</b>	35,871	4,150	4,292	26,820	9,534	24,363	1,423	30,079	6,954	12,075	4,463	1,841	188
<b>Antihistamines</b>													
H <sub>2</sub> receptor antagonists	3,196	1,233	429	1,504	1,866	1,157	142	1,520	1,119	543	77	15	2
Diphenhydramine (unknown if OTC or R <sub>x</sub> )	10,086	5,624	1,250	3,121	6,804	2,989	232	4,419	3,179	2,753	417	59	5
Diphenhydramine- alone (R <sub>x</sub> )	188	76	22	85	102	75	10	104	46	58	10	0	0
Diphenhydramine- alone (OTC)	4,846	1,217	737	2,834	2,001	2,679	132	2,971	1,040	1,593	241	21	0
Other	13,696	6,716	2,229	4,638	9,105	4,092	406	6,074	4,695	3,175	362	55	3
<b>*Category total</b>	32,012	14,866	4,667	12,182	19,878	10,992	922	15,088	10,079	8,122	1,107	150	10
<b>Antimicrobials</b>													
Antibiotic: systemic	42,402	26,512	5,408	10,149	31,927	6,469	3,828	10,248	11,071	5,805	471	34	2
Antibiotic: topical	4,918	4,021	237	619	4,793	55	66	170	1,162	234	7	1	0
Antibiotic: unknown	2,415	823	566	986	1,185	859	348	1,037	504	613	32	5	0
Antifungal: systemic	775	447	76	248	641	87	46	148	207	91	9	2	0
Antifungal: topical	6,153	4,971	249	891	6,023	64	61	269	1,485	600	15	2	0
Antifungal: unknown	31	21	1	9	28	1	2	3	10	2	0	0	0
Anthelmintic:													
diethylcarbamazine	1,450	1,084	37	316	1,435	14	1	84	481	42	1	0	0
Anthelmintic: piperazine	614	484	53	74	597	16	0	79	237	43	2	0	0
Anthelmintic: other	655	332	57	258	615	13	25	201	165	166	13	0	0
Anthelmintic: unknown	48	28	5	14	41	4	2	8	17	3	0	0	0
Antiparasitics: antimalarials	192	82	23	86	144	30	17	109	86	38	13	3	0
Antiparasitics: metronidazole	1,219	305	139	766	588	413	210	503	280	298	21	0	0
Antiparasitics: other	339	219	28	90	270	23	44	74	95	57	7	0	0
Antituberculars: isoniazid	2,656	874	279	1,489	1,579	332	719	1,029	109	130	80	48	6
Antituberculars: rifampin	60	23	5	32	30	23	6	38	12	22	4	1	0
Antitubercular: other	19	6	1	11	11	3	5	9	3	3	0	0	0
Antitubercular: unknown	1	1	0	0	1	0	0	0	0	0	0	0	0
Antivirals: systemic	652	207	58	380	367	239	42	329	196	98	16	5	0
Antivirals: topical	50	26	1	23	44	2	3	12	11	11	0	0	0
Antivirals: unknown	59	16	7	34	38	13	7	28	15	6	3	0	0
Other antimicrobial	90	59	5	25	70	12	8	29	38	13	1	0	0
Unknown antimicrobial	7	2	3	2	4	3	0	2	3	2	0	0	0
<b>*Category total</b>	64,805	40,543	7,238	16,502	50,431	8,675	5,440	14,409	16,187	8,277	695	101	8
<b>Antineoplastics</b>	697	209	34	436	594	60	37	286	187	172	23	5	0
<b>Asthma therapies</b>													
Aminophylline/theophylline	6,744	1,882	1,642	3,168	3,972	2,327	353	4,470	1,678	2,101	619	138	38
Terbutaline and other beta-2 agonists	9,259	7,005	1,295	895	8,199	756	277	3,441	3,463	2,505	199	7	1
Other beta agonists	610	274	137	197	370	207	25	366	157	222	26	2	0
Other	408	317	43	47	371	21	15	76	144	49	2	0	0
Unknown	30	3	16	11	14	14	2	17	3	11	2	0	0
<b>*Category total</b>	17,051	9,481	3,133	4,318	12,926	3,325	672	8,370	5,445	4,888	848	147	39
<b>Cardiovascular drugs</b>													
Alpha blockers	66	25	6	34	42	12	11	33	20	16	1	1	0
Antiarrhythmics	1,034	268	54	703	855	122	48	470	397	158	46	18	8
Antihypertensives	6,260	3,238	546	2,433	4,747	1,321	151	3,533	2,578	1,253	365	79	8
Beta blockers	5,221	1,928	524	2,718	3,450	1,603	124	3,257	2,143	988	293	69	17
Calcium antagonists	5,705	1,991	385	3,286	4,187	1,360	125	3,425	2,395	1,018	326	127	31

(Continued on following page)

**TABLE 18. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)**

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
Cardiac glycosides	2,309	1,079	122	1,093	1,844	349	86	1,402	921	359	202	47	21
Hydralazine	305	128	37	137	216	76	11	173	134	73	13	2	0
Long-acting nitrates	685	373	26	282	588	88	7	259	317	95	13	6	1
Nitroglycerin	2,310	1,698	113	487	2,030	255	16	754	1,213	232	20	5	1
Nitroprusside	37	7	0	30	17	2	18	36	2	13	8	1	0
Other vasodilators	889	560	49	276	778	90	16	288	409	103	12	2	0
Unknown type of vasodilator	4	1	1	2	1	3	0	4	1	1	0	0	0
Vasopressors	15	9	0	6	13	2	0	12	6	6	1	0	0
Other cardiovascular drug	191	47	60	80	176	9	5	87	48	77	9	1	0
Unknown cardiovascular drug	34	14	3	16	20	14	0	20	8	3	0	1	0
<i>*Category total</i>	25,065	11,366	1,926	11,583	18,964	5,306	618	13,753	10,592	4,395	1,309	359	87
<i>Cough and cold preparations</i>	105,185	78,041	11,611	15,057	90,730	11,840	2,324	28,103	36,967	24,444	1,206	95	9
<i>Diagnostic agents</i>	335	128	15	186	284	14	35	156	78	85	19	5	0
<i>Diuretics</i>													
Furosemide	1,282	736	116	422	1,027	222	23	547	467	285	30	3	0
Thiazide	1,675	891	163	613	1,261	369	35	770	675	281	35	7	0
Other	1,590	864	147	586	1,190	319	73	652	624	273	44	10	1
Unknown	277	148	31	96	209	61	3	130	101	62	3	1	0
<i>*Category total</i>	4,824	2,639	457	1,697	3,687	971	134	2,099	1,867	901	112	21	1
<i>Electrolytes and minerals</i>													
Calcium	1,814	1,514	101	191	1,736	53	24	188	468	126	10	1	0
Fluoride	4,350	3,972	262	95	4,275	52	19	368	1,593	667	12	1	0
Iron	5,144	3,578	536	994	4,059	1,009	50	2,860	1,926	1,267	225	20	12
Magnesium	242	97	33	107	213	22	6	86	66	43	8	3	1
Potassium	900	545	83	265	749	130	17	310	366	105	14	3	0
Sodium	1,937	1,385	280	253	1,838	84	11	401	567	405	12	2	0
Zinc	920	532	60	308	854	35	28	206	182	170	23	0	1
Other	133	85	6	40	117	4	12	33	34	17	2	2	0
Unknown	8	4	1	3	7	0	0	4	2	2	0	0	0
<i>*Category total</i>	15,448	11,712	1,362	2,256	13,848	1,389	167	4,456	5,204	2,802	306	32	14
<i>Eye/ear/nose/throat preparations</i>													
<i>Nasal preparations</i>													
Tetrahydrozoline	58	47	2	9	55	1	2	31	34	13	0	0	0
Other decongestant	2,680	1,695	206	755	2,486	117	70	714	1,190	452	20	2	0
Other	356	268	30	53	346	3	7	42	96	73	5	0	0
Unknown	15	5	1	9	13	2	0	3	3	3	1	0	0
<i>Ophthalmic preparations</i>													
Contact lens products	4,246	2,463	216	1,508	4,196	32	13	580	893	965	108	2	0
Glaucoma medications	91	46	2	42	81	3	6	23	29	23	1	0	0
Tetrahydrozoline	1,284	1,067	54	156	1,226	39	8	700	722	174	17	1	0
Other ophthalmic sympathomimetics	279	186	31	62	258	7	12	94	130	45	7	0	0
Other	552	350	45	151	510	16	25	50	116	110	8	0	0
Unknown	34	18	4	12	32	0	2	11	9	10	1	0	0
<i>Otic preparations</i>													
Combination products	1,035	737	89	203	1,024	8	3	149	384	253	6	0	0
Other	1,670	1,017	125	510	1,656	4	7	149	391	431	15	0	0
Unknown	53	23	4	26	51	2	0	7	15	20	0	0	0
<i>Steroids—topical for eye/nose/throat</i>	760	499	66	193	732	10	16	60	143	153	7	0	0
<i>Throat preparations</i>													
Lozenges without local anesthetic	821	649	97	72	781	29	9	41	265	55	2	0	0
Lozenges with local anesthetic	565	436	76	50	541	17	6	54	178	32	2	0	0
Other	328	211	49	64	316	9	3	67	101	71	6	0	0
Unknown	13	8	2	3	11	1	1	5	2	7	0	0	0
<i>*Category total</i>	14,840	9,725	1,099	3,878	14,315	300	190	2,780	4,701	2,890	206	5	0
<i>Gastrointestinal preparations</i>													
<i>Antacids: salicylate-containing</i>	2,752	2,458	137	147	2,649	61	37	240	970	160	9	0	0
<i>Antacids: other</i>	15,004	13,915	441	595	14,728	169	84	458	3,461	502	16	5	0
<i>Antidiarrheals:</i>													
diphenoxylate/atropine	1,644	941	158	536	1,237	297	101	958	684	371	51	10	0
Antidiarrheals: nonnarcotic	661	537	37	83	622	20	18	75	167	33	3	0	0
Antidiarrheals: paregoric	227	180	10	34	189	27	10	73	107	33	1	0	0
Antidiarrheals: other narcotic	263	248	11	4	261	2	0	8	58	72	1	0	0
<i>Antispasmodics:</i>													
anticholinergic	1,786	709	270	788	980	708	82	1,076	568	535	81	12	2
Antispasmodics: other	11	5	1	5	9	2	0	5	5	2	0	0	0
<i>Laxatives</i>	14,575	11,481	1,121	1,903	13,533	847	146	2,353	3,207	3,555	172	5	0
Other	2,914	2,247	180	466	2,520	292	93	659	845	311	51	4	0
Unknown	248	150	14	82	196	31	20	64	89	23	1	0	0
<i>*Category total</i>	40,085	32,871	2,380	4,643	36,924	2,456	591	5,969	10,161	5,597	386	36	2
<i>Hormones and hormone antagonists</i>													
Androgens	188	64	11	110	122	52	12	78	44	26	5	0	0

(Continued on following page)

TABLE 18. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
Corticosteroids	4,974	3,268	464	1,198	4,330	320	302	705	1,073	416	34	3	1
Estrogens	1,870	1,404	102	351	1,646	173	48	297	544	106	9	0	1
Insulin	712	74	49	580	460	227	20	397	240	127	61	11	3
Oral contraceptives	11,454	10,240	621	536	10,837	528	75	1,010	2,662	415	7	0	0
Oral hypoglycemics	2,013	1,143	158	695	1,577	405	22	1,586	903	475	134	24	3
Progestins	879	564	106	203	746	90	39	158	239	51	4	2	0
Thyroid preparations	4,423	3,259	277	858	3,999	370	45	1,094	1,474	332	37	8	0
Other hormones	533	330	49	148	419	86	25	246	163	151	17	1	0
Other hormone antagonists	185	85	15	85	140	31	13	60	52	19	6	1	0
Unknown hormone or antagonist	12	3	1	7	4	6	2	6	1	4	0	0	0
*Category total	27,243	20,434	1,853	4,771	24,280	2,288	603	5,637	7,395	2,122	314	50	8
<i>Miscellaneous drugs</i>													
Allopurinol	341	236	16	87	296	37	5	79	144	24	3	0	0
L-dopa and related drugs	257	121	5	127	216	29	12	121	96	48	10	1	0
Disulfiram	710	47	25	624	212	414	72	516	109	208	55	9	0
Ergot alkaloids	735	357	63	300	478	190	65	447	270	196	15	5	0
Homeopathic preparations	1,400	1,094	68	223	1,215	129	45	304	459	119	14	1	0
Methysergide	3	3	0	0	3	0	0	1	0	0	0	0	0
Neuromuscular blocking	6	1	0	4	4	2	0	4	1	1	0	0	1
Other	6,993	4,140	644	2,136	5,891	772	289	1,701	2,075	1,482	130	24	1
*Category total	10,445	5,999	821	3,501	8,315	1,573	488	3,173	3,154	2,078	227	40	2
<i>Muscle Relaxants</i>													
Cyclobenzaprime	3,053	628	380	2,003	1,024	1,945	60	2,425	661	1,044	266	56	1
Methocarbamol	973	132	134	697	306	635	25	715	226	339	50	15	1
Other	3,495	474	343	2,642	1,018	2,305	123	2,711	579	1,307	297	86	3
Unknown	70	10	10	47	16	51	2	61	9	19	1	0	0
*Category total	7,591	1,244	867	5,389	2,364	4,936	210	5,912	1,475	2,709	614	157	5
<i>Narcotic Antagonists</i>	48	5	4	37	20	16	12	34	9	9	5	0	0
<i>Radiopharmaceuticals</i>	11	4	0	7	7	0	4	7	2	5	0	0	0
<i>Sedative/hypnotics/anti-psychotics</i>													
Barbiturates: long-acting	3,882	933	380	2,522	1,792	1,922	82	2,677	808	1,107	386	173	6
Barbiturates: short-acting	1,759	207	177	1,334	474	1,212	45	1,393	287	657	162	49	6
Barbiturates: unknown	23	2	1	19	2	21	0	22	3	8	3	3	1
Benzodiazepines	32,771	4,801	2,027	25,389	8,597	23,249	529	26,496	5,428	12,415	2,398	653	45
Chloral hydrate	552	146	45	355	211	305	30	446	70	186	76	37	1
Ethchlorvynol	231	9	11	204	23	199	3	218	16	75	47	22	4
Glutethimide	120	6	11	102	17	101	1	116	11	50	22	12	5
Meprobamate	489	61	47	379	133	335	13	397	87	167	51	32	4
Methaqualone	69	6	8	53	13	54	0	66	9	24	2	6	0
Phenothiazines	11,030	1,577	1,095	8,173	3,493	6,771	575	8,915	2,363	3,984	1,129	277	21
Sleep aids (OTC)	5,634	335	633	4,562	855	4,696	35	4,912	962	2,239	398	45	3
Other	1,619	263	139	1,189	524	980	92	1,149	394	480	83	24	1
Unknown	271	18	32	211	37	223	2	236	35	77	14	4	0
*Category total	58,450	8,364	4,606	44,492	16,171	40,068	1,407	47,043	10,473	21,469	4,771	1,337	97
<i>Serums, toxoids, vaccines</i>	967	266	111	565	688	11	261	395	111	295	24	2	1
<i>Stimulants and street drugs</i>													
Amphetamines	4,999	1,735	1,422	1,777	2,933	1,891	113	3,187	1,304	1,504	359	36	11
Amyl/butyl nitrites	86	8	11	65	34	51	0	54	7	24	7	0	0
Caffeine	5,639	1,261	2,208	2,106	2,141	3,278	138	3,150	964	2,350	262	4	3
Cocaine	3,662	146	247	3,203	363	3,213	23	3,451	369	1,275	508	164	60
Diet aids: phenylpropanolamine	2,085	1,002	430	634	1,247	782	44	1,165	782	552	82	4	0
Diet aids: phenylpropanolamine and caffeine	167	59	33	74	79	83	2	120	33	51	7	1	0
Diet aid: other, OTC	148	72	25	50	83	50	13	72	54	37	4	1	0
Diet aid: other, Rx	28	11	10	7	17	11	0	16	6	9	1	1	0
Diet aid: unknown	147	56	27	63	66	73	5	107	40	44	9	0	0
Heroin	712	23	29	648	66	625	12	668	67	205	150	60	10
LSD	1,277	31	525	680	183	1,055	11	1,017	54	506	163	11	1
Marijuana	752	110	221	400	199	528	18	518	73	255	53	4	2
Mescaline/peyote	198	56	49	90	115	80	0	108	11	67	13	0	1
Phencyclidine	278	12	56	205	40	227	1	254	9	108	56	15	0
Phenylpropanolamine look-alike drugs	295	58	97	132	85	206	0	254	59	124	16	3	1
Other stimulant	93	20	21	51	30	61	1	71	14	38	4	0	0
Other hallucinogen	4	2	0	2	2	2	0	3	2	1	0	0	0
Unknown hallucinogen	7	0	4	3	1	4	1	4	0	3	1	0	0
Other street drug	38	11	9	18	20	17	0	28	6	11	4	0	0
Unknown stimulant/street drug	109	21	25	59	36	71	2	87	16	39	14	0	1
*Category total	20,724	4,694	5,449	10,267	7,740	12,308	384	14,334	3,870	7,203	1,713	304	90

(Continued on following page)

**TABLE 18. Demographic Profile of Exposure Cases by Generic Category of Substances and Products: Pharmaceuticals (Cont'd)**

