



1989 Annual Report of the American Association of Poison Control Centers National Data Collection System

TOBY L. LITOVITZ, MD, BARBARA F. SCHMITZ, RN, CSPI,
KATHLEEN M. BAILEY, MD

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).¹⁻⁶ This report includes 1,587,540 human exposure cases reported by 70 participating poison centers during 1989, an increase of 15.5% over 1988 poisoning reports.

The cumulative AAPCC database now contains 7.1 million human poisoning cases.

CHARACTERIZATION OF PARTICIPATING CENTERS

Of the 70 reporting centers, 68 submitted data for the entire year. Thirty-four of the 70 centers were certified as regional poison centers by the AAPCC. Annual center call volumes (human exposure cases only) ranged from 202 to

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 Poison Control Center, Birmingham, AL; Alabama Poison Control Center, Tuscaloosa, AL; Arizona Poison Control System, Tucson, AZ; Samaritan Regional Poison Center, Phoenix, AZ; Fresno Regional Poison Control Center, Fresno, CA; Los Angeles County Medical Association Regional Poison Center, Los Angeles, CA; University of California Irvine Regional Poison Center, Orange, CA; University of California Davis Regional Poison Center, Sacramento, CA; San Diego Regional Poison Center, San Diego, CA; San Francisco Bay Area Regional Poison Center, San Francisco, CA; Santa Clara Valley Medical Center, San Jose, CA; Rocky Mountain Poison Center, Denver, CO; National Capital Poison Center, Washington, DC; Florida Poison Center, Tampa, FL; Georgia Regional Poison Control 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 Center, Kansas City, KS; Kentucky Regional Poison Center of Kosair Children's Hospital, Louisville, KY; Maryland Poison Center, Baltimore, MD; Children's Hospital of Michigan Poison Control Center, Detroit, MI; Blodgett Regional Poison Center, Grand Rapids, MI; Saginaw Region Poison Center, Saginaw, MI; Hennepin Poison Center, Minneapolis, MN; Minnesota Poison Control System, St. Paul, MN; Cardinal Glennon Children's Hospital Regional Poison Center, St. Louis, MO; Mid-Plains Poison Control 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; Western New York Poison Control Center at Children's Hospital of Buffalo, Buffalo, NY; Nassau County Medical Center's Long Island Regional Poison Control

Center, East Meadow, NY; New York City Poison Center, New York, NY; Hudson Valley Poison Center, Nyack, NY; Finger Lakes Regional Poison Control Center at Lifeline, Rochester, NY; Triad Poison Center, Greensboro, NC; North Dakota Poison Center, Fargo, ND; Akron Regional Poison Center, Akron, OH; Stark County Poison Control Center, Canton, OH; Cincinnati Drug and Poison Information Center, Cincinnati, OH; Greater Cleveland Poison Control Center, Cleveland, OH; Central Ohio Poison Control Center, Columbus, OH; Western Ohio Poison and Drug Information Center, Dayton, OH; Mahoning Valley Poison Center, Youngstown, OH; Oregon Poison Center, Portland, OR; LeHigh Valley Poison Center, Allentown, PA; Keystone Region Poison Center, Altoona, PA; Hamot Poison Center, Erie, PA; Northwest Poison Center, Erie, PA; Capital Area Poison Center, Hershey, PA; Delaware Valley Regional Poison Center, Philadelphia, PA; Pittsburgh Poison Center, Pittsburgh, PA; Rhode Island Poison Center, Providence, RI; St. Luke's-Midland Poison Control Center, Aberdeen, SD; McKennan Poison Center, Sioux Falls, SD; Southern Poison Center, Inc., Memphis, TN; Middle Tennessee Regional Poison Center, Nashville, TN; North Texas Poison Center, Dallas, TX; Intermountain Regional Poison Control Center, Salt Lake City, UT; Blue Ridge Poison Center, Charlottesville, VA; Tidewater Poison Center, Norfolk, VA; Central Virginia Poison Center, Richmond, VA; Seattle Poison Center, Seattle, WA; Spokane Poison Center, Spokane, WA; Central Washington Poison Center, Yakima, WA; West Virginia Poison Center, Charleston, WV; Green Bay Poison Center, Green Bay, WI; University of Wisconsin Hospital Regional Poison Control Center, Madison, WI; Milwaukee Children's Hospital Poison Center, Milwaukee, WI.