Substance Implicated in the Exposure	No. of Exposures	Age (yr)			Reason			Treated in Health Care Facility	Outcome*				
		<6	6-17	>17	Acc	Int	Adv Rxn		None	Minor	Moderate	Major	Death
<b>Topicals</b>													
Acne preparations	1,190	734	213	233	1,111	34	41	144	310	255	19	1	0
Boric acid/borates	342	235	24	80	340	1	1	33	111	39	0	0	0
Calamine	5,436	4,406	240	753	5,364	51	17	434	1,399	410	13	0	0
Camphor	7,808	6,264	349	1,135	7,616	153	24	1,903	3,459	1,296	61	10	0
Camphor and methyl salicylate	1,302	1,005	89	198	1,248	22	31	288	483	324	13	1	0
Diaper products	17,832	17,234	192	353	17,779	11	38	278	3,981	795	7	2	0
Hexachlorophene antiseptics	131	80	11	38	123	6	1	41	35	33	3	0	0
Hydrogen peroxide	9,035	5,517	733	2,716	8,829	180	17	546	2,100	1,865	55	2	0
Iodine or iodide antiseptics	1,936	845	227	841	1,685	200	46	529	556	428	24	2	0
Mercury antiseptics	923	779	37	103	887	30	5	97	310	54	1	0	0
Methyl salicylate	8,081	6,429	478	1,141	7,976	70	30	969	2,774	1,765	36	4	1
Podophyllin	82	36	14	31	74	4	4	36	20	29	3	0	0
Silver nitrate	139	28	48	58	128	6	4	31	16	54	5	0	0
Topical steroids	5,518	4,530	178	776	5,426	30	58	178	1,152	348	11	0	0
Topical steroid with antibiotic	1,534	1,313	64	147	1,515	4	13	73	390	110	2	0	0
Wart preparations	2,122	1,556	191	363	2,068	34	16	289	622	553	17	0	0
Other liniment	1,282	873	90	314	1,233	24	25	154	403	246	5	0	0
Other topical antiseptic	4,403	3,256	348	767	4,251	122	17	530	1,629	593	28	0	0
<i>*Category total</i>	69,096	55,120	3,526	10,047	67,653	982	388	6,553	19,750	9,197	303	22	1
<b>Miscellaneous veterinary</b>													
	3,076	1,609	200	1,235	3,021	42	7	337	961	444	21	3	1
<b>Vitamins</b>													
<b>Multiple vitamin tablets: adult formulations</b>													
No iron, no fluoride	1,648	1,216	190	236	1,429	159	55	261	491	169	7	0	0
With iron, no fluoride	5,454	4,274	545	614	4,807	584	51	1,515	2,193	654	50	6	2
With iron, with fluoride	73	68	4	1	72	1	0	24	41	8	1	0	0
No iron, with fluoride	200	191	5	3	200	0	0	8	79	8	0	0	0
<b>Multiple vitamin tablets: pediatric formulations</b>													
No iron, no fluoride	8,779	7,946	782	31	8,654	113	10	370	2,953	475	6	1	0
With iron, no fluoride	10,100	9,246	793	42	9,954	125	8	1,777	4,176	1,142	41	2	0
With iron, with fluoride	800	776	16	8	794	5	0	88	225	47	1	0	0
No iron, with fluoride	1,878	1,820	50	7	1,870	8	0	77	479	53	2	0	0
<b>Multiple vitamin liquids: adult formulations</b>													
No iron, no fluoride	152	94	26	28	131	16	4	96	8	18	4	0	0
With iron, no fluoride	39	23	1	15	30	7	1	11	14	8	0	0	0
No iron, with fluoride	6	5	0	1	6	0	0	2	1	0	0	0	0
<b>Multiple vitamin liquids: pediatric formulations</b>													
No iron, no fluoride	222	213	6	3	214	2	6	9	63	23	0	0	0
With iron, no fluoride	296	281	12	2	289	6	1	47	117	31	0	0	0
With iron, with fluoride	103	101	2	0	100	2	1	15	37	9	0	0	0
No iron, with fluoride	615	601	8	3	614	0	1	12	180	30	1	0	0
<b>Multiple vitamin, unspecified adult formulations</b>													
No iron, no fluoride	34	26	4	4	29	4	1	10	8	6	1	0	0
With iron, no fluoride	1,361	1,045	172	134	1,200	147	11	391	563	169	6	1	0
With iron, with fluoride	6	5	1	0	5	1	0	1	4	1	0	0	0
No iron, with fluoride	10	5	1	4	8	1	1	1	4	2	0	0	0
<b>Multiple vitamin, unspecified pediatric formulations</b>													
No iron, no fluoride	185	165	19	1	181	4	0	2	73	7	0	0	0
With iron, no fluoride	222	199	22	0	219	3	0	56	95	25	3	0	0
With iron, with fluoride	3	3	0	0	3	0	0	0	1	1	0	0	0
No iron, with fluoride	32	31	1	0	32	0	0	2	14	0	0	0	0
<b>Other vitamins</b>													
Vitamin A	870	629	73	162	785	56	27	148	229	89	3	1	1
Niacin (B <sub>3</sub> )	1,761	421	153	1,155	974	133	651	266	120	965	33	0	1
Pyridoxine (B <sub>6</sub> )	262	158	28	74	197	51	13	71	70	30	7	3	0
Other B complex vitamins	960	678	77	198	791	113	56	159	256	99	3	0	0
Vitamin C	1,916	1,543	197	160	1,760	106	46	137	458	147	4	0	0
Vitamin D	200	151	16	31	180	16	4	56	71	8	2	0	0
Vitamin E	850	690	57	99	774	53	20	85	248	48	0	0	0
Other	755	597	48	102	671	56	24	145	261	81	8	1	0
Unknown	1,091	822	132	129	956	98	32	281	252	95	5	0	0
<i>*Category total</i>	40,883	34,023	3,441	3,247	37,929	1,870	1,024	6,123	13,784	4,448	188	15	4
<b>Miscellaneous unknown drugs</b>													
	14,018	5,372	1,863	6,291	10,177	2,866	451	7,334	3,192	3,246	538	116	3
<b>Total no. pharmaceutical substances</b>	<b>812,785</b>	<b>453,461</b>	<b>91,411</b>	<b>260,347</b>	<b>576,379</b>	<b>208,253</b>	<b>22,832</b>	<b>318,767</b>	<b>232,492</b>	<b>164,478</b>	<b>26,081</b>	<b>6,037</b>	<b>780</b>
<b>% of pharmaceutical substances</b>		<b>55.8</b>	<b>11.2</b>	<b>32.0</b>	<b>70.9</b>	<b>25.6</b>	<b>2.8</b>	<b>39.2</b>	<b>28.6</b>	<b>20.2</b>	<b>3.2</b>	<b>0.7</b>	<b>0.1</b>
<b>% of all substances</b>	<b>42.0</b>	<b>23.4</b>	<b>4.7</b>	<b>13.4</b>	<b>29.8</b>	<b>10.8</b>	<b>1.2</b>	<b>16.5</b>	<b>12.0</b>	<b>8.5</b>	<b>1.3</b>	<b>0.3</b>	<b>0.0</b>

NOTE. Patients with totally unknown age, reason or medical outcome were omitted from the respective tabulations.  
 ABBREVIATIONS: Acc, accidental; Adv Rxn, adverse reaction; Int, intentional; OTC, over-the-counter; R<sub>x</sub>, prescription; MAO, monoamine oxidase.  
 \* Medical outcome data were also collected in categories labeled "unknown, non-toxic," "unknown, potentially toxic," and "unrelated effect." Thus, the numbers listed here do not represent the total poison exposure experience.

TABLE 19. Demographic Profile of Accidental Exposure Cases by Substance Category

	No. of Exposures	Age (yr)			Treated in Health Care Facility	Outcome*				
		<6	6-11	>17		None	Minor	Moderate	Major	Death
Adhesives/glues	21,691	11,285	2,783	7,333	3,818	4,788	5,342	414	13	1
Alcohols	25,942	18,620	1,447	5,631	5,501	9,232	4,884	318	54	3
Arts/crafts/office supplies	31,807	25,578	3,905	2,131	1,517	7,081	2,045	63	4	0
Auto/aircraft/boat products	10,344	3,868	922	5,376	3,792	2,814	3,779	330	7	4
Batteries	8,176	4,611	1,324	2,152	3,273	2,639	2,292	223	11	0
Bites/envenomations	76,299	16,597	16,181	42,763	18,724	4,208	37,356	3,207	134	2
Building products	7,995	4,539	483	2,884	1,761	1,717	1,754	278	7	0
Chemicals	50,975	18,120	4,761	27,087	19,769	9,170	17,551	2,536	120	9
Cleaning substances	186,843	120,214	10,696	54,070	34,637	48,637	58,169	4,396	160	6
Cosmetics/personal care	149,252	126,749	7,243	14,517	11,187	44,949	25,671	763	31	0
Deodorizers (nonpersonal)	16,869	15,129	643	1,017	1,332	5,969	2,427	61	2	0
Dyes	2,623	2,197	191	224	189	788	171	5	0	0
Essential oils	3,053	2,311	348	374	480	834	1,191	29	0	0
Fertilizers	8,913	6,427	818	1,592	483	2,687	739	37	1	0
Fire extinguishers	2,296	280	455	1,519	823	356	1,056	61	1	0
Food products/poisoning	40,215	12,147	4,817	22,599	4,081	5,151	9,143	519	11	1
Foreign bodies/toys	63,860	48,941	8,824	5,697	5,964	13,848	5,089	133	14	1
Fumes/gases/vapors	25,193	2,807	3,082	18,822	11,485	2,370	12,293	1,470	103	34
Fungicides (nonmedicinal)	1,423	558	97	741	430	304	359	29	3	0
Heavy metals	8,743	3,550	1,053	4,004	2,768	1,681	1,651	198	16	1
Herbicides	6,045	1,805	625	3,484	1,768	1,319	1,735	136	11	2
Hydrocarbons	60,785	30,537	5,585	23,855	15,194	16,989	21,485	1,386	77	9
Insecticides/pesticides	53,085	28,185	4,575	19,686	12,598	14,574	12,566	966	63	1
Lacrimators	6,846	2,377	2,219	2,159	1,243	361	4,390	111	5	0
Matches/fireworks/explosives	3,399	3,045	191	143	249	1,058	223	18	0	0
Moth repellants	6,020	5,183	270	544	1,203	2,814	417	16	1	0
Mushrooms	8,877	7,460	575	804	2,032	5,458	939	177	8	2
Paints/stripping agents	23,706	14,001	1,807	7,620	4,099	4,871	5,283	393	13	0
Photographic products	798	321	127	340	199	184	228	19	0	0
Plants	110,148	91,808	7,857	9,795	7,642	36,361	13,434	730	18	1
Polishes/waxes	7,041	5,968	263	770	770	2,772	1,363	48	3	0
Radioisotopes	115	11	8	96	43	15	15	1	0	0
Rodenticides	14,785	13,816	279	601	5,727	6,046	554	30	5	1
Sporting equipment	804	490	186	122	203	281	123	10	1	1
Swimming pool/aquarium	5,250	2,960	638	1,594	854	1,370	1,496	102	4	0
Tobacco products	9,846	9,276	191	357	2,186	3,939	2,425	77	2	0
Unknown nondrug substance	6,227	3,096	836	2,210	1,326	1,661	1,209	69	4	0
Analgesics	112,248	90,831	8,171	12,601	23,025	39,171	7,727	584	100	5
Anesthetics	5,151	4,061	286	776	1,081	2,235	834	43	8	0
Anticholinergic	1,650	916	131	580	727	561	410	69	9	0
Anticoagulants	602	408	24	163	248	239	55	8	1	0
Anticonvulsants	6,278	3,238	773	2,214	3,019	2,192	1,483	393	61	1
Antidepressants	9,544	4,016	1,086	4,304	5,428	3,412	2,046	398	116	3
Antihistamines	19,887	14,567	2,186	3,026	4,544	8,076	3,291	166	12	0
Antimicrobials	50,446	39,470	3,432	7,237	4,704	13,904	3,737	160	11	0
Antineoplastics	594	208	22	349	205	169	143	12	0	0
Asthma therapies	12,930	9,261	1,705	1,891	4,885	5,040	3,039	311	32	8
Cardiovascular drugs	18,968	11,305	1,017	6,527	8,211	9,544	2,385	376	82	13
Cough/cold preparations	90,745	76,977	7,208	6,253	17,295	34,645	18,648	414	22	0
Diagnostic agents	284	128	11	139	116	77	63	13	3	0
Diuretics	3,688	2,624	196	845	1,105	1,649	498	27	0	0
Electrolytes/minerals	13,849	11,638	802	1,313	3,154	4,865	2,206	208	21	10
Eye/ear/nose/throat preparations	14,320	9,687	982	3,525	2,563	4,638	2,708	178	4	0
Gastrointestinal preparations	36,931	32,692	1,624	2,470	3,844	9,705	4,539	209	7	0
Hormones & antagonists	24,283	20,365	1,138	2,651	3,408	6,881	1,326	106	12	1
Miscellaneous drugs	8,317	5,933	493	1,812	1,611	2,880	1,357	69	5	0
Muscle relaxants	2,366	1,216	243	887	1,140	884	539	54	10	0

(Continued on following page)

**TABLE 19. Demographic Profile of Accidental Exposure Cases by Substance Category (Cont'd)**

	No. of Exposures	Age (yr)			Treated in Health Care Facility	Outcome*				
		<6	6-11	>17		None	Minor	Moderate	Major	Death
Narcotic antagonists	20	3	3	13	11	7	2	1	0	0
Radiopharmaceuticals	7	4	0	3	4	2	4	0	0	0
Sedatives/hypnotics/ antipsychotics	16,190	7,995	1,255	6,736	7,979	5,008	4,126	602	101	3
Serums, toxoids, vaccines	688	176	76	421	262	102	175	13	0	0
Stimulants/street drugs	7,744	4,521	1,468	1,675	3,316	2,698	1,888	239	19	0
Topicals	67,657	54,963	3,154	9,168	5,804	19,499	8,734	248	17	1
Miscellaneous veterinary	3,022	1,606	188	1,198	304	953	427	16	1	0
Vitamins	37,933	33,879	2,463	1,458	4,631	13,212	3,393	116	7	2
Unknown drugs	10,179	5,207	1,027	3,593	4,176	2,828	2,250	216	26	0
<b>Total</b>	<b>1,642,810</b>	<b>1,112,762</b>	<b>137,469</b>	<b>378,541</b>	<b>306,150</b>	<b>464,372</b>	<b>338,880</b>	<b>24,608</b>	<b>1,594</b>	<b>126</b>

NOTE. Patients with totally unknown age or medical outcome were omitted from the respective tabulations.

\* Medical outcome data were also collected in categories labeled "unknown, nontoxic," "unknown, potentially toxic," and "unrelated effect." Thus, the numbers listed here do not represent the total poison exposure experience.

**TABLE 20. Frequency of Plant Exposures by Plant Type**

Botanical Name	Common Name	Frequency
<i>Philodendron</i> spp	Philodendron	6,407
<i>Dieffenbachia</i> spp	Dumbcane	4,242
<i>Capsicum annuum</i>	Pepper	3,687
<i>Euphorbia pulcherrima</i>	Poinsettia	3,289
<i>Ilex</i> spp	Holly	2,839
<i>Phytolacca americana</i>	Pokeweed, inkberry	2,349
<i>Crassula</i> spp	Jade plant	2,244
<i>Spathiphyllum</i> spp	Peace lily	1,969
<i>Brassaia &amp; Schefflera</i> spp	Umbrella tree	1,878
<i>Epipremnum aureum</i>	Pothos, devil's ivy	1,735
<i>Toxicodendron radicans</i>	Poison ivy	1,735
<i>Saintpaulia</i> spp	African violet	1,509
<i>Taxus</i> spp	Yew	1,452
<i>Pyracantha</i> spp	Fire thorn	1,265
<i>Rhododendron</i> spp	Rhododendron, azalea	1,192
<i>Chlorophytum comosum</i>	Spider plant	1,034
<i>Ficus benjamina</i>	Weeping fig tree	1,030
<i>Chrysanthemum</i> spp	Chrysanthemum	990
<i>Solanum dulcamara</i>	Climbing nightshade	989
<i>Quercus</i> spp	Oak	932

**TABLE 21. Substances Most Frequently Involved in Human Exposure**

Substance	No.	%*
Cleaning substances	191,830	10.4
Analgesics	183,013	10.0
Cosmetics	153,424	8.3
Plants	112,564	6.1
Cough and cold preparations	105,185	5.7
Bites/envenomations	76,941	4.2
Pesticides (includes rodenticides)	70,523	3.8
Topicals	69,096	3.8
Antimicrobials	64,805	3.5
Foreign bodies	64,472	3.5
Hydrocarbons	63,536	3.5
Sedatives/hypnotics/antipsychotics	58,450	3.2
Chemicals	53,666	2.9
Alcohols	50,296	2.7
Food poisoning	46,482	2.5
Vitamins	40,883	2.2

NOTE. Despite a high frequency of involvement, these substances are not necessarily the most toxic, but rather often represent only ready availability.

\* Percentages are based on the total number of human exposures rather than the total number of substances.

**TABLE 22. Categories With Largest Numbers of Deaths**

Category	No.	% of All Exposures in Category
Analgesics	190	0.104
Antidepressants	188	0.525
Sedative/hypnotics	97	0.166
Stimulants and street drugs	90	0.434
Cardiovascular drugs	87	0.348
Alcohols	72	0.143
Gases and fumes	49	0.188
Asthma therapies	39	0.229
Chemicals	37	0.069
Hydrocarbons	36	0.057
Cleaning substances	26	0.014
Pesticides (including rodenticides)	18	0.026

**TABLE 23. 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

**TABLE 24. 8-Year Comparisons of Fatality Data**

Year	Total Fatalities		Suicides		Pediatric Deaths (<6 years)	
	No.	%	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

## 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

## APPENDIX

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

**Case 1.** A 25-year-old man had been installing carpet in the hull of a boat using an adhesive spray containing acetone, propane, and isobutane. He was discovered in full cardiopulmonary arrest with seizure activity. After cardiopulmonary resuscitation with epinephrine and defibrillation, he was intubated on mechanical ventilation, comatose and unresponsive to pain, and had intermittent seizure activity. Twelve hours after the exposure, vital signs included blood pressure, 161/70 mm Hg; heart rate, 116 beats/min; rectal temperature, 38.2°C. Medications included diazepam, phenytoin, dexamethasone, and mannitol. A computed tomography (CT) scan of his head revealed swelling. An electroencephalogram (EEG) was grossly abnormal. One day after the exposure, his Glasgow coma score was 3. He had no spontaneous respiration and had developed adult respiratory distress syndrome. Over the ensuing 2 weeks he developed decerebrate posturing with continued seizure activity, renal insufficiency, and congestive heart failure. He died 3 weeks after the exposure.

**Case 22.** A 70-year-old woman ingested an unknown amount of a ceramic glaze containing lead. Gastric decontamination consisted of the administration of ipecac syrup. On the second hospital day, a blood lead level was ordered. During her hospitalization the patient became encephalopathic and developed cerebral edema. Her blood lead level was 238 µg/dL. After the initiation of chelation therapy, there was some improvement. However, the patient developed renal failure and died on the 26th hospital day.

**Case 24.** A 20-year-old man and seven friends mistakenly drank a methanol-containing automotive antifreeze over a 2-day period. The patient reportedly consumed more than 0.95 L of the mixture. He developed nausea, dizziness, visual sensitivity to bright light, and decreasing level of consciousness. His past history was significant for substance abuse, including alcohol, marijuana, and lysergic acid diethylamide. On presentation to the emergency department (ED), the patient was comatose with a systolic blood pressure of 84 mm Hg, pulse of 100 beats/min, and respiration of 4 to 8 breaths/min. Corneal and gag reflexes were absent. The left eye was fixed, dilated, and would not cross the midline. The right eye was dilated and

deviated to the right. The extremities were flaccid with marked hyperreflexia. Initial arterial blood gases (ABGs) showed pH, 6.72; Pco<sub>2</sub>, 16 mm Hg; Po<sub>2</sub>, 215 mm Hg; and bicarbonate, 2 mEq/L. Other laboratory studies included blood urea nitrogen, 13 mg/dL and creatinine, 1.8 mg/dL. Carbon dioxide was unmeasurable. Toxicologic analysis showed an ethanol level of zero and a methanol level of 143 mg/dL. Naloxone was administered without response. An ethanol infusion was administered and hemodialysis was performed. The postdialysis methanol level was 61 mg/dL. The ethanol infusion continued and hemodialysis was performed again. His acid-base disturbance was corrected and the ethanol infusion was discontinued when the methanol level was undetectable. On the second hospital day, the patient had severe encephalopathy with cortical and brain stem dysfunction. An EEG showed evidence of multifocal epileptiform discharges suggesting ongoing electrical seizures. Phenytoin was then administered. On the sixth hospital day, the patient was pronounced brain dead. Postmortem examination revealed extensive subcortical white matter necrosis of the cerebral hemispheres and cerebellum, optic tract inflammation and compromise, moderate pulmonary congestion and edema, pleural effusions, and ascitic fluid.

**Case 29.** A 56-year-old man along with three other men drank approximately 1 L of a blue automobile antifreeze stored in an unmarked bottle and mistaken for wine cooler. A few hours later in the ED, his systolic blood pressure was 132 mm Hg. Within 1 hour of presentation, his blood pressure dropped and pressors were required. The patient was intubated and mechanically ventilated. Sodium bicarbonate, fluids, epinephrine, albumin, and dopamine were administered. In addition, an ethanol infusion was administered before the toxicologic analysis was available. Laboratory studies included sodium, 154 mEq/L; potassium, 2.7 mEq/L; and calcium, 6 mg/dL. Initial ethylene glycol levels were 176 mg/dL (serum) and 396 mg/dL (gastric). Chest roentgenogram reportedly showed shock lung. Hemodialysis was performed 24 hours after his initial presentation. The ABGs obtained 36 hours after presentation showed pH, 7.25; Po<sub>2</sub>, 50 mm Hg; and oxygen saturation, 80%. Blood alcohol levels ranged from 139 to 212 mg/dL. Hemodialysis was again performed for 6 hours. An EEG was reported as showing no activity. Over the ensuing 72 hours, he required dopamine and epinephrine infusions to maintain his blood pressure. Continuous peritoneal dialysis was being performed because of renal insufficiency. A CT scan of the head showed infarction of the basal ganglia and caudate nucleus consistent with hypoxic and anoxic damage. Over a 10-day period, he was weaned from the ventilator. On the 18th hospital day, he died.

**Case 33.** A 27-year-old man ingested approximately 360 mL of a radiator flush solution with a pH of 11.5 containing sodium bichromate, 0.7%; sodium silicate, 9%; soda ash, 3.9%; ammonium hydroxide, 3%; sodium metasilicate, 1%; and trisodium phosphate, 1%. In the ED 1 hour after the ingestion, he was alert and oriented with a blood pressure of 140/92 mm Hg, pulse of 120 beats/min, respiration of 19 breaths/min, and temperature of 37.4°C. The patient was vomiting and had diffuse abdominal tenderness. There were no oral burns. Within 2 hours of the ingestion, his voice was raspy, and his vital signs were blood pressure, 110/72 mm Hg; pulse, 125 beats/min; and respiration, 19 breaths/min. Approximately 2.5 hours postingestion, the patient had a cardiac arrest and was resuscitated, but remained comatose with an unobtainable blood pressure. He died 10 hours postingestion.

**Case 37.** A man allegedly drank 7.6 L of a methanol-containing windshield washer solvent in a suicide attempt. An ambulance was dispatched to the scene, but the patient refused transport. He was then arrested and transferred to the local hospital. In the ED 7 hours after the ingestion, he was comatose with response only to deep pain. He was intubated. Initial ABGs showed pH, 7.00; Pco<sub>2</sub>, 13 mm Hg; Po<sub>2</sub>, 448 mm Hg; and bicarbonate, 3 mEq/L. The methanol level was 206 mg/dL. Sodium bicarbonate, thiamine, folic acid, and a loading dose of ethanol were administered, followed by an ethanol



infusion. During transfer for hemodialysis, he developed bradycardia which responded to atropine. Hemodialysis was initiated 11 hours after the ingestion. Dialysis was discontinued despite a repeat methanol level of 130 mg/dL. After the ethanol level returned to 60 mg/dL, the ethanol infusion was increased and the ethanol level increased to 110 mg/dL. Twenty-seven hours after the ingestion, the methanol level was 108 mg/dL. Hemodialysis was again performed and the methanol level decreased to 45 mg/dL. The patient remained comatose and the ophthalmologic examination revealed no exudates or papilledema. On the fourth hospital day, he had wide fluctuations of his pulse from 30 to 168 beats/min. Metoprolol was then administered down the nasogastric tube. On the fifth hospital day, he spiked a temperature of 40°C then developed fixed and dilated pupils. After a CT scan of the head showed diffuse intracerebral bleeding, life-support measures were withdrawn.

**Case 45.** A 33-year-old man ingested an unknown amount of a cyanide-containing solution while his wife was watching. He collapsed shortly after the arrival of the paramedics. Despite the infusion of two cyanide antidote kits and multiple boluses of sodium bicarbonate, the patient could not be resuscitated. Postmortem blood cyanide level was 82 µg/mL.

**Case 47.** A 53-year-old man who had just been found guilty of felony drug charges reached into his pocket, removed a small glass vial, and placed it in his mouth. A few seconds later, he collapsed in the courtroom. When the paramedics arrived, the patient was pulseless and apneic. Cardiopulmonary resuscitation was initiated and the patient was taken to the hospital. In the ED, the patient was intubated. An electrocardiogram (ECG) showed an agonal rhythm. After the administration of a cyanide antidote kit, the patient developed normal sinus rhythm with a palpable blood pressure. Gastric lavage was performed and activated charcoal was administered. The patient had another cardiopulmonary arrest which responded to the administration of high concentrations of epinephrine. Eighteen hours postingestion, the patient died. Analysis of the two remaining glass vials revealed potassium cyanide.

**Case 52.** A 35-year-old man who had been drinking ingested cyanide while his wife was watching. He vomited immediately after the ingestion. En route to the ED, the patient had no blood pressure and he was intubated. In the ED approximately 15 to 20 minutes post-ingestion, his systolic blood pressure was 80 mm Hg. His breath smelled of apricots. His arterial blood pH was 7.1. Treatment included the administration of the cyanide antidote kit, sodium bicarbonate, fluids, and dopamine. Approximately 2.5 hours postingestion, his systolic blood pressure was 150 mm Hg and dopamine was discontinued. He was assisting the ventilator and was moving his extremities. Approximately 3.5 hours postingestion, he had decorticate posturing and only one of his pupils was reactive. In addition, sodium bicarbonate was administered because of a falling pH. Twelve hours postingestion, his blood pressure was 210/110 mm Hg with a pulse of 140 beats/min. Laboratory studies obtained 14 hours postingestion included sodium, 141 mEq/L; potassium, 2.8 mEq/L; chloride, 111 mEq/L; carbon dioxide, 18 mEq/L; blood urea nitrogen, 9 mg/dL; creatinine, 1.3 mg/dL; aspartate aminotransferase (AST), 160 IU/L; alanine aminotransferase (ALT), 57 IU/L; lactate dehydrogenase, 450 IU/L; creatine phosphokinase, 2,240 IU/L; total bilirubin, 0.3 mg/dL; and total protein, 5.5 mg/dL. Twenty-two hours postingestion, the patient herniated. An EEG showed no brain wave activity. He died on the third hospital day.

**Case 53.** Paramedics were dispatched to the residence of a 36-year-old man after a friend notified the police that he was about to ingest cyanide. Looking through one of the windows of the house, the paramedics saw the patient ingest a liquid from a bowl. The door was forcibly opened just as the patient vomited and collapsed on the floor. Cardiopulmonary resuscitation was initiated and the patient was transported to the hospital. Cardiopulmonary resuscitation continued in the ED and the patient was administered the cyanide antidote kit. He was pronounced dead 50 minutes after the ingestion. On postmortem examination 796 mg of cyanide was found in the

stomach. Postmortem toxicologic analysis showed a blood cyanide level of 53.2 µg/mL and a blood ethanol level of 160 mg/dL. A container of sodium cyanide was found in the victim's apartment.

**Case 65.** A 72-year-old man with bladder cancer, portal hypertension, and ascites was undergoing bladder cystoscopy. During the procedure, his bladder perforated and approximately 1 L of a 5% formalin solution was instilled into the peritoneal cavity. Approximately 6 hours later, the patient was intubated and had a systolic blood pressure of 80 mm Hg. The ABGs showed pH, 7.28; Pco<sub>2</sub>, 39 mm Hg; Po<sub>2</sub>, 94 mm Hg; and bicarbonate, 16 mEq/L. Intravenous fluids, sodium bicarbonate, folic acid, and dopamine were administered. Four days after the exposure, he had a cardiac arrest and died.

**Case 66.** A 50-year-old man was sprayed at work with 30% hydrofluoric acid over the upper third of his body, including his face and eyes. At the work site, calcium gluconate was applied topically and by nebulizer. In the ED, he was awake and in acute respiratory distress. His vital signs were blood pressure, 110/60 mm Hg; pulse, 68 beats/min; and respiration, 20 breaths/min. Physical examination revealed second- and third-degree burns of his skin and bilateral rhonchi. Laboratory studies included sodium, 141 mEq/L; glucose, 325 mg/dL; calcium, 8.3 mg/dL; and anion gap, 4 mEq/L. The ABGs were pH, 7.46; Pco<sub>2</sub>, 29 mm Hg; and Po<sub>2</sub>, 68 mm Hg. He was intubated and intravenous calcium chloride, topical calcium gluconate, and intradermal calcium gluconate were administered. His eyes were flushed with a calcium gluconate solution. One hour later the patient had bradycardia at a rate of 26 beats/min. After the administration of atropine, calcium chloride, sodium bicarbonate, and epinephrine, his rhythm was ventricular tachycardia. Asystole ensued and he could not be resuscitated. Postmortem examination showed dermal burns and severe pulmonary intra-alveolar hemorrhage. Postmortem toxicologic analysis of the urine showed a fluoride ion concentration of 86 mEq/L.

**Case 70.** A 4-month-old, 4,050 g girl had been born 10 weeks prematurely. She required continuous hospitalization and tracheostomy because of infant respiratory distress syndrome and bronchopulmonary dysplasia. She also had a 2-week history of rectal prolapse. Phenol was injected into the perianal and perirectal soft tissue to sclerose the tissue and to prevent further prolapse. She was injected with approximately 8 mL of 89% phenol instead of the intended 4 to 5 mL of 5% phenol. Immediately following the injection, she developed burns of the buttocks and perianal tissue, hypoglycemia, cyanosis, and bradycardia. Three hours after the injection, she had a cardiopulmonary arrest and was resuscitated. She died 7 hours after the injection from another cardiopulmonary arrest. Postmortem examination revealed chemical burns of the large bowel, buttocks, perineum, left arm, ovaries, fallopian tubes, distal ureters, femoral arteries, femoral veins, and anterior serosal surface of the bladder. Additionally, there was pulmonary interstitial fibrosis and thymic atrophy. Postmortem phenol levels were heart blood, 255 mg/L; jugular, 200 mg/L; bile, 570 mg/L; liver, 168 mg/L; kidney, 370 mg/L; brain, 470 mg/L; muscle, 540 mg/L; lung, 160 mg/L; vitreous, 85 mg/L; spleen, 130 mg/L; and tissue taken from the injection site, 2,300 mg/L.

**Case 71.** A 2-year-old boy ingested an unknown amount of a corrosive agent containing 50% sodium hydroxide. The product had been brought home from the workplace by the child's father and was stored in the garage. Physical examination in the ED revealed oral and esophageal burns. After 5 hospital days, he was discharged. Multiple esophageal dilatations were performed on an outpatient basis. While the child was undergoing esophageal dilatation, he developed cardiac arrhythmias and died.

**Case 74.** A 16-month-old boy ingested an unknown amount of a sodium hydroxide-containing cleaner used to clean farm milk equipment. The child was immediately symptomatic with evidence of oral burns. In the ED, the child was drooling. Chest roentgenogram was unremarkable. Pulse oximetry showed an oxygen saturation of 99% on room air. The child was subsequently transferred to a tertiary

care facility where endoscopy revealed circumferential full-thickness esophageal burns. The child was intubated and a gastrostomy was performed for enteral nutrition. In addition, a small lumen dilator was passed through the esophagus. Seven days post-ingestion, the child was extubated and transferred to a floor bed. However, he soon developed respiratory distress and was re-intubated. Positive pressure ventilation was complicated by the development of bilateral pneumothoraces, necessitating the insertion of chest tubes. The child developed a respiratory syncytial virus infection and hypoxemia. During a femoral ABG puncture, he developed an embolus that resulted in an ischemic right leg and ultimately in a below-the-knee amputation. The child continued to deteriorate and he died on the 37th hospital day from multiple organ system failure.

**Case 75.** A five-year-old girl was forced to inhale a degreaser (80% trichloroethane, 20% perchloroethylene) from a rag placed over her face during a sexual assault. When she was brought to the ED, she was comatose. She was intubated and placed on mechanical ventilation. Toxicologic analysis was negative. A CT scan of her head revealed cerebral edema. A repeat CT scan revealed a subarachnoid hemorrhage with persistent cerebral edema. The patient remained comatose and died 48 hours after presentation.

**Case 85.** The mother of a 15-month-old girl was mopping the floor using a phenol disinfectant in water. The mother went outside for approximately 10 minutes and when she returned she found her daughter immersed in the bucket containing the phenol disinfectant. The child was cyanotic and not moving. She was pulled from the bucket and started to cough when stimulated. A neighbor initiated cardiopulmonary resuscitation and the child had shallow and spontaneous respiration when the paramedics arrived. In the ED, the child was awake and in acute respiratory distress. She had intercostal retractions and bilateral rhonchi. She was intubated and placed on mechanical ventilation with positive end-expiratory pressure. The ABGs showed pH, 7.27; Pco<sub>2</sub>, 48 mm Hg; and Po<sub>2</sub>, 107 mm Hg. Treatment also included the administration of a sedative, furosemide, and antibiotics. During the first 24 hours, it was difficult to maintain the patient's oxygen saturation at 60%. She developed pneumothoraces and subcutaneous emphysema. An artificial surfactant was administered, but there was no change in her pulmonary status. On the second hospital day after she developed precipitous drops in her blood pressure and oxygen saturation, she was placed on extracorporeal membrane oxygenation (ECMO). In addition, dobutamine and vasopressors were administered. Her first 9 days of ECMO were complicated by numerous pneumothoraces, hypernatremia, and leukocytosis. She was afebrile and all blood cultures were negative. On the 12th hospital day, she developed a distended abdomen without bowel sounds. On the 17th hospital day, she developed seizures and phenytoin was administered. On the 22nd hospital day, while being weaned off of ECMO, she became hypotensive, developed an agonal rhythm, and died.

**Case 89.** A 2-year-old boy ingested and spilled on his skin an unknown amount of an acid toilet bowl cleaner. Ten minutes later, when paramedics arrived, the child was cold and lifeless. In addition, he had facial burns and a white substance around his mouth. Cardiopulmonary resuscitation was initiated and his skin was decontaminated with a normal saline irrigation. Cardiac monitor showed ventricular fibrillation and he was defibrillated. Multiple attempts at intubation were unsuccessful. Physical examination in the ED revealed asystole, apnea, facial burns, and red eyes. He was intubated and cardiopulmonary resuscitation was continued. However, he remained asystolic and died. The pH of the toilet bowl cleaner was less than 1.0.

**Case 96.** A 55-year-old woman drank an unknown quantity of a water stain remover containing 4.7% hydrofluoric acid. When the paramedics arrived approximately 14 minutes after the ingestion, she was complaining of nausea. The paramedics estimated that approximately 700 mL of the original 950 mL of the water stain remover solution was missing. Her vital signs were blood pressure,

80/50 mm Hg; pulse, 60 beats/min; and respiration, 24 breaths/min. She was confused, disoriented, and had a Glasgow coma score of 14. She had frothy red material in her mouth. En route to the hospital the patient developed shallow breathing and her blood pressure was unobtainable. In the ED, her systolic blood pressure was 80 mm Hg and her heart rate was 118 beats/min with no palpable carotid pulse. Two minutes later the patient became asystolic and could not be resuscitated. Postmortem blood fluoride level was 110 mg/L.

**Case 98.** A 33-year-old woman ate seaweed purchased at a local market in Guam. Within 4 hours of the ingestion, she was weak and had developed nausea, abdominal pain, and paresthesias of her extremities. Fourteen hours after the ingestion, she was diaphoretic, tremulous, vomiting, wheezing, and short of breath. In the ED, she was diaphoretic with a blood pressure of 125/74 mm Hg, pulse of 95 beats/min, respiration of 26 breaths/min, and a temperature of 37.8°C. Physical examination was unremarkable. Laboratory studies included hematocrit, 43.5%; white blood cell count, 24,700/mm<sup>3</sup>; sodium, 154 mEq/L; potassium, 4.4 mEq/L; chloride, 106 mEq/L; carbon dioxide, 30 mEq/L; glucose, 173 mg/dL; and calcium, 10.1 mg/dL. The ABGs obtained on room air were pH, 7.31; Pco<sub>2</sub>, 57 mm Hg; and Po<sub>2</sub>, 59 mm Hg. Treatment included the administration of oxygen, albuterol, meperidine, and promethazine. Over the next several hours her upper airway stridor worsened and methylprednisolone, epinephrine, and diphenhydramine were administered. Approximately 24 hours postingestion, she developed muscle spasms and fasciculations. The ABGs on 2 L of oxygen were pH, 7.30; Pco<sub>2</sub>, 61 mm Hg; and Po<sub>2</sub>, 91 mm Hg. Over the ensuing hour, the muscle rigidity and stridor worsened and she became cyanotic. She was then taken to the operating room and intubated under general anesthesia. The epiglottis and vallecula were noted to be markedly edematous. Repeat laboratory studies revealed sodium, 151 mEq/L; potassium, 5.7 mEq/L; chloride, 104 mEq/L; carbon dioxide, 21 mEq/L; creatinine, 1.1 mg/dL; calcium, 9.8 mg/dL; and phosphorus, 1.7 mg/dL. Total protein, albumin, bilirubin, and serum transaminases were within normal limits. The patient continued to be restless, and her muscle spasms and fasciculations increased. Her temperature increased to 41.1°C and her blood pressure dropped to 60/30 mm Hg. She developed frequent premature ventricular contractions, bradycardia, electromechanical dissociation, and asystole. During cardiopulmonary resuscitation, she developed generalized tetany and died approximately 28 hours postingestion. Postmortem examination revealed bilateral severe pulmonary congestion and edema, petechial hemorrhages of the epicardium and visceral pleurae, fatty infiltration and swelling of the liver, and acute cerebral congestion. Analysis of the seaweed and the patient's serum and urine for toxins (suspected palytoxin) have been requested, but the results are unavailable. Additional history was obtained that five other people ingested the seaweed and became ill, and that two of them died.

**Case 99.** A 29-year-old woman with a history of chronic cocaine abuse aspirated a plastic bag containing cocaine. She had a respiratory arrest and paramedics were called. In the ED, the plastic was removed from her lungs. However, she could not be resuscitated. Toxicologic analysis of the blood showed cocaine (0.34 µg/mL), benzoylecgonine (3.14 µg/mL), diazepam (0.23 µg/mL), and ethanol (46 mg/dL). Postmortem examination revealed acute pulmonary edema, mild cerebral edema, multiple linear pigmented scars ("tracks") with focal puncture sites, and multiple contusions of the upper and lower extremities. Postmortem examination confirmed aspiration of a foreign material as the cause of death.