© 1985, 1986, 1987, 1988, 1989, 1990 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 American Association of Poison Control Centers, 3800 Reservoir Road, NW, Washington, DC 20007.

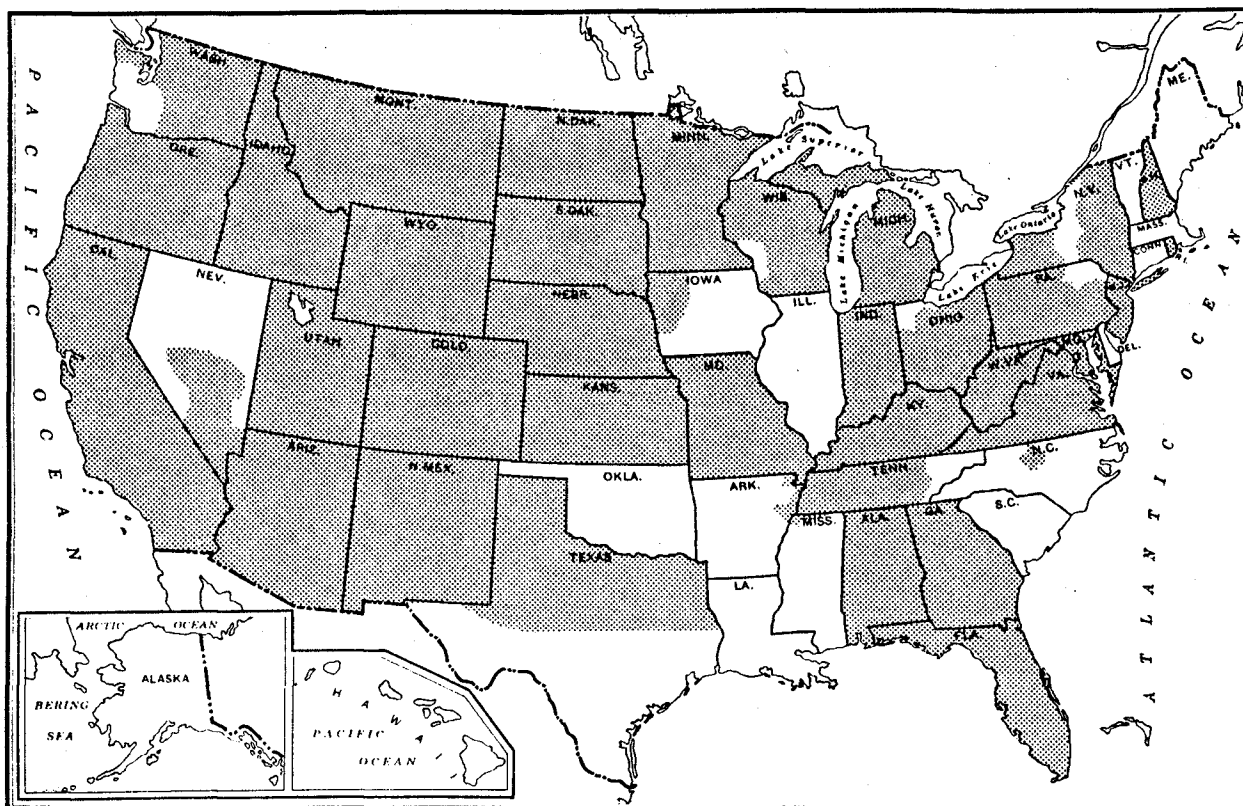


FIGURE 1. Seventy poison centers participated in the Data Collection System in 1989. The shaded areas denote regions served by reporting centers. (Map adapted from Hammond's Outline Map of the United States.)

66,417 (mean 22,593). Center penetrance ranged from 3.6 to 18.7/1,000 with a mean of 8.7 reported exposures per thousand population. Mean penetrance for all regional centers exceeded that for nonregional poison centers (9.0 v 7.9, respectively). A year-to-year trend of increasing penetrance is observed in Table 1. 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 182.4 million was served by the participating centers including portions of 42 states and the District of Columbia (Fig 1). Noting the 248.2 million estimated United States population, the data presented represent an estimated 73% of the human poison exposures that precipitated poison center contacts in the US during 1989. Extrapolating from the 1,581,540 human poison exposures reported in this database, more than 2.1 million human poison exposures are estimated to have been reported to all US poison centers in 1989. However, extrapolations from the number of reported poisonings to the number of actual poisonings occurring annually in the US cannot be made from these data alone, as considerable variations in poison center penetrance were noted. Indeed, assuming all centers reached the penetrance level of 18.7 poisonings/1,000 population reported for one state, then 4.6 million poisonings would have been reported to poison control centers in 1989. Because of the growth and development of this relatively new data collection project, with increasing center participation from year to year, the data do not directly identify a trend in the overall incidence of poisonings in the US. However, an analysis of data from 57 centers that participated for the entirety of 1988

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
Total			7,097,871	

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

	Site of Caller (%)	Site of Exposure (%)
Residence	81.3	91.9
Workplace	1.5	2.6
Health Care Facility	14.8	0.6
School	0.7	0.9
Other	1.2	2.1
Unknown	0.4	1.9

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	65,928	4.2	60,950	3.9	1,838	0.1	128,716	8.1	128,716	8.1
1	155,188	9.8	136,952	8.7	2,278	0.1	294,418	18.6	423,134	26.8
2	164,375	10.4	141,523	8.9	2,453	0.2	308,351	19.5	731,485	46.3
3	77,415	4.9	64,693	4.1	1,230	0.1	143,338	9.1	874,823	55.3
4	33,645	2.1	26,462	1.7	560	0.0	60,667	3.8	935,490	59.2
5	17,436	1.1	13,387	0.8	339	0.0	31,162	2.0	966,652	61.1
6-12	48,009	3.0	36,487	2.3	723	0.0	85,219	5.4	1,051,871	66.5
13-19	37,929	2.4	54,460	3.4	494	0.0	92,883	5.9	1,144,754	72.4
20-29	47,560	3.0	55,086	3.5	389	0.0	103,035	6.5	1,247,789	78.9
30-39	35,744	2.3	45,882	2.9	265	0.0	81,891	5.2	1,329,680	84.1
40-49	17,036	1.1	23,789	1.5	101	0.0	40,926	2.6	1,370,606	86.7
50-59	8,136	0.5	12,557	0.8	44	0.0	20,737	1.3	1,391,343	88.0
60-69	5,773	0.4	9,631	0.6	36	0.0	15,440	1.0	1,406,783	89.0
70-79	3,456	0.2	6,276	0.4	32	0.0	9,764	0.6	1,416,547	89.6
80-89	1,632	0.1	3,630	0.2	15	0.0	5,277	0.3	1,421,824	89.9
90-99	286	0.0	766	0.0	3	0.0	1,055	0.1	1,422,879	90.0
Unknown	64,579	4.1	85,381	5.4	8,701	0.6	158,661	10.0	1,581,540	100.0
Tota.	784,127	49.6	777,912	49.2	19,501	1.2	1,581,540	100.0	1,581,540	100.0

TABLE 4. Distribution of Age and Sex of 590 Fatalities

Age (yr)	Male	Female	Unknown	Total	%	Cumulative Total	Cumulative %
<1	5	1	0	6	1.0	6	1.0
1	6	4	0	10	1.7	16	2.7
2	1	1	0	2	0.3	18	3.1
3	1	1	1	3	0.5	21	3.6
4	1	1	0	2	0.3	23	3.9
5	0	1	0	1	0.2	24	4.1
6-12	5	2	0	7	1.2	31	5.3
13-19	35	27	0	62	10.5	93	15.8
20-29	63	39	0	102	17.3	195	33.1
30-39	64	58	1	123	20.9	318	53.9
40-49	37	42	0	79	13.4	397	67.3
50-59	37	26	0	63	10.7	460	78.0
60-69	24	28	0	52	8.8	512	86.8
70-79	14	24	0	38	6.4	550	93.2
80-89	13	9	0	22	3.7	572	97.0
90-99	2	1	0	3	0.5	575	97.5
Unknown adult	9	5	0	14	2.4	589	99.8
Unknown	0	0	1	1	0.2	590	100.0
Total	317	270	3	590	100.0	590	100.0