**Cases 100 and 104.** A 2-year-old girl and her 6-year-old brother were found dead in their beds by their father when he returned home from work. Their mother and a third sibling were found unresponsive. The house had a faulty furnace and the boy's room was across the hall from the furnace. On postmortem examination, their palms and soles were pink. The girl's postmortem carboxyhemoglobin level was 47% and her brother's level was 72%.

**Case 101.** An emergency medical service was dispatched to the

home of a 6-month-old girl who was reported to have difficulty breathing. When the unit arrived, the infant, her 2-year-old brother, and other family members appeared to be in no apparent distress. While the infant was being transported to the ED, the 2-year-old boy collapsed at home. When the second unit arrived at the home, the boy was unresponsive. During transport to the ED, the boy had a respiratory arrest and cardiopulmonary resuscitation was initiated. In the ED, cardiopulmonary resuscitation continued for additional 2 hours before he was pronounced dead. After the fire department measured carbon monoxide levels within the home, the coroner obtained a postmortem carboxyhemoglobin level of 25.4%. The girl survived.

**Cases 105, 106, and 107.** An 11-year-old girl and her three siblings (10, 14, and 16 years old) were in the back of an unventilated 1976 pickup truck. Her parents were in the front seat driving from Washington to Texas. After driving for approximately 3.5 hours, they stopped at a rest stop and the parents found their 10-year-old and 16-year-old children unresponsive. The 16-year-old child was pronounced dead at the scene. The 10-year-old child died in the ED after unsuccessful cardiopulmonary resuscitation. The 10-year-old child's carboxyhemoglobin level was 40%. The 11-year-old girl and her 14-year-old sibling were found moaning and crying. When first evaluated by a health care provider, the 11-year-old girl was combative, hyperventilating, and poorly responsive. She was intubated and succinylcholine, pancuronium, and atropine were administered. A carboxyhemoglobin level of 0.5% was obtained several hours after the administration of 100% oxygen. She and her sibling were transferred to another health care facility for the administration of hyperbaric oxygen. Laboratory studies for the 11-year-old obtained approximately 23 hours after she was found in the back of the truck were sodium, 137 mEq/L; potassium, 3.8 mEq/L; chloride, 102 mEq/L; carbon dioxide, 27 mEq/L; and glucose, 135 mg/dL. On the second hospital day, her mental status fluctuated from agitation to obtundation. A CT scan of her head showed cerebral edema. The ABGs were pH, 7.65; Pco<sub>2</sub>, 18 mm Hg; and Po<sub>2</sub>, 569 mm Hg. An ECG showed U waves. Treatment included hyperventilation and the administration of mannitol, barbiturates, lidocaine, fentanyl, vecuronium, atropine, and neostigmine. She died approximately 50 hours after being found unresponsive. The 14-year-old sibling survived.

**Case 130.** A 14-year-old girl with asthma volunteered as a counselor at a church summer camp. While cleaning a cabin, she mixed a sodium hypochlorite solution with an acid-containing cleaning agent. She developed severe bronchospasm when she inhaled the chlorine gas. During transport to the nearest ED, which was 20 miles away, she had a cardiopulmonary arrest and was resuscitated. In the ED, she had fixed and dilated pupils. She sustained a second cardiopulmonary arrest and could not be resuscitated. Postmortem examination showed chronic asthmatic changes of the airways. In addition, examination of the trachea showed toxic mucosal necrosis with extensive sloughing of the epithelium and generalized congestion of the submucosal vasculature.

**Case 131.** A 64-year-old woman with asthma was using bleach and a drain cleaner containing sulfuric acid. After becoming very short of breath, she called her sister, who then notified the emergency medical system. Five minutes later, when paramedics arrived, the patient was in cardiopulmonary arrest. Because of the strong odor in her home, the patient had to be taken outside before cardiopulmonary resuscitation could be initiated. An ECG obtained during transport to the hospital showed complete heart block and an acute myocardial infarction. After intubation in the ED, she had palpable pulses. In the intensive care unit (ICU), serial cardiac isoenzymes confirmed that the patient had an acute myocardial infarction. The patient developed anoxic encephalopathy and died on the eighth hospital day.

**Case 135.** A 38-year-old man fell into a grease pit when he attempted to rescue his stricken friend who only a few minutes earlier had collapsed into the pit while trying to unclog a drainage pipe.

Paramedics pulled the patient from the grease pit and transported him to the hospital. Fifteen minutes later in the ED, the patient was in cardiopulmonary arrest and was resuscitated. On physical examination he was comatose with a blood pressure of 114/60 mm Hg. His pupils were fixed and dilated and he had bilateral corneal burns. His skin and hair were covered with a malodorous and greasy substance. He also had numerous ecchymoses and abrasions. After initial stabilization and intubation, he was lavaged and his skin was thoroughly decontaminated. In the ICU, norepinephrine and dopamine were administered to maintain his blood pressure. Serial chest roentgenograms demonstrated progressive bilateral infiltrates consistent with adult respiratory distress syndrome. The patient's respiratory status continued to deteriorate and he died on the fourth hospital day. Cause of death was due to adult respiratory distress syndrome secondary to hydrogen sulfide exposure.

**Case 138.** A 39-year-old man who owned a landfill went down a waste silo without wearing protective equipment. When his co-workers found him later, he was unresponsive. In the ED, he was comatose with dilated pupils. He was intubated and 100% oxygen was administered. In the ICU, he developed seizures and acidosis. His pupils became pinpoint. Diazepam, phenytoin, phenobarbital, and sodium bicarbonate were administered. The patient remained comatose with no spontaneous respiration. After an EEG showed no brain wave activity, life support measures were discontinued and the patient died.

**Case 141.** A 2-year-old girl who had been in a house fire was transported by ambulance with cardiopulmonary resuscitation in progress. On physical examination she was comatose and had signs of smoke inhalation. She was reported to have a high anion gap metabolic acidosis. She was intubated, given 100% oxygen, and placed on mechanical ventilation. Five minutes after arrival, she had a cardiac arrest and could not be resuscitated.

**Case 147.** A 40-year-old pathologist ingested an unknown amount of mercuric chloride. In the ED, he had severe abdominal pain and persistent hematemesis. His vital signs were systolic blood pressure of 120 mm Hg, pulse of 80 beats/min, and respiration of 25 breaths/min. Laboratory studies included sodium, 158 mEq/L; potassium, 3.8 mEq/L; chloride, 117 mEq/L; carbon dioxide, 19 mEq/L; blood urea nitrogen, 26 mg/dL; creatinine, 3.8 mg/dL; and arterial pH, 7.17. Because of hypotension, he was intubated and intravenous fluids were administered. Dimercaprol was also administered. After developing renal dysfunction and anuria, he underwent hemodialysis three times a week. The serum mercury level drawn in the ED returned at greater than 20 µg/dL and dimercaprol continued to be administered. He became febrile and antibiotics were infused. On the 12th hospital day, he had a cardiopulmonary arrest and was resuscitated. An EEG performed on the 15th hospital day showed minimal cortical activity. The patient died on the 21st hospital day. Postmortem examination revealed esophageal erosions, gastric erosions, laryngeal edema, acute tubular necrosis, anoxic brain necrosis, and a reactivated *Coccidioides immitis* infection.

**Case 148.** A 32-year-old electrician who worked in a chemistry laboratory presented to the ED with complaints of nausea, vomiting, vague abdominal symptoms, and burning paresthesias of his feet and hands. Because he had had a viral illness within the prior 2 weeks, Guillain-Barré syndrome was suspected. After a negative evaluation, which included lumbar puncture, electromyelogram, and heavy metal screening for arsenic, lead, mercury, and cadmium, he was discharged. Two weeks later the patient was re-admitted for protracted vomiting, constipation, profound weakness, dizziness, and persistent paresthesias. Differential diagnosis included Guillain-Barré syndrome, poliomyelitis, and acute intermittent porphyria. Over the ensuing 15 days, the patient developed alopecia, agitation, disorientation, gastrointestinal bleeding, and intermittent fevers. Occupational exposure to thallium was considered and serum and 24-hour urine samples were sent for analysis. On the 15th hospital day, he became asystolic and was resuscitated. Studies revealed

that he had a pulmonary embolism. He developed decreased urinary output and cerebral edema. On the 19th hospital day, the 24-hour urine thallium returned at 1,828 ng/mL. Dimercaptosuccinic acid was administered, but the patient remained comatose and without spontaneous respiration. On the 20th hospital day, the serum thallium returned at 15 µg/dL. An EEG and a brain scan were consistent with brain death. The patient died on the 20th hospital day. Urine samples obtained from the patient's wife and daughter revealed thallium. Further investigation established that an iced tea container used at home and at work was the source of the thallium exposure.

**Case 149.** A 25-year-old man accidentally drank one to two swallows of paraquat. At least 36 hours after the ingestion, the patient presented to the ED with nausea, vomiting, burning throat, abdominal pain, and bloody diarrhea. He was oliguric with a creatinine of 5 mg/dL. Other significant initial laboratory results included hematocrit, 53%; white blood cell count, 26,000/mm<sup>3</sup>; AST, 150 IU/L; and bilirubin, 4 mg/dL. Initial ABG showed pH, 7.42; Pco<sub>2</sub>, 34.2 mm Hg; Po<sub>2</sub>, 80 mm Hg; and oxygen saturation, 96.2%. His bloody diarrhea continued and within 6 hours his hematocrit fell to 47%. He developed respiratory failure 3 days after the ingestion and was intubated. In addition, he developed a pneumothorax, which was evacuated. After his creatinine increased to 12.5 mg/dL, he was hemodialyzed. Seven days after the ingestion, his ABGs were pH, 7.49; Pco<sub>2</sub>, 30 mm Hg; Po<sub>2</sub>, 61 mm Hg; and oxygen saturation, 93%. Other laboratory studies included total bilirubin of 8.6 mg/dL (direct bilirubin, 5.7 mg/dL) and AST of 61 IU/L. Nine days after the ingestion, an ABG drawn while the patient was receiving 21% oxygen and positive end-expiratory pressure of 7.5 cm of water showed pH, 7.38; Pco<sub>2</sub>, 38 mm Hg; Po<sub>2</sub>, 37 mm Hg; and oxygen saturation, 83%. A transplant team was consulted and the patient was declined. Twelve days after the ingestion, the patient died.

**Case 150.** A 30-year-old man with a history of ethanol abuse ingested 100 mL of paraquat that he had brought from Portugal. In the ED, he was agitated. Treatment included the administration of ipecac, followed by multiple doses of activated charcoal. Oxygen was withheld. On the second hospital day, the patient had ventricular arrhythmias that were treated with lidocaine and fluids. The ABGs showed pH, 7.5; Pco<sub>2</sub>, 32 mm Hg; Po<sub>2</sub>, 49 mm Hg; and oxygen saturation, 85%. Other laboratory studies included potassium, 4.4 mEq/L; chloride, 102 mEq/L; carbon dioxide, 22 mEq/L; blood urea nitrogen, 26 mg/dL; creatinine, 4.5 mg/dL; and glucose, 138 mg/dL. Two days after the ingestion, the patient developed pulmonary fibrosis. Repeat laboratory studies showed arterial Po<sub>2</sub>, 32 mm Hg; blood urea nitrogen, 47 mg/dL; creatinine, 7 mg/dL; AST, 196 IU/L; and lactate dehydrogenase, 459 IU/L. He was diaphoretic and hemoperfusion was recommended. The patient was dialyzed without improvement. Lidocaine and dopamine infusions were administered. On the fourth hospital day, the patient died from pulmonary fibrosis. Laboratory studies drawn prior to his death showed blood urea nitrogen, 93 mg/dL; creatinine, 13 mg/dL; AST, 270 IU/L; ALT, 214 IU/L; lactate dehydrogenase, 913 IU/L; total bilirubin, 5.8 mg/dL; and creatine phosphokinase, 871 IU/L. Urine output had been only 6 mL over 12 hours.

**Case 152.** A 41-year-old carpenter presented to the ED with vomiting, diarrhea, bradycardia, and hypotension. Intravenous fluids were administered and he was hospitalized. Ten hours after admission, dopamine and broad-spectrum antibiotics were administered because of bradycardia and hypotension. Approximately 14 hours after admission, the patient informed the nurse that he had ingested 90 to 120 mL of paraquat earlier that day. Over the ensuing hours, his mental status deteriorated. His pulse ranged from 150 to 220 beats/min with a systolic blood pressure of 90 mm Hg. Multiple doses of furosemide were administered because of poor urine output. Approximately 2 hours later, the patient's systolic blood pressure fell to 50 mm Hg and the dopamine infusion was increased and a dobutamine infusion was started. Hemodynamic parameters from a Swan-Ganz catheter were reportedly normal. During the insertion

of an arterial line, the patient had a respiratory arrest, aspirated, and then had a cardiac arrest. After an hour of cardiopulmonary resuscitation, the patient died. The 20-hour postingestion plasma paraquat level was 5 µg/mL. Evaluation of the gastric contents showed a paraquat level of 48,850 µg/L.

**Case 159.** A 17-month-old boy drank an unknown amount of charcoal lighter fluid at a family barbecue. After a woman stuck her finger down the child's throat, he vomited and then stopped breathing. En route to the ED, he had seizures. In the ED, he was also convulsing and hypotensive. He was intubated and midazolam, diazepam, fentanyl, phenytoin, phenobarbital, dopamine, and epinephrine were administered. Serial chest roentgenograms showed a progressive pattern consistent with aspiration pneumonia or respiratory distress syndrome. The child died 2 days after the ingestion. Postmortem examination revealed pulmonary thromboembolism, generalized venous thrombosis, and anoxic encephalopathy.

**Case 168.** A 3-year-old boy with Down's syndrome ingested a couple of swallows of a fabric protector containing mineral spirits. The child presented to the ED with a mild but persistent cough. Initial chest roentgenogram revealed a right infiltrate. Repeat roentgenogram revealed bilateral infiltrates. He became febrile and hypoxic, and was intubated. While receiving an oxygen concentration of 70% and a positive end-expiratory pressure of 7 cm of water, his ABGs were pH, 7.34; Pco<sub>2</sub>, 38 mm Hg; Po<sub>2</sub>, 92 mm Hg; and bicarbonate, 20 mEq/L. Over the ensuing 2.5 weeks, the child continued to deteriorate. He developed barotrauma and five chest tubes were inserted. With a positive end-expiratory pressure of 16 cm of water, his Po<sub>2</sub> was 50 mm Hg. After gram-positive cocci were cultured from the Swan-Ganz catheter, vancomycin was administered. The child became hypotensive and dopamine, epinephrine, and nitroprusside were infused. While receiving 100% oxygen, his Po<sub>2</sub> was approximately 30 mm Hg. The child died on the 19th hospital day.

**Case 173.** An 82-year-old woman ingested 300 to 420 mL of a furniture polish containing 99% mineral seal oil. In the ED 2 hours postingestion, she was weak, lethargic, and afebrile, and had stable vital signs. Chest roentgenogram was consistent with pneumonia. Antibiotics and oxygen were administered. During her hospitalization her respiratory status continued to deteriorate. A decision was made not to intubate her and she died 8 days after admission.

**Case 174.** A 15-month-old boy who ingested gasoline was brought to the fire department because of increased oral secretions. In the ED, he had a cardiac arrest and was resuscitated. He was intubated and placed on mechanical ventilation. The ABGs showed a Po<sub>2</sub> of 50 mm Hg. The child pulled out the endotracheal tube, vomited, and aspirated. In the pediatric ICU, he was hypothermic. Laboratory studies showed intravascular hemolysis. Chest roentgenogram showed opacifications of both lung fields. The patient was receiving a positive end-expiratory pressure of 12 cm of water and intravenous vancomycin. Approximately 9 hours postingestion, the child's blood pressure was maintained at 75/45 mm Hg with a dopamine infusion. While receiving a sodium bicarbonate infusion, his ABGs were pH, 7.31; Pco<sub>2</sub>, 24 mm Hg; Po<sub>2</sub>, 119 mm Hg; and bicarbonate, 12 mEq/L. His hemoglobin was 11.2 g/dL. The patient was being suctioned every 2 hours for frothy, red-tinged secretions. A heat lamp maintained his temperature at 36.7°C. Over the ensuing 3 days, his temperature remained at approximately 38°C, he developed hematuria, and he had a hypertensive episode. In addition, it was difficult to maintain his oxygen saturation. Four days postingestion, while receiving an oxygen concentration of 78% and a positive end-expiratory pressure of 12 cm of water, his ABGs were pH, 7.3; Pco<sub>2</sub>, 56 mm Hg; and Po<sub>2</sub>, 64 mm Hg. Blood cultures were growing a gram-negative diplococcus. Cefotaxime and nafcillin were administered; later ciprofloxacin was added. On the fifth hospital day, *Hemophilus influenzae* was cultured from the lungs and proteus was cultured from the urine. Vital signs were blood pressure, 155/57 mm Hg; pulse, 160 beats/min; and temperature, as high as 40°C. Ciprofloxacin was also administered. By the 10th hospital day, he was

receiving 100% oxygen and had an inverse inspiratory to expiratory ratio on the ventilator. His ABGs were pH, 7.14 and  $P_{CO_2}$ , 78 mm Hg. The patient had multiple cardiopulmonary arrests and was resuscitated. Extracorporeal membrane oxygenation was considered, but the patient was too unstable. He died on the 11th hospital day.

**Case 175.** A 2-year-old boy with a mild upper respiratory infection drank an unknown amount of gasoline for a lawn mower. He coughed immediately, became cyanotic, and stopped breathing. His grandfather initiated cardiopulmonary resuscitation and after an unknown period of time, the child was unresponsive but had resumed breathing. The child was then transported. In the ED, he was apneic, unresponsive, hypotensive, and had bloody frothy fluid coming out of his mouth and nose. He was intubated and epinephrine, sodium bicarbonate, atropine, dopamine, methylprednisolone, and plasma proteins were administered. He died 70 minutes after presentation to the ED.

**Case 177.** A 16-year-old boy inhaled the contents of a halon fire extinguisher that he had sprayed into a plastic bag. He was transported to the ED in cardiopulmonary arrest. During cardiopulmonary resuscitation, the patient temporarily had an idioventricular rhythm with a pulse. Postmortem examination showed generalized visceral congestion and moderate to severe cerebral edema. Asphyxiation was confirmed as the cause of death.

**Case 178.** An 11-month-old boy ingested an unknown amount of kerosene and vomited. He was found unresponsive and apneic at home. It was unknown how long the boy had been apneic. Cardiopulmonary resuscitation was initiated by paramedics and the child was transported to the hospital. In the ED, he was intubated and ventilated using positive end-expiratory pressure. He was sedated with diazepam. His initial chest roentgenogram showed pulmonary infiltrates. As his condition continued to deteriorate, extracorporeal mechanical oxygenation was considered, but not done. Fifty-seven hours after admission, he died.

**Case 179.** An 11-month-old girl ingested and aspirated an unknown amount of kerosene that had been placed in a soda can. In the ED, the infant was in acute respiratory distress. During intubation, the infant probably aspirated. The infant was then transferred to a tertiary care facility. Positive pressure ventilation was complicated by the development of a pneumothorax necessitating the insertion of a chest tube. Cardiovascular collapse developed, requiring aggressive vasopressor support. The patient ultimately died of multiple organ systems failure on the 52nd hospital day.