and 1989 indicates an 8.7% increase in reported poison exposures from 1988 to 1989 within the regions served by these 57 centers. This increase may actually reflect greater public awareness of poison center services rather than an increase in poisonings.

REVIEW OF THE DATA

Of the 1,581,540 human exposures reported in 1989, 91.9% occurred in the home (Table 2). Two unlikely sites of poisonings, health care facilities and schools, accounted for 8,721 (0.6%) and 14,424 (0.9%) poison exposures, respectively. Poison center peak call volumes were noted from 5 to 9 pm, although call frequency remained consistently high between 9 am and 11 pm, with 89.3% of calls logged during this 14-hour period.

The age and sex distribution of human poison exposure

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

No. of Substances	No. of Cases	% of Cases
1	1,481,811	93.7
2	73,967	4.7
3	15,515	1.0
4	4,679	0.3
5	1,690	0.1
6	715	0.0
7	313	0.0
8	169	0.0
9	90	0.0
≥10	235	0.0
Unknown	2,356	0.1
Total	1,581,540	100.0

TABLE 6. Reason for Human Exposure Cases

	Reason	No.	%
<i>Accidental</i>	General	1,300,158	82.2
	Misuse*	53,469	3.4
	Occupational	30,748	1.9
	Environmental	10,218	0.6
	Unknown	1,933	0.1
	Total	1,396,526	88.3
<i>Intentional</i>	Suicidal	103,606	6.6
	Misuse†	19,669	1.2
	Abuse‡	15,166	1.0
	Unknown	14,380	0.9
	Total	152,821	9.7
<i>Adverse Reaction</i>	Drug	13,743	0.9
	Food	7,561	0.5
	Other	2,401	0.2
	Total	23,705	1.5
<i>Unknown</i>		8,488	0.5
<i>Total</i>		1,581,540	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 where psychotropic effect was not sought, eg, intentional excessive dosing to obtain a more rapid or superior pharmacological effect for presumed "therapeutic" purposes.

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

victims is outlined in Table 3. Children younger than 3 years were involved in 46.3% of cases; and 61.1% occurred in children younger than 6 years. A male predominance is found among poison exposure victims younger than 13 years old, but the gender distribution is reversed in teenagers and adults. Table 4 gives the age and sex distribution for the 590 reported fatalities. Although responsible for the majority of poisoning reports, children younger than 6 years made up only 4% (24) of the fatalities. A slight male predominance is seen in both pediatric and adult fatalities, in contrast to the female preponderance observed in poisoning episodes in patients older than 13 years.

A single substance was implicated in 93.7% of reports, and only 1.5% of patients were exposed to more than two possibly poisonous drugs or products (Table 5). Most cases of human exposure were acute (97.8%), as were most poison-related fatalities (87.5%). (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 (88.3%) of poison exposures were accidental; suicidal intent was present in 6.6% of cases (Table 6). Nearly a quarter (23.0%) of cases with suicidal intent occurred in patients who were 13- through 17-years-old. Accidental poisonings outnumbered intentional poisonings in all age groups except 13- to 17-year-olds, where they were nearly equal (Table 7). In contrast, of the 590 human poisoning fatalities reported, 76% of adult deaths (older than 17 years) were intentional (Table 8).