**Case 180.** A 2-year-old girl was found near a mayonnaise jar containing kerosene. She smelled strongly of kerosene and immediately vomited several times. When paramedics arrived approximately 30 minutes later, the child was lethargic, pale, and tachypneic. In the ED, she was unresponsive, vomiting, and had respiration of 24 breaths/min. Oxygen saturation by pulse oximetry was 84%. The child was intubated and placed on mechanical ventilation. Two hours postexposure her ABGs on 100% inspired oxygen were pH, 6.78;  $P_{CO_2}$ , 88 mm Hg;  $P_{O_2}$ , 49 mm Hg; and bicarbonate, 13.3 mEq/L. The urine drug screen was negative. Four hours postexposure, she was transported to a major medical center for intensive care. During transport, she had hypotension, tachycardia, and poor peripheral perfusion. Intraosseous crystalloid fluids were administered. While receiving 100% oxygen and positive end-expiratory pressure, her oxygen saturation was in the 80s. Six hours postexposure, she was admitted to the pediatric ICU. Acute respiratory insufficiency and hemodynamic instability continued despite intensive care. She developed anemia, leukopenia ( $2,600/\text{mm}^3$ ), and a coagulopathy. Packed red blood cells were transfused and albumin was administered. Seven hours postexposure, the child had a cardiopulmonary arrest and could not be resuscitated.

**Case 182.** An 11-month-old girl poured approximately 90 mL of a lamp oil containing 98% paraffin over her face. It was estimated by her father, who had witnessed the spill, that she had ingested approximately 30 mL of the lamp oil. The patient immediately coughed

and gagged repeatedly, and her eyes appeared red. In the ED, her respiratory rate was 75 breaths/min. An oxygen saturation was in the low 80s. After oxygen was administered at a rate of 15 L/min, capillary blood gases were pH, 7.42;  $P_{CO_2}$ , 30 mm Hg; and  $P_{O_2}$ , 56 mm Hg. The patient was transferred to the ED of a pediatric hospital, where her heart rate was 185 beats/minute and her respiratory rate was 85 to 90 breaths/min. Physical examination revealed deep retractions and bilateral rales. The pulse oximeter decreased to the 80s. The initial chest roentgenogram showed pulmonary infiltrates, which had increased 12 hours later. The patient was intubated and placed on mechanical ventilation. Her oxygen saturations continued to drop even with positive pressure. Approximately 24 hours after admission, her pulse was greater than 200 beats/min and her oxygen saturations continued to drop on 100% oxygen. Antibiotic therapy was then initiated. Two days after admission, she developed several pneumothoraces for which chest tubes were placed. Vecuronium and fentanyl were administered to paralyze the patient. The patient continued to deteriorate and on the fourth hospital day she was placed on ECMO. Over the ensuing 25 days, she was maintained on ECMO. The ECMO flow ranged from an initial 250 mL/min to 1,000 mL/min as the patient deteriorated. She was placed on the list for a lung transplant, but developed bacteremia. On the 29th hospital day, she had a cardiopulmonary arrest and died.

**Case 188.** A 40-year-old man with a history of alcohol abuse applied a pesticide to prairie dog holes during the day. The initial history suggested inhalation exposure to methyl bromide and ethylene dibromide. One hour after leaving work, he developed nausea and vomiting. Three hours after leaving work, while being transported to the ED by paramedics, he had a respiratory arrest and was resuscitated. Four hours later, he was restless and had severe abdominal pain. His blood pressure was 75/40 mm Hg with a respiratory rate of 20 breaths/min. Five hours later, when his systolic blood pressure was 40 mm Hg and his arterial pH was 6.97, he was transferred to another hospital. At the second hospital, he admitted to intentionally ingesting aluminum phosphide pellets. Two days after the ingestion, he was intubated and placed on mechanical ventilation. He was still able to follow commands. During his hospital course he developed hypovolemia, refractory hypotension, anuria, ventricular tachycardia, seizure activity, and liver failure. His creatinine was 8.2 mg/dL. Treatment included the administration of intravenous fluids, dopamine, lidocaine, and diazepam. He died 4 days postingestion. Postmortem examination showed mucosal ulceration with fibrinous exudate of the stomach, distal esophagus, and upper airway. Other findings included hepatic centrilobular necrosis with mild cholestasis, renal tubular necrosis, bilateral pleural effusions with necrotizing pleuritis, and acute bronchopneumonia. A brain aluminum level was less than 2  $\mu\text{g/g}$ .

**Case 196.** A 49-year-old man was found unresponsive with a suicide note that had apparently been written 4 hours earlier. A large number of prescription containers and an empty bottle of malathion were found next to the suicide note. In the ED, he was comatose with pinpoint pupils and had a pulse of 120 beats/min. On physical examination, he had profuse oral secretions and muscle fasciculations. In addition, he had attempted to slit his wrists and ankles. The patient was paralyzed with vecuronium and intubated. Gastric lavage was performed and activated charcoal administered. Routine toxicologic analysis was negative. The patient developed a metabolic acidosis with a bicarbonate of 5 to 7 mEq/L, which required the administration of 1,750 mEq of sodium bicarbonate over 16 hours. Hypernatremia (sodium of 160 mEq/L) limited the amount of bicarbonate that could be given. Hypotension refractory to vasopressors developed and the patient died 19 hours after the ingestion. Postmortem toxicologic analysis of the blood showed an ethanol level of 30 mg/dL, a malathion level of 10  $\mu\text{g/mL}$ , and a malaoxon level of 0.5  $\mu\text{g/mL}$ .

**Case 201.** A 90-year-old woman and her 64-year-old son ate a mushroom and partially cooked chicken. The mushroom had been

picked in a neighbor's yard the previous day. Approximately 12 hours after eating the mushroom, the woman developed nausea, vomiting, diarrhea, and weakness. Because these symptoms persisted, she went to the ED. Past medical history was significant for hypertension and the insertion of a transvenous pacemaker. Medications included enalapril and aspirin. Approximately 26 hours after eating the mushroom she was afebrile and her vital signs were blood pressure, 150/80 mm Hg; heart rate, 75 beats/min; and respiration, 18 breaths/min. Physical examination was unremarkable. Initial laboratory studies included sodium, 138 mEq/L; potassium, 2.5 mEq/L; carbon dioxide, 20 mEq/L; chloride, 110 mEq/L; blood urea nitrogen, 45 mg/dL; creatinine, 1.4 mg/dL; glucose, 202 mg/dL; calcium, 10.4 mg/dL; AST, 247 IU/L; ALT, 149 IU/L; bilirubin, 0.6 mg/dL; prothrombin time, 13.6 seconds; and partial thromboplastin time, 25.9 seconds. Intravenous penicillin (300,000 U/kg/d), cimetidine (1.5 g every 6 hours), and fluids were administered. Intramuscular vitamin K (40 mg/d) and multiple doses of activated charcoal were also administered. Four days postingestion, the patient was intubated and placed on mechanical ventilation because of acute respiratory failure. The ABGs were pH, 7.18; Pco<sub>2</sub>, 24 mm Hg; Po<sub>2</sub>, 166 mm Hg; and bicarbonate, 9.3 mEq/L. Additional laboratory studies included blood urea nitrogen, 37 mg/dL; creatinine, 3.3 mg/dL; AST, 4,099 IU/L; ALT, 5,394 IU/L; alkaline phosphatase, 144 IU/L; prothrombin time, greater than 50 seconds; partial thromboplastin time, greater than 110 seconds; and lactic acid, 13.5 mEq/L. The patient remained hypotensive with low urine output despite the administration of intravenous fluids, dopamine, and dobutamine. By the following day, she was comatose with fixed and dilated pupils. She had a cardiac arrest and died 5 days postingestion. Postmortem examination revealed right-sided pleural effusion, pericardial effusion, left ventricular hypertrophy, cardiac arteriosclerosis, liver necrosis, and ascites. Amatoxins were present in both antemortem and postmortem serum.

**Case 202.** A 70-year-old man ingested mushrooms he had picked. At an unknown time after the ingestion, he developed abdominal pain and bloody diarrhea. In the ED, he was comatose. Laboratory studies included blood urea nitrogen of 124 mg/dL and creatinine of 4.0 mg/dL. After the transfusion of 10 U of platelets, his platelet count was 24,000/mm<sup>3</sup>. At some point during his hospitalization, he was alert enough to admit to ingesting the mushrooms. Additional laboratory studies showed ALT, 4,000 IU/L; lactate dehydrogenase, 3,000 IU/L; and bilirubin, 8.3 mg/dL. Prothrombin time was prolonged. The patient was transferred to a tertiary care hospital. At the second hospital, he was comatose and unstable. Laboratory studies included blood urea nitrogen, 5 mg/dL; creatinine, 4.4 mg/dL; AST, 590 IU/L; ALT, 847 IU/L; total bilirubin, 10.3 mg/dL (direct, 7.3 mg/dL); and prothrombin time, 39 seconds. On the second hospital day, the patient had a cardiopulmonary arrest and could not be resuscitated.

**Case 203.** A 95-year-old man mistook a glory lily bulb (*Gloriosa superba*) for an onion and put it in a stew. After eating the stew, he developed severe diarrhea, vomiting, and weakness. In the ED, he had tachycardia with a systolic blood pressure of 95 mm Hg. Treatment included gastric lavage and the administration of activated charcoal and intravenous fluids. On the second hospital day, his systolic blood pressure remained at 95 mm Hg and he became anuric. Laboratory studies included creatinine, 2.6 mg/dL; AST, 350 IU/L; ALT, 598 IU/L; alkaline phosphatase, 930 IU/L; and a prolonged prothrombin time. The patient continued to deteriorate and died on the third hospital day.

**Case 204.** A 32-year-old man with a history of alcohol abuse ingested a large amount of peyote at an unknown time. The patient had a cardiopulmonary arrest and was transported to the hospital. On arrival in the ED 45 minutes later, he was intubated and cardiopulmonary resuscitation continued. However, he died shortly after arrival. Toxicologic analysis was positive for mescaline. Postmortem examination revealed aspirated oral contents in the bronchi, severe

pulmonary edema, parenchymal congestion of an upper lobe of the lung, and a Mallory-Weiss tear. Chronic gastritis, macrovesicular steatosis, and alcoholic hepatitis were also present.

**Case 206.** A 23-month-old girl drank an unknown amount of a gun bluing solution containing selenium dioxide, nitric acid, and phosphoric acid from a 90-mL container. She immediately vomited. In the ED 30 minutes later, she was drooling and vomited coffee-ground material. She was admitted and had persistent vomiting and diarrhea. Approximately 9 hours postingestion, she was transferred to a tertiary care facility. She had a respiratory arrest en route and was intubated. The ABGs on arrival showed pH, 6.94; Pco<sub>2</sub>, 24.9 mm Hg; and Po<sub>2</sub>, 370 mm Hg. Cardiopulmonary resuscitation was initiated, but she died 13 hours postingestion.

**Case 209.** A 30-year-old woman with a 2-month history of malaise, cough, chest pain, and low-grade fevers ingested an unknown amount of acetaminophen and an over-the-counter cold preparation containing acetaminophen, 1,000 mg; doxylamine, 7.5 mg; pseudoephedrine, 60 mg; and dextromethorphan, 30 mg per 30 mL. Approximately 2 weeks prior to admission, she developed right upper quadrant abdominal pain and loose stools. She continued to treat her symptoms with acetaminophen. One day prior to admission, she became very short of breath. In the ED, she was markedly icteric with systolic blood pressure, 84 mm Hg; pulse, 130 beats/min; respiration, 32 breaths/min; and temperature, 35°C. On physical examination, she had decreased breath sounds on the right side and the liver was palpable 6 cm below the right costal margin. Laboratory studies included AST, 25,127 IU/L; ALT, 7,815 IU/L; lactic dehydrogenase, 35,364 IU/L; and prothrombin time, 32.6 seconds. Her acetaminophen level obtained an unknown time after her last ingestion was 103 µg/mL. N-acetylcysteine was administered. Shortly after admission, she became anuric. Bradycardia occurred twice without a palpable pulse and responded to epinephrine, atropine, and fluids. Epinephrine and norepinephrine infusions were required to maintain her blood pressure. She was transferred for evaluation for a liver transplant, but a cardiopulmonary arrest occurred in the helicopter. Resuscitation efforts, continued on arrival at the receiving hospital, were not successful. The patient died 24 hours after her initial presentation. Postmortem examination confirmed the cause of death as hepatic necrosis secondary to acetaminophen ingestion. The postmortem acetaminophen level was 39 µg/mL.

**Case 246.** An 18-month-old girl was found cyanotic and unresponsive by her mother. Basic life support was initiated at home, and the child was transported to the ED where she was unresponsive with an agonal rhythm. Cardiopulmonary resuscitation was successful in restoring a cardiac rhythm. She failed to improve following naloxone administration. After receiving intravenous fluids and dopamine, her systolic blood pressure was 90 mm Hg and her pulse was 170 beats/min. Toxicologic analysis revealed a plasma acetaminophen level of 152 µg/mL and the presence of opiates in the urine although no history of drug exposure was obtained. Admission laboratory studies included AST, 305 IU/L; ALT, 158 IU/L; total bilirubin, 0.5 mg/dL; prothrombin time, 20 seconds; and partial thromboplastin time, 44 seconds. Soon after admission, the patient's vital signs stabilized. Ten hours after admission, N-acetylcysteine was administered. Transaminases continued to rise (AST peaked at 13,617 IU/L), and she developed gastrointestinal bleeding. She had multiple, diffusely abnormal EEGs and died on the seventh hospital day.

**Case 320.** A 60-year-old man was brought to the ED by his wife for mental status changes. In the ED, he was hyperventilating. Additional history was obtained that the patient had ingested a bottle of aspirin the previous evening in a suicide attempt. Several hours after the ingestion, his salicylate level was 70 mg/dL. Because of mental status deterioration, he was paralyzed with succinylcholine and intubated. After the intubation, he became febrile and rigid and his temperature peaked at over 42.2°C. Laboratory studies showed marked hyperkalemia. Sodium bicarbonate was administered and

dialysis initiated. The patient became hemodynamically unstable and developed premature ventricular contractions. Approximately 6 hours after admission, he developed ventricular fibrillation and then asystole. Cardiopulmonary resuscitation was initiated, but he could not be resuscitated. A repeat salicylate level drawn prior to his death was 100 mg/dL. It was reported that his arterial pH never fell below 7.4. Although this patient's cause of death is listed as suicide from salicylate poisoning, examination of the sequence of events showed a rapid deterioration after he was paralyzed with succinylcholine and intubated. It is quite possible that his hyperkalemia, rigidity, hyperthermia, and hypotension were manifestations of malignant hyperthermia induced by succinylcholine and not salicylate poisoning alone.

**Case 327.** A 39-year-old, 85-kg woman ingested 165 tablets of ibuprofen, 200 mg. When an ambulance arrived approximately 9 hours postingestion, the patient was alert and oriented, complaining of epigastric pain, nausea, and vomiting. After an evaluation at the hospital, which included toxicologic analysis of the blood that showed only the presence of caffeine and ibuprofen, the patient was transferred to a psychiatric unit. Three days later, the patient was transferred to the ICU because of persistent gastrointestinal symptoms. During her hospitalization, the patient became comatose and developed adult respiratory distress syndrome. She was intubated and placed on mechanical ventilation. Hypertension was treated with the administration of nitroprusside and hydralazine. The patient had a cardiopulmonary arrest and died 10 days postingestion.

**Case 339.** A 21-year-old woman with insulin-dependent diabetes ingested ethanol and 20 g of equine phenylbutazone. Approximately 6 to 8 hours postingestion she was transported by ambulance to the ED. After being observed for 6 hours in the ED and "sobering up," she was discharged. Toxicologic analysis, which did not include a phenylbutazone level, was negative. It was believed that she had not ingested the phenylbutazone. Seven hours after discharge from the ED, she was stumbling and falling and complained that she could not hear. Her parents took her to their private physician where she suddenly collapsed and would open her eyes only to painful stimuli. In the ICU, she was agitated, pulled out her intravenous lines, and broke her restraints. After a grand mal seizure, complicated by probable aspiration, she was intubated and diazepam and phenytoin were administered. An arterial pH of 7.18 obtained after the seizure was corrected with the administration of sodium bicarbonate. The patient was also receiving multiple doses of activated charcoal. Her diabetes was well controlled on an insulin infusion. Serum phenylbutazone level approximately 5 hours postingestion was 96.5 µg/mL. A repeat level 22 hours later was 202 µg/mL. Approximately 24 hours after admission, she was febrile and her blood pressure could not be maintained with a dopamine infusion. Laboratory studies showed pancytopenia, coagulopathy, and elevated liver function tests. She was then transferred to a tertiary care facility where charcoal hemoperfusion could be performed. On the second hospital day, her serum phenylbutazone level peaked at 270 µg/mL. After charcoal hemoperfusion, her serum phenylbutazone decreased to 170 µg/mL but rebounded to 250 µg/mL 12 hours after charcoal hemoperfusion. Charcoal hemoperfusion was repeated on the third hospital day, and the phenylbutazone level had fallen to 38 µg/mL by the fourth hospital day. Her hospitalization was complicated by the development of respiratory failure, persistent pancytopenia, rhabdomyolysis, renal failure, and hepatic dysfunction. She died 7 days after the ingestion.

**Case 340.** An open bottle of propoxyphene was found by the crib of a sleeping 19-month-old boy. The child developed respiratory difficulty 3.5 hours later. By the time the child arrived at the pediatric health care facility, he was in cardiopulmonary arrest. Cardiopulmonary resuscitation was initiated and naloxone, atropine, and epinephrine were administered. When the child was intubated, milk was found in the trachea. Dopamine was infused to maintain his blood pressure. Toxicologic analysis revealed a propoxyphene level

of 1.3 µg/mL and a norpropoxyphene level of 6.8 µg/mL. An abdominal roentgenogram showed a button in the stomach. A CT scan of his head was negative. Approximately 4 hours after arrival to the ED, the child had fixed and dilated pupils. He had another cardiopulmonary arrest and died approximately 7.5 hours after arrival.

**Case 352.** A 35-year-old anesthetist with a history of intravenous drug abuse with anesthetic drugs went to his bedroom to lie down. Minutes later his wife found him in respiratory arrest with vomitus in his mouth. An ambulance was summoned and the patient was transported to the hospital. On arrival, the patient was in cardiac arrest. Cardiopulmonary resuscitation was initiated, but was complicated by the inability to secure an adequate airway due to vomitus. Naloxone was also administered without effect. Approximately 1 hour after arriving in the ED, the patient died. Postmortem examination of the lungs showed hemorrhagic edema and the presence of abundant foreign material. On his skin were numerous scarred needle tracks. Toxicologic analysis of the blood drawn 16.5 hours postmortem showed levels of ketamine, 1.1 µg/mL; sufentanil, 1.1 ng/mL; fentanyl, less than 0.5 ng/mL; and midazolam, less than 1 ng/mL. Postmortem examination confirmed the cause of death as aspiration pneumonia and chemical pneumonitis secondary to the intravenous administration of sufentanil and ketamine.

**Case 356.** A 79-year-old woman with end-stage renal disease went to the ED because of a nosebleed of several hours' duration. During dialysis 4 hours earlier, the patient had received at least 20,000 U (possibly 50,000 U) of heparin because of a clotted hemodialysis catheter. In the ED, the patient developed bradycardia and apnea. During intubation, blood was present in the nares and trachea. Vital signs at that time were blood pressure, 190/100 mm Hg; pulse, 130 beats/min; and temperature, 35°C. The patient was comatose, responsive to painful stimuli, and had fixed and dilated pupils. Laboratory studies included hemoglobin, 11.4 g/dL; hematocrit, 33.8%; prothrombin time, 19.9 seconds; partial thromboplastin time, greater than 150 seconds; potassium, 5 mEq/L; blood urea nitrogen, 59 mg/dL; and creatinine, 6.3 mg/dL. Protamine and fresh-frozen plasma were given to correct the coagulopathy. However, the patient suffered a massive intracranial bleed. She died 17 hours after the exposure.

**Case 358.** A 35-year-old woman with a history of a seizure disorder and auditory hallucinations ingested up to 190 tablets of carbamazepine, 200 mg. In the ED approximately 75 minutes postingestion, she was lethargic and occasionally combative with blood pressure, 133/81 mm Hg; pulse, 93 beats/min; and temperature, 37.5°C. Pupils were 2 mm and reactive, and bowel sounds were decreased. Laboratory studies were unremarkable except for a potassium level of 3.3 mEq/L and a glucose level of 174 mg/dL. An ECG showed normal sinus rhythm at a rate of 90 beats/min and normal intervals. After the results of the ABGs returned showing pH of 7.3, Pco<sub>2</sub> of 49 mm Hg, and Po<sub>2</sub> of 35 mm Hg, oxygen was administered. Gastric lavage returned large amounts of pink sludge and pill fragments. Activated charcoal and sorbitol were given. In the ICU approximately 13 hours postingestion, the patient had three generalized seizures treated with diazepam. When the seizures stopped, the monitor showed a supraventricular tachycardia. However, she rapidly developed bradycardia, then asystole. After 20 minutes of cardiopulmonary resuscitation, she had a pulse but dopamine was required to maintain her blood pressure. After the initial carbamazepine level from the ED returned at 23 µg/mL, the patient was transferred to another facility for charcoal hemoperfusion. When charcoal hemoperfusion was initiated 18 hours postingestion, her carbamazepine level was 72.5 µg/mL. Following hemoperfusion, her level was 49 µg/mL. Over the next 2 days, charcoal hemoperfusion was repeated frequently with her levels rebounding to approximately 40 µg/mL each time. Eight days postingestion, her carbamazepine level was negligible. However, she never improved neurologically, and died 18 days postingestion.

**Case 361.** A 20-month-old boy with a history of febrile seizures

was brought to the ED because of recurrent seizures. Initially, his pH was 7.07 and the seizures were controlled by diazepam. When the seizures recurred, phenytoin was administered. Instead of receiving 150 mg (15 mg/kg), the child received 1,500 mg intravenously over a 30-minute period. Forty minutes after the total amount was administered, the child was asystolic. Cardiopulmonary resuscitation was initiated and the child was resuscitated then transferred to a tertiary care facility for charcoal hemoperfusion. The phenytoin level dropped from 86 µg/mL to 71 µg/mL after hemoperfusion. There was no restoration of brain function and he died 8 days later.

**Case 363.** A 4-year-old boy with a history of seizures, right-sided hemiparesis, and gross developmental delays secondary to the agenesis of part of his left temporal lobe was taking valproate chronically. After ethosuximide was added to control his seizures, his parents noticed that he was more lethargic. Drug levels obtained 4 days after the addition of ethosuximide showed a valproate level of 154 µg/mL and an ethosuximide level of 60 µg/mL. Valproate was then decreased from 300 mg three times a day (50 mg/kg) to 250 mg three times a day (41.6 mg/kg). Because of persistent lethargy, he was brought to the ED the following day. In the ED, he was described as being intermittently arousable and occasionally antagonistic. Vital signs were heart rate, 190 beats/min; respiration, 60 breaths/min; and temperature, 38.9°C. Laboratory data included hemoglobin, 17 g/dL; white blood cell count, 30,000/mm<sup>3</sup>; platelets, 99,000/mm<sup>3</sup>; blood urea nitrogen, 30 mg/dL; and creatinine, 0.8 mg/dL. Chest roentgenogram was unremarkable. After cultures were obtained, ceftriaxone was administered. Despite the administration of fluids, oliguria developed a few hours after admission. Repeat laboratory studies showed blood urea nitrogen, 42 mg/dL; creatinine, 2.4 mg/dL; potassium, 7.6 mEq/L; bicarbonate, 10.8 mEq/L; glucose, 34 mg/dL; hemoglobin, 12.2 g/dL; white blood cell count, 52,800/mm<sup>3</sup>; platelets, 114,000/mm<sup>3</sup>; AST, 449 IU/L; and ALT, 146 IU/L. The ABGs showed pH, 7.14; Pco<sub>2</sub>, 19 mm Hg; Po<sub>2</sub>, 83 mm Hg; and bicarbonate, 6 mEq/L. The patient developed an arrhythmia and then sustained a respiratory arrest with loss of his blood pressure. The patient was intubated and fluids, sodium bicarbonate, calcium, dopamine, and epinephrine were administered. His systolic blood pressure was approximately 60 mm Hg. The patient was anuric, but hemodialysis could not be performed because of the presence of hypotension and a coagulopathy (prothrombin time of 106 seconds). Additional laboratory studies showed AST, 12,000 IU/L; ALT, 3,000 IU/L; ammonia, 200 µg/dL; lactate, 32 mEq/L; and amylase, 600 IU/L. Approximately 30 hours after admission, he died. Post-mortem examination revealed severe hemorrhagic pancreatitis, moderately severe hepatic necrosis and hemorrhage, and pulmonary congestion with effusions consistent with congestive heart failure.

**Case 414.** A 49-year-old woman ingested 100 tablets of an unknown strength of amoxapine at an unknown time. In the ED, she was in status epilepticus. After convulsing for 30 minutes, she was paralyzed with pancuronium and intubated. Treatment also included the administration of diazepam, phenytoin, and sodium bicarbonate. An ECG revealed conduction disturbances including atrioventricular dissociation. The patient was lavaged and given activated charcoal with sorbitol. Prior to admission to the ICU, lidocaine was administered and an external pacemaker was placed on the patient. Her last pH in the ED was 6.9. During the first 24 hours of hospitalization, her cardiovascular status stabilized but she remained obtunded and ventilator dependent. An episode of hyperthermia (41.8°C) was controlled with cooling blankets. Sodium bicarbonate and multiple doses of activated charcoal were administered. Her pH was 7.34. Despite the administration of diazepam and phenobarbital, seizure activity persisted and she was paralyzed again. Cortical seizures persisted following administration of a total dose of 3.75 g of phenobarbital. The seizures were controlled with a phenobarbital infusion on the second hospital day. She remained comatose, occasionally requiring norepinephrine to maintain her blood pressure. On the third hospital day a CT scan of the head revealed cerebral

edema with cerebellar involvement. The patient became hypothermic and her EEG showed bursts of seizure activity despite phenobarbital. Mannitol was then administered. Over the subsequent 4 days, there was no change. A repeat CT scan of the head on the seventh hospital day revealed massive cerebral edema. A ventriculostomy was then performed. The patient continued to deteriorate and developed persistent seizure activity and hyperthermia, which were resistant to treatment. The patient died on the 12th hospital day.

**Case 417.** A 45-year-old woman ingested an unknown amount of bupropion, 75-mg tablets. In the ED 12 to 24 hours postingestion, the patient was in status epilepticus with a blood pressure of 120/70 mm Hg and a pulse of 70 beats/min. She was intubated and placed on mechanical ventilation. After intravenous diazepam, phenytoin, and phenobarbital failed to control the seizures, the patient was placed in a pentobarbital coma. A subsequent EEG on this regimen showed no evidence of epileptiform activity. Multiple doses of activated charcoal were administered. On the third hospital day, she became hypotensive and dopamine was administered. In addition, she was hypothermic and a CT scan of her head showed moderate to severe cerebral edema. An EEG obtained 1 week after admission showed global encephalopathic changes. The patient died 19 days postingestion.

**Case 418.** A 47-year-old man ingested 100 tablets of bupropion, 100 mg, at an unknown time. He started to vomit and convulse. In the hospital, he had a cardiopulmonary arrest and was resuscitated. The seizures recurred. Laboratory studies revealed hypokalemia and a QRS duration of 0.16 seconds. Sodium bicarbonate, atropine, dopamine, and lorazepam were administered. On the second hospital day, he had a cardiopulmonary arrest and died.

**Case 420.** A 2-year-old boy ingested an unknown amount (parent believed it was only one tablet) of desipramine, 50 mg. In the ED approximately 1 hour after the ingestion, the child was ataxic. He was lavaged and activated charcoal was administered. Seventy-two minutes after the ingestion, the child started to convulse and then had a cardiopulmonary arrest. Although cardiopulmonary resuscitation was performed for 2 hours, the child could not be resuscitated.

**Case 482.** A 70-year-old woman with chronic obstructive pulmonary disease ingested an unknown amount of lithium carbonate in a suicide gesture. In the ED, the patient was alert and oriented and complaining of nausea, vomiting, and extreme shortness of breath. Vital signs were blood pressure, 130/80 mm Hg; pulse, 117 beats/min; and respiration, 26 breaths/min. Physical examination revealed only diffuse bilateral coarse rhonchi. The initial lithium level was 4.5 mEq/L. The ABGs revealed pH, 7.14; Pco<sub>2</sub>, 60 mm Hg, and Po<sub>2</sub>, 110 mm Hg. The patient was intubated secondary to acute respiratory failure. Whole bowel irrigation with polyethylene glycol at 2 L/hr was initiated. Despite this therapy, a repeat lithium level obtained 8 hours postingestion was 9.5 mEq/L. The patient became hypotensive, requiring vasopressors. Hemodialysis was unavailable at this institution and the patient was deemed too unstable for transfer. She died 30 hours postingestion.

**Case 516.** A 39-year-old man with paranoid schizophrenia treated with thioridazine and clonazepam admitted ingesting up to 120 tablets of tranlycypromine, 10 mg, and a six-pack of beer. On physical examination, he was lethargic with a blood pressure of 148/102 mm Hg, pulse of 116 beats/min, respiration of 16 breaths/min, and temperature of 37.1°C. Initial laboratory studies were unremarkable. An ethanol level was not obtained. Chest roentgenogram showed a small left pleural effusion. An ECG showed sinus tachycardia. Gastric decontamination consisted of gastric lavage and the administration of activated charcoal and sorbitol. Four hours postingestion, the patient was alert and afebrile in the ICU with blood pressure, 150/98 mm Hg; pulse, 107 beats/min; and respiration, 20 breaths/min. Approximately 24 hours postingestion, he was alert and able to eat. By 32 hours postingestion, he was disoriented. His vital signs 34



hours postingestion were blood pressure, 160/80 mm Hg; pulse, 136 beats/min; and temperature, 39.2°C. Thirty minutes later his temperature spiked to 41.2°C and his systolic blood pressure was 76 mm Hg with a pulse of 180 beats/min. His oxygen saturation decreased to 58%. The patient went into ventricular tachycardia, followed by ventricular fibrillation and cardiopulmonary arrest. Cardiopulmonary resuscitation was initiated and the patient died 35 hours post-ingestion. Laboratory studies drawn during cardiopulmonary resuscitation showed potassium of 6.1 mEq/L, white blood cell count of 8,200/mm<sup>3</sup>, and ABGs of pH, 7.38; Pco<sub>2</sub>, 36 mm Hg; and Po<sub>2</sub>, 59 mm Hg. Postmortem examination confirmed tranylcypromine ingestion as the cause of death.

**Case 523.** A 19-year-old woman was found convulsing. In the ED, her blood pressure was 160/90 mm Hg, her pulse was 160 beats/min, and her pupils were dilated. She was intubated and intravenous diazepam, lorazepam, and phenytoin were administered to control persistent grand mal seizures. The patient then developed a ventricular arrhythmia and had a cardiopulmonary arrest. In addition to the standard resuscitative cardiac drugs, physostigmine was also administered. After the resuscitation, her pulse was 110 beats/min and her blood pressure was being maintained with a dopamine infusion. Gastric lavage was performed and then activated charcoal and sorbitol were administered. Seizures recurred and lasted for an unspecified length of time. On the second hospital day, she was comatose with a systolic blood pressure of 110 mm Hg and a temperature of 40.5°C. Laboratory studies included blood urea nitrogen, 9 mg/dL; creatinine, 1.5 mg/dL; serum aminotransferases, greater than 900 IU/L; and creatine phosphokinase, 14,000 IU/L. The ABGs were pH, 7.38; Pco<sub>2</sub>, 31 mm Hg; and Po<sub>2</sub>, 110 mm Hg. Toxicologic analysis showed a **diphenhydramine** level of 10.8 µg/mL. The patient developed seizures again, which were not controlled by physostigmine, but did respond to phenobarbital and phenytoin. Because of rhabdomyolysis, the urine pH was maintained at 7.5. On the third hospital day, the patient had no bowel sounds and a nasogastric tube was inserted. Abdominal roentgenogram showed an ileus. On the fourth hospital day, abdominal roentgenogram showed air in the abdomen. In addition, a liver scan showed air in the portal system and necrosis of the intestines. She also had an aspiration pneumonia. On the fifth hospital day, infarcted bowel was found during surgery. A colostomy was performed and a j-tube was placed. On the seventh hospital day, desmopressin acetate was administered to control her urine output. On the eighth hospital day, an EEG showed minimal brain activity and she died. Postmortem examination revealed cerebral edema and congestion.

**Case 524.** A 16-year-old girl who had been convulsing for more than 30 minutes was transported by ambulance to the hospital. In the ED, she was apneic with blood pressure, 68/30 mm Hg; pulse, 100 beats/min; and rectal temperature, 41.7°C. She was intubated, packed in ice, and given diazepam and sodium bicarbonate. A norepinephrine infusion was needed to maintain her blood pressure. Despite the administration of 30 mg of diazepam, the patient continued to convulse. General anesthesia and neuromuscular blockade were used to abort the convulsions. It was learned later that the patient was pregnant and had a positive reaction to the purified protein derivative skin test. Pyridoxine, 5 g, was then administered. Despite fluids and vasopressors, the patient's blood pressure could not be maintained. She died on the second hospital day. Postmortem examination revealed coagulative changes of the brain consistent with extreme hyperthermia. It was confirmed later that the patient had ingested approximately 90 tablets of **isoniazid**, 300 mg, in a suicide attempt.

**Case 525.** A 21-year-old woman ingested as much as 30 g of **isoniazid** at an unknown time. In the ED, she was comatose, hyperthermic, and in status epilepticus. After the administration of 2.5 g of pyridoxine, the seizures were controlled. However, an additional 15 g of pyridoxine was administered because of intermittent seizures. Her **isoniazid** level was 52 µg/mL. Her hospital course was

complicated with the development of severe anoxic brain damage, rhabdomyolysis, renal failure, adult respiratory distress syndrome, and disseminated intravascular coagulopathy. On the 27th hospital day, the patient became hypotensive and dopamine was infused. On the 29th hospital day, she had a cardiopulmonary arrest and could not be resuscitated.

**Case 526.** A 33-year-old man ingested an unknown number of **isoniazid** tablets. In the ED 9.5 hours postingestion, he was convulsing. The patient had been evaluated in the same ED the day before and **isoniazid** had been prescribed for tuberculosis. Laboratory studies revealed an arterial pH of 6.96, hyperkalemia, myoglobinuria, and hematuria. Treatment included the administration of pyridoxine (3 g), sodium bicarbonate, diazepam, phenytoin, phenobarbital, and pentobarbital. Although the patient received an additional 5 g of pyridoxine, he continued to deteriorate. He had two episodes of asystole and was resuscitated. The patient developed severe anoxic encephalopathy, rhabdomyolysis, and liver failure. He had minimal urine output and was hemodialyzed. Approximately 24 hours post-ingestion, he had another cardiopulmonary arrest and could not be resuscitated.

**Case 529.** A 12-month-old, 4.6-kg boy who had been delivered prematurely was taking **theophylline** daily for bronchopulmonary dysplasia. In the ED, his laboratory studies revealed a glucose of 600 mg/dL and a potassium of 3.6 mEq/L. After regular insulin was administered, he started to convulse. Toxicologic analysis showed a **theophylline** level of 68 µg/mL. His stool was guaiac positive. The patient was transferred to a tertiary care facility where he received multiple doses of activated charcoal. Repeat **theophylline** level was 44 µg/mL. By 36 hours after admission, a neurologic examination showed no brain function. He died on the sixth hospital day.

**Case 558.** A 59-year-old woman with severe chronic obstructive pulmonary disease admitted to family members that she had ingested 128 tablets of **sustained-release theophylline** (300 mg), an unknown number of **bupropion** tablets, 20 tablets of **prednisone** (20 mg), and 10 tablets of **cefuroxime** (250 mg). She had pneumonia and was currently being treated with **theophylline** and **prednisone**. When paramedics arrived 2 hours after the ingestion, she was alert and vomiting with a blood pressure of 200/108 mm Hg. Cardiac monitor showed sinus tachycardia at a rate of 150 beats/min. In the ED, the patient continued to vomit and was hyperreflexic. While receiving 100% oxygen, she had an arterial Po<sub>2</sub> of 90 mm Hg. Treatment in the ED included the administration of activated charcoal with a cathartic, verapamil, and midazolam. Approximately 3.5 hours after the ingestion, her blood pressure was 115/70 mm Hg and her heart rate was 90 beats/min. The initial **theophylline** level was 93 µg/mL. In the ICU the patient's mental status fluctuated from being alert to lethargic. Her blood pressure was 100/50 mm Hg and her pulse was 90 beats/min while receiving a continuous infusion of lidocaine. Potassium level was 3.4 mEq/L. A second dose of activated charcoal was given. At 12.5 hours postingestion, the patient had a seizure that responded to diazepam. Repeat **theophylline** level was 229 µg/mL. After her systolic blood pressure dropped to 90 mm Hg with a sinus tachycardia of 150 beats/min, charcoal hemoperfusion was initiated. The patient had a cardiopulmonary arrest and died 14 hours post-ingestion. Postmortem examination confirmed **theophylline** toxicity complicated by severe obstructive pulmonary disease.