Ingestions accounted for 77.3% of poison exposures (Table 9), followed in frequency by dermal, ophthalmic, inha-

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	959,408	60.7	79,594	5.0	33,290	2.1	180,949	11.4	19,174	1.2	124,111	7.8	1,396,526	88.3
Intentional	1,747	0.1	4,698	0.3	34,332	2.2	85,884	5.4	2,439	0.2	23,721	1.4	152,821	9.7
Adverse Reaction	2,701	0.2	1,513	0.1	988	0.1	10,847	0.7	1,046	0.1	6,610	0.4	23,705	1.5
Unknown	717	0.0	535	0.0	1,132	0.1	3,762	0.2	324	0.0	2,018	0.1	8,488	0.5
Total	964,573	61.0	86,340	5.5	69,742	4.4	281,442	17.8	22,983	1.5	156,460	9.9	1,581,540	100.0

TABLE 8. Distribution of Reason for Exposure and Age for 590 Fatalities

Reason	<6 Years	6-12 Years	13-17 Years	>17 Years	Unknown Age	Total
<i>Accidental</i>	General	10	2	1	6	19
	Environmental	3	2	1	10	16
	Misuse	2	0	0	24	27
	Occupational	0	0	0	23	23
	Unknown	0	0	0	6	6
	Total	15	4	2	69	91
<i>Intentional</i>	Suicide	0	0	23	300	323
	Misuse	6	0	1	25	32
	Abuse	0	0	16	48	64
	Unknown	0	1	0	20	21
Total	6	1	40	393	440	
<i>Adverse Reaction</i>	1	2	0	14	17	
<i>Unknown</i>	2	0	0	40	42	
<i>Total</i>	24	7	42	516	590	

TABLE 9. Distribution of Route of Exposure for Human Poison Exposure Cases and 590 Fatalities

Route	All Exposure Cases		Fatal Exposure Cases	
	No.	%	No.	%
Ingestion	1,280,751	77.3	468	73.8
Dermal	115,887	7.0	7	1.1
Ophthalmic	98,461	5.9	1	0.2
Inhalation	90,524	5.5	99	15.6
Bites and stings	55,492	3.4	4	0.6
Parenteral	4,421	0.3	31	4.9
Other	4,217	0.3	2	0.3
Unknown	6,212	0.4	22	3.5
Total	1,655,965	100.0	634	100.0

NOTE. Multiple routes of exposure were observed in many poison exposure victims. Percentage is based on the total number of exposure routes (1,655,965 for all patients, 634 for fatal cases) rather than the total number of human exposures (1,581,540) or fatalities (590).

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

Symptom Assessment	No.	%
Asymptomatic	1,017,041	64.3
Symptomatic, related to exposure	427,526	27.0
Symptomatic, unrelated to exposure	26,238	1.7
Symptomatic, unknown if related	76,951	4.9
Unknown	33,784	2.1
Total	1,581,540	100.0

TABLE 11. Management Site of Human Poison Exposure Cases

Site	No.	%
Non-Health-Care Facility	1,141,090	72.2
Health-Care Facility		
Already there when poison center called	199,747	12.6
Referred by poison center	200,122	12.7
Other/Unknown	40,581	2.6
Total	1,581,540	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	412,149	26.1	23,496	1.5	15,293	1.0	64,932	4.1	4,021	0.3	519,891	32.9
Minor effect	134,653	8.5	26,389	1.7	26,652	1.7	178,076	11.3	3,561	0.2	369,331	23.4
Moderate effect	5,707	0.4	1,455	0.1	3,748	0.2	26,355	1.7	420	0.0	37,685	2.4
Major effect	461	0.0	96	0.0	394	0.0	3,477	0.2	81	0.0	4,509	0.3
Death	24	0.0	7	0.0	42	0.0	516	0.0	1	0.0	590	0.0
Unknown nontoxic*	370,215	23.4	27,766	1.8	12,999	0.8	85,777	5.4	9,198	0.6	505,955	32.0
Unknown, potentially toxic†	26,285	1.7	4,480	0.3	8,934	0.6	60,558	3.8	3,404	0.2	103,661	6.6
Unrelated effect	14,033	0.9	2,552	0.2	1,576	0.1	19,409	1.2	323	0.0	37,893	2.4
Unknown	1,046	0.1	99	0.0	104	0.0	686	0.0	90	0.0	2,025	0.1
Total	964,573	61.0	86,340	5.5	69,742	4.4	439,786	27.8	21,099	1.3	1,581,540	100.0

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

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

lation, bites and stings, and parenteral exposures. For the 590 fatalities, ingestion followed by inhalation and parenteral 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 27.0% of patients with initial symptoms clearly related to the exposure, symptoms developed during the subsequent course in 14,606 initially asymptomatic patients. Thus symptoms definitely related to the exposure eventually developed in at least 28.0% of patients.