**Case 562.** A 65-year-old man presented to the ED with a 3-day history of weakness, diarrhea, vomiting, and no urine output. Past medical history was significant for hypertension and prior coronary artery bypass graft surgery. Medications included **atenolol** (50 mg/d), **lisinopril** (10 mg/d), **salsalate** (750 mg three times daily), **colchicine** (0.6 mg twice daily), and **sulfapyrazone** (100 mg/d). Because of vomiting, his last **atenolol** dose had been more than 24 hours before. On physical examination, he was alert with a systolic blood pressure of 78 mm Hg and pulse of 44 beats/min. Laboratory studies included potassium, 6.1 mEq/L; carbon dioxide, 14 mEq/L; blood urea nitrogen, 94 mg/dL; creatinine, 15 mg/dL; glucose, 115 mg/dL; anion gap,

33 mEq/L; hemoglobin, 18.1 g/dL; and white blood cell count, 10,400/mm<sup>3</sup>. Toxicologic analysis showed a salicylate level of 31.5 mg/dL and an atenolol level of 802 ng/mL. His hypotension was refractory to fluid resuscitation. After glucagon was administered, both his blood pressure and pulse increased. Dopamine was also infused to maintain his blood pressure. In the ICU, he underwent hemodialysis and charcoal hemoperfusion in series in an attempt to extract the atenolol in the setting of acute renal failure. His predialysis blood pressure was 95/64 mm Hg with a pulse of 91 beats/min, during his glucagon infusion. His postdialysis blood pressure was 92/42 mm Hg with a pulse of 58 beats/min, without a glucagon infusion because the hospital's glucagon supply had been exhausted. His postdialysis and posthemoperfusion atenolol level was 557 ng/mL. The patient became hypotensive with a pulse of 120 beats/min. On the second hospital day, his ECG was consistent with a posterior-inferior myocardial infarction. The patient developed ventricular fibrillation and cardiopulmonary resuscitation was initiated. His potassium level was 4.2 mEq/L. Postmortem examination revealed pulmonary edema and arteriolonephrosclerosis. His atenolol toxicity was due to decreased renal elimination from acute renal failure.

**Case 568.** A 66-year-old blind diabetic man presented to the ED with a chief complaint of "feeling that he was about to die." He had also been vomiting and fainted when he stood up. Over the preceding 3 weeks, he had been bedridden and had eaten only when food was brought to him. He was currently taking two medications, but did not know what they were. In the ED his vital signs were blood pressure, 97/44 mm Hg; pulse, 48 beats/min; and temperature, 35.1°C. Laboratory studies showed a potassium level of 6.3 mEq/L and a digoxin level of 19.4 ng/mL. Digoxin-specific Fab fragments were not readily available. After atropine was administered, his junctional rhythm increased from 48 beats/min to 85 beats/min. His systolic blood pressure increased to 120 mm Hg after the administration of fluids and atropine. The patient developed ventricular fibrillation and could not be resuscitated.

**Case 570.** A 68-year-old woman ingested an unknown amount of digoxin, 0.125 mg, mistaking it for her pain medication. The patient was not taking digoxin chronically. In the ED 3 hours postingestion, her chief complaint was vomiting. On physical examination, she was alert, oriented, and afebrile, with a blood pressure of 200/100 mm Hg, pulse of 116 beats/min, and respiration of 24 breaths/min. Laboratory studies included a potassium level of 5.7 mEq/L and a digoxin level of 34 ng/mL. Gastric decontamination consisted of gastric lavage and the administration of activated charcoal. One hour after her arrival, the patient developed a junctional rhythm that quickly deteriorated into ventricular tachycardia. After three vials (120 mg) of digoxin-specific Fab fragments were administered, the patient remained in ventricular tachycardia. The hospital did not have additional supplies of digoxin-specific Fab fragments and the patient died 75 minutes after her arrival.

**Case 586.** A 31-year-old man ingested 20 sustained-release tablets of diltiazem. In the ED 10 hours after the ingestion, he was lethargic, with blood pressure, 63/42 mm Hg; heart rate, 54 beats/min; and respiration, 20 breaths/min. Laboratory studies included sodium, 140 mEq/L; potassium, 4.7 mEq/L; chloride, 105 mEq/L; carbon dioxide, 16 mEq/L; blood urea nitrogen, 11 mg/dL; creatinine, 2.2 mg/dL; glucose, 200 mg/dL; and calcium, 8.6 mg/dL. The ECG showed a QRS duration of 0.08 seconds. After intravenous fluids were administered, the patient's blood pressure increased to 100/50 mm Hg with a heart rate of 63 beats/min. The patient was lavaged and activated charcoal was administered. Thirteen hours postingestion, the patient developed an atrioventricular block that initially responded to calcium chloride, but then deteriorated into asystole. Cardiopulmonary resuscitation was initiated and the patient's rhythms included asystole, ventricular tachycardia, and ventricular fibrillation. After resuscitation, dopamine, glucagon, and calcium chloride (4 mg/min) were infused. During his hospitalization, he had numerous episodes of bradycardia deteriorating to ventricular fibril-

lation that were unresponsive to atropine, isoproterenol, and internal pacing. However, after the administration of calcium chloride boluses, the patient's blood pressure would increase and his rhythm was sinus at a rate of 50 to 70 beats/min. Twenty-two hours post-ingestion, the patient developed ventricular fibrillation and could not be resuscitated. A calcium level obtained at that time was 15 mg/dL.

**Case 591.** A 41-year-old woman ingested 90 tablets of mexiletine, 200 mg. According to the emergency medical service, the patient had been in cardiopulmonary arrest during the entire 45-minute transport to the hospital. After atropine, isoproterenol, sodium bicarbonate, and dopamine were administered in the ED, the patient had a blood pressure of 80/52 mm Hg. Treatment also included alkalinization of the serum and the administration of activated charcoal. The patient was then transferred to a tertiary care facility for the insertion of a balloon pump. On the third hospital day, the patient was described as having no neurologic activity. She died on the fourth hospital day. Postmortem examination confirmed cardiopulmonary arrest and hypoxic brain injury secondary to an overdose of mexiletine as the cause of death. Her postmortem mexiletine level was 22.2 µg/mL.

**Case 595.** An 18-month-old girl was brought to the ED after ingesting an unknown amount of nifedipine. In the ED, she was hypotensive with no cardiac arrhythmias. Treatment included the administration of fluids, calcium gluconate, glucagon, gastric lavage, activated charcoal, and sorbitol. She remained hypotensive and then became pulseless. The ECG showed disorganized ventricular complexes. Cardiopulmonary resuscitation was initiated. Approximately 3.5 hours after presentation to the ED, the echocardiogram showed no ventricular activity, and resuscitative efforts were terminated. Postmortem examination showed cerebral edema and congestion of the lungs, liver, and spleen. Nifedipine blood level on presentation was 590 ng/mL; the postmortem level was 270 ng/mL.

**Case 628.** A 9-month-old girl was brought to the ED with a history of possibly ingesting two tablets of ferrous sulfate, 325 mg. The family later admitted to having found about 20 partially eaten tablets. In the ED, the patient was lethargic with stable vital signs. Physical examination revealed thrush and a diaper rash. Laboratory studies obtained after the administration of 50% dextrose were hematocrit, 41.3%; white blood cell count, 32,800/mm<sup>3</sup>; glucose, 531 mg/dL; blood urea nitrogen, 15 mg/dL; creatinine, 0.6 mg/dL; AST, 77 IU/L; and amylase, 60 IU/L. Urinalysis showed 8 to 10 red blood cells per high power field. Approximately 2 hours after admission, the patient had a bloody stool and deferoxamine was administered. Serum iron level obtained 5 hours after presentation was 3,730 µg/dL. The patient was then transferred to a facility with a pediatric ICU. The patient was having pink diarrhea and her glucose was 600 mg/dL. A second iron level obtained 11 hours after admission was 1,042 µg/dL. Abdominal roentgenogram was negative for iron. The third iron level obtained approximately 18 hours after admission was 300 µg/dL. The hematocrit had fallen to 30%. Thirty-six hours after admission, the deferoxamine infusion continued and the patient had vin rose urine. Forty-eight hours after admission, the serum iron level was 62 µg/dL. The deferoxamine infusion continued and the urine color was orange to slightly pink. Five days after admission, the patient developed a small bowel obstruction and necrotic bowel was resected. Postoperatively, the patient developed respiratory distress syndrome and a chest roentgenogram showed a pneumomediastinum. Eight days after admission, she developed a left-sided pneumothorax and a chest tube was inserted. A CT scan of her head was unremarkable and an EEG was nondiagnostic. The patient's respiratory status continued to deteriorate, and she died on the 33rd hospital day.

**Case 629.** A 12-month-old boy ingested 35 to 40 tablets of ferrous sulfate, 325 mg. Three hours later in the ED, the patient was vomiting and had diarrhea. On physical examination, he was lethargic with normal vital signs. Laboratory studies included hemoglobin,

15.0 g/dL; hematocrit, 48%; white blood cell count, 29,600/mm<sup>3</sup>; glucose, 351 mg/dL; creatinine, 0.5 mg/dL; AST, 43 IU/L; and ALT, 31 IU/L. Serum iron level was 4,023 µg/dL. Abdominal roentgenogram revealed multiple radiopaque tablets in the stomach and duodenum. Treatment included gastric lavage, whole bowel irrigation with polyethylene glycol solution, and administration of a deferoxamine infusion. Within 90 minutes of his arrival to the ED, the patient's neurologic and cardiovascular status deteriorated. He was intubated and fluids, dopamine, and dobutamine were administered. He also became anuric and hemodialysis was attempted. He remained hypotensive and died approximately 18 hours postingestion.

**Case 630.** A 14-month-old boy was found by his mother with 325-mg ferrous sulfate tablets and cigarettes. Ferrous sulfate tablets were retrieved from his mouth. One hour later in the ED, he was lethargic, pale, and vomiting. His vital signs were blood pressure, 82/50 mm Hg; pulse, 160 beats/min; respiration, 30 breaths/min; and tympanic temperature, 35.3°C. The patient was lavaged with a 36-French tube with return of some pill fragments. In addition, he vomited pill fragments around the lavage tube. Activated charcoal was administered. An abdominal roentgenogram showed approximately eight tablets distal to the pylorus. Whole bowel irrigation with polyethylene glycol solution at a rate of 30 mL/kg/hr was administered. Concurrently, deferoxamine was administered at a rate of 15 mg/kg/hr. The boy soon had vin rose urine. He was also intubated, and central and arterial lines were inserted. Laboratory studies included an arterial pH, 7.20; potassium, 3.2 mEq/L; carbon dioxide, 18 mEq/L; glucose, 250 mg/dL; and white blood cell count, 34,000/mm<sup>3</sup>. One or 2 hours after the ingestion, his serum iron level was 2,088 µg/dL. The deferoxamine was gradually titrated to 38 mg/kg/hr without complications. The nasogastric tube output was bloody. After the hemoglobin decreased to 8.1 gm/dL and the prothrombin time increased to 16.8 seconds, blood products and antibiotics were administered. Approximately 60 hours after the ingestion, the child developed a pneumothorax and pneumomediastinum requiring a chest tube. Hypotension developed that was unresponsive to albumin, dopamine, dobutamine, nitroprusside, epinephrine, and the cessation of deferoxamine. Postmortem examination showed a small amount of iron staining in one portion of the gastric mucosa.

**Case 631.** An 18-month-old girl ingested approximately 40 tablets of ferrous sulfate, 325 mg. Approximately 30 minutes later she vomited pill fragments. In the ED, she was unresponsive, hypotensive, and had hematemesis. Lavage returned numerous pill fragments. An abdominal roentgenogram obtained after the gastric lavage showed the presence of 32 tablets, most of which were in the small intestine. ABGs were pH of 7.28 and bicarbonate of 14 mEq/L. After the deferoxamine challenge produced vin rose urine, a deferoxamine infusion was administered. The child became more responsive and was transferred to a tertiary care facility. Nine hours postingestion, the child was intubated and in the pediatric ICU. Her serum iron level was 1,651 µg/dL. By this time, polyethylene glycol electrolyte solution, midazolam, sodium bicarbonate, and glucose had been administered. She was unresponsive and had poor perfusion, hematuria, and diarrhea. Her pH was 7.22. The deferoxamine infusion rate was then increased to 25 mg/kg/hr. Whole bowel irrigation was discontinued secondary to abdominal distention. Her hemoglobin was 8.5 g/dL and whole blood and fresh-frozen plasma were administered. After several boluses of sodium bicarbonate, her ABGs were pH, 7.34; Pco<sub>2</sub>, 32 mm Hg; Po<sub>2</sub>, 88.9; and bicarbonate, 17 mEq/L. Repeat serum iron level was 209 µg/dL. Two days postingestion, she had elevated hepatic enzymes (AST of 368 IU/L and ALT of 203 IU/L) and a prolonged prothrombin time of 16.2 seconds. In addition, she had an active gastrointestinal bleed and had developed renal failure. Deferoxamine, dopamine, and fresh-frozen plasma continued to be administered. She died on the second hospital day.

**Case 632.** A 2-year-old boy ingested 90 tablets of ferrous sulfate

and presented to the ED in shock with gastrointestinal bleeding and metabolic acidosis. Polyethylene glycol solution was instilled during gastric lavage. On gastroscopy the stomach appeared to be black and necrotic. Deferoxamine was administered first via the nasogastric tube and then as an intravenous infusion. The initial serum iron level was 14,000 µg/dL. A repeat serum iron level obtained 6 hours after the initiation of the deferoxamine infusion was 2,530 µg/dL. On the second hospital day, the child remained obtunded and had multiple episodes of gastric bleeding. The deferoxamine infusion continued and his serum iron level was 180 µg/dL. Despite aggressive therapy including deferoxamine, hemodialysis, and transfusions of whole blood and blood products, the patient died from multiple organ system failure on the sixth hospital day.

**Case 633.** A 2-year-old boy ingested approximately 35 ferrous sulfate tablets. About 4 hours later, the child was vomiting and was taken to a health care facility. In the ED, he was obtunded and in shock. His arterial pH was 7.03. Abdominal roentgenogram showed a bezoar. Gastric decontamination included gastric lavage and the administration of polyethylene glycol electrolyte solution. Repeat abdominal roentgenogram showed opacities and an endoscopy was scheduled for the following day. After the administration of intravenous fluids, sodium bicarbonate, and deferoxamine, the child became alert. However, he was paralyzed, intubated, and placed on mechanical ventilation. His serum iron level was 6,350 µg/dL. Twelve hours later in the ICU, a chest roentgenogram was consistent with aspiration pneumonia. The ABGs obtained on 100% oxygen were pH, 7.04; Pco<sub>2</sub>, 32 mm Hg; Po<sub>2</sub>, 132 mm Hg; and bicarbonate, 8 mEq/L. The child developed multisystem failure, had two cardiopulmonary arrests, and died.

**Case 634.** A 3-year-old boy ingested approximately 30 of his mother's prenatal ferrous sulfate tablets each containing 65 mg of elemental iron (136 mg/kg). He vomited and the emesis contained tablet fragments. In the ED, he was minimally responsive to deep pain and had agonal respiration. In addition, he had poor peripheral perfusion. He was intubated and oxygen was administered. Gastric lavage was performed with a return of a large amount of blood. Approximately 4 hours after the ingestion, his serum iron level was greater than 10,000 µg/dL and his total iron-binding capacity was 3,247 µg/dL. Deferoxamine was initially infused at a rate of 15 mg/kg/hr, but was subsequently increased to a rate of 45 mg/kg/hr after the 6-hour postingestion iron level returned at 20,763 µg/dL. An exchange transfusion was performed. Additional laboratory studies revealed hypokalemia, hypocalcemia, hypoglycemia, hyperphosphatemia, metabolic acidosis, and hepatic dysfunction with elevated transaminases and abnormal coagulation studies (prothrombin time of 35 seconds and a partial thromboplastin time of 168 seconds). He had a gastrointestinal bleed and abdominal distention. In addition, there was a possibility that he also had a retroperitoneal bleed. Progressive hypotension, disproportionate to the bleeding, developed and was refractory to the infusion of both dopamine and dobutamine. Approximately 25 hours after admission, the patient had a cardiac arrest. Despite the administration of fluids, atropine, epinephrine, bicarbonate, and calcium, a perfusing rhythm was obtained only briefly. Electromechanical dissociation developed and the patient died 29 hours after the ingestion. Postmortem examination revealed gastrointestinal hemorrhage, hemorrhagic pulmonary edema, and cerebral edema.

**Case 635.** A 3-year-old boy was found by his mother with two or three ferrous sulfate tablets in his mouth. An unknown number had been ingested. Approximately 1 to 2 hours later, he started to vomit and became lethargic. In the ED approximately 3 hours postingestion, he was awake and alert. Laboratory studies included hemoglobin, 11.6 g/dL; white blood cell count, 12,300/mm<sup>3</sup>; and glucose, 106 mg/dL. Electrolytes, liver enzymes, and coagulation studies were all within normal limits. Serum iron level was 377 µg/dL. Gastric lavage was performed, with return of pill fragments and reddish fluid. Activated charcoal was administered, but the patient vomited

the charcoal. An abdominal roentgenogram showed pill fragments in the small bowel. Approximately 30 minutes after his arrival, deferoxamine was administered (15 mg/kg/hr intravenously) and there was no change in his urine color. In the pediatric ICU, the patient remained awake and alert. Whole bowel irrigation with a polyethylene glycol solution was initiated, but discontinued 3 hours later because he vomited once. He had a watery black stool after the completion of the whole bowel irrigation. A repeat abdominal roentgenogram was not obtained. Serum iron level 5.5 hours postingestion was 201 µg/dL. The patient's urine was now dark orange with a slight vin rose tint. Approximately 6 hours postingestion, he was lethargic with stable vital signs. At approximately 10.5 hours postingestion, he remained lethargic with a blood pressure of 107/66 mm Hg and a pulse of 117 beats/min. Approximately 15.5 hours postingestion, he suddenly became hypotensive, then had a cardiac arrest. Cardiopulmonary resuscitation was initiated and he died approximately 16 hours postingestion.

**Case 636.** A 19-year-old woman ingested an unknown number of ferrous sulfate, diphenhydramine, and hydrocodone/acetaminophen tablets at an unknown time. She was found unresponsive and covered with dried vomitus. In the ED, she was drowsy and pale with a blood pressure of 90/50 mm Hg. Chest roentgenogram showed a lower lobe infiltrate and pulmonary edema. A nasogastric tube was inserted and there was bright red blood in the return. Abdominal roentgenogram was unremarkable. Toxicologic analysis showed a serum iron level of 4,289 µg/dL and an acetaminophen level of 43 µg/mL. Deferoxamine was administered within 2 hours of presentation to the ED. In the ICU, the patient was intubated and hemodialysis was performed. The deferoxamine infusion was increased to 25 mg/kg/hr. By this time the patient was bleeding from her mouth, rectum, and bladder. Laboratory studies included hemoglobin, 16 g/dL; hematocrit, 51%; white blood cell count, 28,000/mm<sup>3</sup>; glucose, greater than 500 mg/dL; prothrombin time, greater than 30 seconds; partial thromboplastin time, greater than 100 seconds; pH, 7.11; and bicarbonate, 14 mEq/mL. Blood, fresh-frozen plasma, cryoprecipitate, vitamin K, and sodium bicarbonate were administered. Twelve hours after presentation to the ED, the patient was transferred to a tertiary care facility. She was awake and agitated with a blood pressure of 114/71 mm Hg and a pulse of 110 beats/min. She had minimal urine output and the color was vin rose. The deferoxamine infusion was reduced to 15 mg/kg/hr. On the second hospital day, her respiratory status deteriorated and she was dialyzed again. Because of the loss of circulation to her right arm, she underwent exploratory surgery of her right brachial artery. However, a clot could not be found, and it was believed that vasospasm was responsible for the loss of circulation. By the third hospital day, she had developed hypotension, adult respiratory distress syndrome, renal failure, and cold and mottled extremities. The patient had multiple cardiopulmonary arrests. Postmortem examination revealed congested and poorly aerated lungs, hepatomegaly, and extensive hemorrhage of the stomach and upper duodenum.

**Case 637.** A 15-month-old girl was brought to the ED by her parents when she developed nausea, vomiting, and mental status changes. The mother stated that no ingestion had occurred. On physical examination the patient had tachycardia, Kussmaul breathing, and decreased tone. Rectal examination revealed guaiac-positive stool. Laboratory studies included hematocrit, 40%; white blood cell count, 43,900/mm<sup>3</sup> with 24% segmented neutrophils and 6% bands; and blood glucose, 440 to 600 mg/dL. The ABGs revealed pH, 7.18; Pco<sub>2</sub>, 25 mm Hg; and Po<sub>2</sub>, 218 mm Hg. Liver function studies were unremarkable. After the administration of intravenous fluids, the serum glucose was within normal limits, but the patient remained acidotic. The next morning the patient developed an upper gastrointestinal hemorrhage. The mother informed the physician that an older sibling had seen the patient ingest iron tablets on the day of admission. A serum iron drawn immediately was greater than 400 µg/dL. Deferoxamine and dobutamine were administered. Her

AST was 820 IU/L and ALT was 760 IU/L. By the third hospital day, she was comatose and had developed ascites and disseminated intravascular coagulation. Sonography revealed ascites, liver distention, and sluggish liver and renal blood flow. Her serum iron had decreased to 190 from 209 µg/dL. The patient was intubated and placed on mechanical ventilation. Her blood pressure was initially managed with nitroprusside and nitroglycerin, but later norepinephrine and epinephrine were required. Packed red blood cells, platelets, fresh-frozen plasma, cryoprecipitate, and vitamin K were administered. Repeat liver function studies showed AST, 1,976 IU/L; ALT, 1,617 IU/L; and total bilirubin, 6.7 mg/dL. The patient was placed on the liver transplant candidate list. Whenever an attempt was made to wean the patient from the ventilator, she became acidotic. On the eighth hospital day, dobutamine, dopamine, vancomycin, and ceftazidime were administered. The patient had a cardiopulmonary arrest and could not be resuscitated. Postmortem examination revealed 35 cm of bloody and necrotic distal small bowel. A few small areas of gastric mucosa were affected. The liver had multiple areas of centrilobular necrosis, and special stains revealed high hepatic iron concentrations. Respiratory distress syndrome and a superimposed pneumonia were evident on pulmonary examination.

**Case 638.** A 21-year-old woman ingested 62 iron tablets (65 mg elemental iron/tablet), less than 30 mL of iodine, and an unknown amount of ibuprofen and piperazine. In the ED 2.5 hours after the ingestion, she was asymptomatic. Gastric lavage was performed and activated charcoal and a cathartic were administered. Her initial serum iron level was 2,400 µg/dL. After abdominal roentgenograms showed that iron tablets were still present in the gastrointestinal tract, whole bowel irrigation was initiated. Deferoxamine and sodium bicarbonate were infused. Within 6 hours the patient developed gastrointestinal bleeding. Eighteen hours after the ingestion, her serum iron level was 700 µg/dL. Because of gastrointestinal bleeding and patient intolerance, whole bowel irrigation was discontinued. Thirty hours after the ingestion, her iron level had decreased to 59 µg/dL. She was awake and alert with vital signs that were within normal limits. However, she continued to have a gastrointestinal bleed and cimetidine was administered. Deferoxamine was infused over a 4-day period. On the fourth hospital day, she developed a temperature of 38.2°C. Antibiotics were then administered because of a possible infection at the site of an arterial line. On the sixth hospital day, she had inappropriate behavior. In addition, she had a possible seizure and was then unresponsive. She was intubated, paralyzed, and placed on mechanical ventilation. She developed a pneumothorax and a chest tube was inserted. Multiple antibiotics were administered for possible sepsis. Because of the possibility of a necrotic bowel, she underwent an exploratory laparotomy, which was negative. On the 13th hospital day, she was awake, alert, oriented, and continued to have a low-grade fever. She also developed another pneumothorax. Her condition deteriorated and on the 17th hospital day she had three chest tubes inserted. Despite the administration of antibiotics, she continued to be septic and died on the 24th hospital day. Postmortem examination confirmed the cause of death as adult respiratory distress syndrome and multisystem organ failure secondary to iron overdose.

**Case 639.** A 71-year-old hospitalized patient with ischemic heart disease, diabetes, and lung cancer was scheduled to receive an oral dose of magnesium. However, the magnesium was given intravenously. Immediately after receiving the intravenous magnesium, the patient went into ventricular fibrillation and was resuscitated. His magnesium level was 16.5 mg/dL. The patient died 6 hours later in the ICU.

**Case 641.** An 18-month-old girl ingested four or five tablets of trihexyphenidyl, 5 mg each. Approximately 7.5 hours after the ingestion, she was described as being alert, but had intermittent restlessness, shuffling gait, lip smacking, and mild hallucinations. In the ED, she was alert, oriented, and was running around the examining

room. Treatment in the ED consisted of the administration of one dose of activated charcoal. However, she vomited and then aspirated a large amount of the activated charcoal. Numerous attempts at intubation and a tracheostomy were unsuccessful. Ninety minutes after her presentation to the ED, she died secondary to respiratory arrest and hypoxemia from aspiration.

**Case 644.** A 2-year-old girl was apneic when brought to the ED. It was suspected that she might have ingested an over-the-counter cold preparation containing dextromethorphan. She was intubated and placed on a ventilator. In addition, she received naloxone with minimal response. She was unresponsive with frequent seizure activity treated with lorazepam. A CT scan of the head was normal. She became profoundly hypoglycemic and was treated with boluses of 25% dextrose and an infusion of 10% dextrose. Blood insulin level was 487  $\mu\text{U/mL}$  and C-peptide was 5.3 ng/mL. She died 24 hours after admission. Postmortem examination revealed an injection site and cerebral edema. Postmortem insulin levels were 27.7  $\mu\text{U/mL}$  (bile) and 7.0  $\mu\text{U/mL}$  (vitreous humor). Police investigation discovered that an older sibling had injected the 2-year-old with insulin.

**Case 647.** A 75-year-old man undergoing a cystoscopy developed a perforation and an unknown amount of glycine irrigation fluid spilled into his peritoneal cavity. Eighteen hours postexposure, he developed metabolic acidosis, adult respiratory distress syndrome, liver and renal failure, and died.

**Case 672.** A 42-year-old woman ingested an unknown number of meprobamate tablets of unknown strength in a suicide attempt. In the ED she was comatose, unresponsive to pain, and without spontaneous respiration. Her pupils were slightly dilated and reactive to light. There were no bowel sounds. Cardiac monitor showed normal sinus rhythm without ectopy. Systolic blood pressure was 100 mm Hg on a norepinephrine infusion. Urine output was minimal. Initial treatment consisted of naloxone, oxygen, and glucose. Gastric lavage returned bright red blood. Initial laboratory studies showed white blood cell count, 28,800/mm<sup>3</sup>; platelets, 108,000/mm<sup>3</sup>; AST, 3,000 IU/L; ALT, 1590 IU/L; gamma-glutamyltranspeptidase, 212 IU/L; prothrombin time, 42 seconds; partial thromboplastin time, 60 seconds; ammonia, 96 mg/dL; and lactate, 18.4 mEq/L. An initial toxicologic screen was negative, including salicylates, acetaminophen, and iron. A bowel infarction secondary to prolonged hypotension was suspected clinically. Ten hours after presentation to the ED, after receiving sodium bicarbonate, her arterial pH was 7.3. Seventeen hours after presentation, she remained ventilator dependent and was requiring positive end-expiratory pressure. Her temperature was 38.8°C. On the second hospital day, she extubated herself and could follow simple commands. Repeat laboratory studies showed creatinine, 4.1 mg/dL; AST, 8,240 IU/L; ALT, 2,589 IU/L; lactate dehydrogenase, 8,876 IU/L; creatine phosphokinase, 3,980 IU/L; ammonia, 109 mg/dL; prothrombin time, 26 seconds; and partial thromboplastin time, 33 seconds. Urine output was maintained with the administration of furosemide and metolazone. Whole blood and fresh-frozen plasma were transfused over a 2-day period to control her coagulopathy. On the eighth hospital day, a chest roentgenogram showed a left lower lobe infiltrate. In addition, she developed necrosis and blistering of all of her toes. Over the ensuing 48 hours, the necrosis and blistering extended to involve both feet. On the 11th hospital day, she died unexpectedly.

**Case 687.** A 13-year-old girl ingested an unknown amount of temazepam and went to bed. Approximately 12 to 18 hours after the ingestion, her parents could not arouse her. When paramedics arrived, she was in cardiopulmonary arrest and could not be resuscitated. Her postmortem temazepam level was 3.6  $\mu\text{g/mL}$  (therapeutic, 0.4 to 0.9  $\mu\text{g/mL}$ ). Toxicologic analysis was negative for all other substances. Postmortem examination confirmed acute temazepam poisoning as the cause of death.

**Case 691.** A 52-year-old man was bitten on his left thumb by an unidentified rattlesnake in a desert area of Central Oregon at high altitude. He applied a tourniquet to his thumb and arrived in the ED

20 minutes later. He was complaining of local pain, circumoral numbness, tingling, and generalized flushing. On physical examination, blood pressure was 140/94 mm Hg; pulse, 92 beats/min; and respiration, 16 breaths/min. On his left thumb between the metacarpophalangeal and the interphalangeal joints there were two entrance wounds and minimal swelling. There was no swelling in the arm. The physician decided to treat the patient with crotalid antivenin. However, skin testing was not performed. After receiving 6 mL of a solution of five vials of antivenin in 500 mL of 5% dextrose solution, the patient became diaphoretic and dyspneic with increased pulmonary secretions. In addition, the patient complained of "going out." The antivenin was discontinued and he was intubated. Epinephrine and steroids were administered. He became hypotensive and developed asystole within 15 minutes. Despite cardiopulmonary resuscitation, defibrillation, external cardiac pacing, and the administration of lidocaine and high-dose epinephrine, the patient died. An ABG drawn during the resuscitation showed pH, 6.91; Pco<sub>2</sub>, 8.2 mm Hg; and Po<sub>2</sub>, 579 mm Hg. Other laboratory studies included hemoglobin, 23.0 g/dL; hematocrit, 67.3%; white blood cell count, 4,800/mm<sup>3</sup>; platelets, 217,000/mm<sup>3</sup>; prothrombin time, 13.6 seconds (control, 11.4 seconds); and partial thromboplastin time, 49 seconds (control, 26 to 36 seconds). Postmortem examination showed extensive coronary artery disease.

**Case 753.** A 26-year-old man was found by the police climbing on cars. He was very combative and three police officers were needed to restrain him. After he admitted using methamphetamine, he was taken to jail. At an unknown time, he became pale and had decreased respiration with no pulse. Cardiopulmonary resuscitation was initiated. When paramedics arrived his rhythm was described as junctional or complete heart block. Cardiopulmonary resuscitation continued and naloxone was administered without response. In the ED, he was comatose with a blood pressure of 98/46 mm Hg, heart rate of 146 beats/min, and no spontaneous respiration. His pupils were fixed and dilated. He was intubated and activated charcoal and sorbitol were administered. Toxicologic analysis was positive for methamphetamine and possibly positive for amphetamines. Treatment in the ED also included the administration of diazepam, phenytoin, and sodium bicarbonate. In the ICU, dopamine was infused to maintain his blood pressure at 100/70 mm Hg. Because of rhabdomyolysis (creatinine phosphokinase of 64,020 IU/L), sodium bicarbonate was infused. His lactic acid level was 11.2 mEq/L. A CT scan of his head and lumbar puncture were unremarkable. The patient remained comatose and died on the third hospital day.

**Case 755.** A 27-year-old man injected an unknown quantity of methamphetamine. In the ED he was agitated, combative, tremulous, hallucinating, diaphoretic, and tachypneic. Systolic blood pressure was 110 mm Hg; pulse, 160 beats/min; and axillary temperature, 39.4°C. Diazepam and haloperidol were administered to control his agitation. He was placed on a cooling blanket and treated with mist and a fan. In the ICU, the patient developed recurrent seizures, supraventricular tachycardia, ventricular tachycardia, and third-degree heart block. The ABGs showed a pH of 7.28 and a Pco<sub>2</sub> of 30 mm Hg. Treatment included intubation, hyperventilation, diazepam, and lidocaine. He became increasingly hypotensive and developed disseminated intravascular coagulopathy. His rectal temperature peaked at 42.3°C. He had a cardiac arrest 2.5 days after admission and was not resuscitated. Postmortem examination showed cerebral edema and congestion of the lungs, liver, and spleen. Postmortem toxicologic analysis of the serum showed an amphetamine level of 80 ng/mL and methamphetamine level of 2,440 ng/mL. Toxicologic analysis of the urine was also positive for cocaine and benzoylecgonine.

**Case 756.** A 21-year-old woman was brought to the ED in status epilepticus. An empty bottle of phendimetrazine, 35 mg capsules, had been found near the patient. She had last been seen healthy 7 hours earlier. In the ED, she was convulsing with a blood pressure of 160/110 mm Hg, heart rate of 158 beats/min, and respiration of 20

breaths/min. Her initial glucose was 20 mg/dL. She was intubated and dextrose, naloxone, lorazepam, and phenytoin were administered. Gastric lavage was performed and activated charcoal was administered. Toxicologic analysis revealed sympathomimetics, benzodiazepines, and caffeine. She remained comatose with fixed and dilated pupils. A CT scan of her head revealed diffuse cerebral edema. Additional history was obtained from the patient's sister that both of them had been under a physician's care for weight control. The weight control regimen included amphetamines for appetite suppression and injections every other day. The patient's glucose slowly increased and by the fifth hospital day was 90 to 120 mg/dL. The patient remained in a coma with fixed and dilated pupils. On the sixth hospital day, the patient became hypotensive and norepinephrine was administered. An EEG revealed anoxic encephalopathy. The patient continued to deteriorate and died on the 11th hospital day.

**Case 758.** A 2-year-old girl ingested approximately 15 mL of oil of wintergreen. Because of vomiting, she was brought to the ED. In the ED approximately 4.5 hours postingestion, activated charcoal and magnesium citrate were administered. The ABGs showed pH, 7.36;  $P_{CO_2}$ , 31 mm Hg; and  $P_{O_2}$ , 115 mm Hg. Her salicylate level was 79.7 mg/dL. Approximately 7.5 hours postingestion, she had a seizure. She had a pulse of 204 beats/min, respiration of 50 breaths/min, and potassium of 3.8 mEq/L. One hour later the patient developed ventricular tachycardia, which resolved spontaneously. She subsequently had a seizure, then a cardiopulmonary arrest. Cardiopulmonary resuscitation was initiated and she died 9 hours postingestion.

**Case 760.** A 17-month-old boy ingested an entire bottle of prenatal vitamins with iron. In the ED, the child had no blood pressure and no urine output. His serum iron level was 18,150  $\mu$ g/dL. Treatment included deferoxamine and an exchange transfusion. An abdominal roentgenogram revealed a 10-cm bezoar of iron, which was subsequently removed endoscopically. In the ICU, the patient developed shock, renal failure, hepatic failure, and a coagulopathy. Twenty-four hours after admission, his systolic blood pressure increased to 80 mm Hg and he was oliguric. Laboratory studies included serum iron level, 96  $\mu$ g/dL; ALT, 2,570 IU/L; and total bilirubin, 4 mg/dL. On the second hospital day, vasopressors, vitamin K, and fresh-frozen plasma were administered. Laboratory studies included AST, 4,377 IU/L; ALT, 7,682 IU/L; lactate dehydrogenase, 22,640 IU/L; bilirubin, 5.1 mg/dL; prothrombin time, greater than 42 seconds; and partial thromboplastin time, greater than 100 seconds. By the fifth hospital day, the patient developed respiratory distress syndrome and was placed on a jet ventilator. By the sixth hospital day, the patient developed fulminant hepatic failure. By the 35th hospital day, he was weaned off the ventilator and began to awaken. By the

44th hospital day, the patient was transferred to a regional children's hospital for a possible liver transplant. On the 69th hospital day, the patient died from complications of liver failure secondary to the iron ingestion.

**Case 761.** An 18-month-old girl was found holding a bottle of prenatal vitamins (65 mg elemental iron/tablet). Her father removed several tablets from her mouth and estimated that his daughter had ingested four or five tablets. Approximately 3.5 hours after the ingestion, the child started to vomit and had black diarrhea. Laboratory evaluation of blood drawn approximately 4.5 hours after the ingestion revealed white blood cell count, 27,900/mm<sup>3</sup>; glucose, 324 mg/dL; AST, 45 IU/L; lactate dehydrogenase, 1,272 IU/L; iron level, greater than 1,000  $\mu$ g/dL; and total iron-binding capacity, 905  $\mu$ g/dL. Abdominal roentgenogram showed one radiopaque tablet in the duodenum. Within 4 hours the patient was transferred to the pediatric ICU of a tertiary care facility. At that time, she was lethargic with stable vital signs. Her emesis was brown and a cathartic had not been administered. Deferoxamine was being administered. Four hours later, the patient had amber-colored urine. Her vital signs were blood pressure, 109/88 mm Hg; pulse, 146 beats/min; respiration, 48 breaths/min; and temperature, 38.3°C. The ABGs were pH, 7.28;  $P_{CO_2}$ , 35 mm Hg;  $P_{O_2}$ , 50 mm Hg; bicarbonate, 16 mEq/L; and oxygen saturation, 80%. Hemoglobin was 15.5 g/dL. In the ICU, the patient had only a small amount of emesis, which was guaiac positive. Sodium bicarbonate was added to her intravenous fluids and repeat ABGs 12 hours after admission were pH, 7.41;  $P_{CO_2}$ , 27 mm Hg;  $P_{O_2}$ , 99 mm Hg; and bicarbonate, 17 mEq/L. Serum iron was 227  $\mu$ g/dL. On the fourth hospital day, her mental status improved and she was more active. Deferoxamine was continued. However, she had developed ascites and a gram stain of the ascitic fluid showed white blood cells only. Intravenous antibiotics were then administered. Liver enzymes were slightly elevated, and prothrombin time and partial thromboplastin time were prolonged. On the fifth hospital day, re-examination of the ascitic fluid showed gram-negative rods. The child developed respiratory distress syndrome and died later that day.

**Case 762.** A 37-year-old man who had ingested 10 bottles (unknown size) of vitamin A over a 2-week period presented to the ED complaining of shortness of breath, cracked skin, and jaundice. Because of hepatic dysfunction and a coagulopathy, he was admitted to the ICU. Eight hours after admission, he was alert, icteric, and in acute respiratory distress. The only available laboratory studies are hemoglobin, 5.7 g/dL, and lactate dehydrogenase, greater than 11,000 IU/L. Approximately 9 hours after admission, the patient had a cardiopulmonary arrest and could not be resuscitated.