The majority of cases reported to poison centers were managed in a non-health-care facility (72.2%), usually at the site of exposure, the patient's own home (Table 11). Treatment in a health care facility was rendered or recommended in 25.3% of cases, and of these, 53.1% involved treatment and release, 17.7% involved admission for medical care, and 3.0% involved admission for psychiatric treatment; 8.1% refused referral, and 17.8% 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 7.0% of cases. In children, ipecac syrup was most often administered outside a health-care facility (Table 15).

A summary of the 590 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 post-mortem report was obtained in 34.1% of cases. The highest blood level of implicated substances is provided where available to the reporting poison center. Cases with prehospital

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	488,722	30.9	28,442	1.8	1,485	0.1	1,242	0.1	519,891	32.9
Minor effect	302,765	19.1	53,206	3.4	11,165	0.7	2,195	0.1	369,331	23.4
Moderate effect	22,079	1.4	13,475	0.9	1,405	0.1	726	0.0	37,685	2.4
Major effect	1,335	0.1	2,932	0.2	65	0.0	177	0.0	4,509	0.3
Death	91	0.0	440	0.0	17	0.0	42	0.0	590	0.0
Unknown, nontoxic	483,426	30.6	17,260	1.1	4,122	0.3	1,147	0.1	505,955	32.0
Unknown, potentially toxic	63,969	4.0	34,549	2.2	2,923	0.2	2,220	0.1	103,661	6.6
Unrelated effect	32,447	2.1	2,279	0.1	2,487	0.2	680	0.0	37,893	2.4
Unknown	1,692	0.1	238	0.0	36	0.0	59	0.0	2,025	0.1
Total	1,396,526	88.3	152,821	9.7	23,705	1.5	8,488	0.5	1,581,540	100.0

cardiac or respiratory arrests are indicated. Prehospital arrests occurred in 32.0% of all fatalities. Selected abstracts are provided in the appendix.

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 1,581,540 exposures,

TABLE 14. Therapy Provided in Human Exposure Cases

Therapy	No.
Initial Decontamination	
Dilution	602,880
Irrigation/washing	293,111
Ipecac syrup	110,800
Activated charcoal	101,525
Cathartic	85,016
Gastric lavage	41,056
Other emetic	3,743
Measures to Enhance Elimination	
Alkalinization (with or without diuresis)	4,526
Hemodialysis	418
Forced diuresis	340
Hemoperfusion (charcoal)	162
Acidification (with or without diuresis)	134
Exchange transfusion	42
Hemoperfusion (resin)	29
Peritoneal dialysis	21
Specific Antidote Administration	
Naloxone	6,082
N-acetylcysteine (oral)	4,972
Atropine	717
Deferoxamine	646
Antivenin/antitoxin	506
Ethanol	440
Hydroxocobalamin	343
Pralidoxime (2-PAM)	275
Physostigmine	246
Dimercaprol (BAL)	205
N-acetylcysteine (IV)	179
FAB fragments	174
Cyanide antidote kit	160
Penicillamine	125
Pyridoxine	113
Methylene blue	93
EDTA	78

presented by category. Table 17 focuses on nonpharmaceuticals; Table 18 presents drugs.

A breakdown of plant exposures is provided for those most commonly implicated (Table 19). 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 20 presents the most common categories listed by frequency of exposure. Table 21 lists the substance categories with the largest number of reported deaths. A nearly fourfold increase in deaths from hydrocarbons is evident in 1989 compared with 1988, reflecting a marked increase in deaths from intentional inhalation abuse of butane, freon, and fabric protectors.

Table 22 demonstrates a declining role of ipecac-induced emesis in the treatment of poisoning, and corresponding increase in the use of activated charcoal. A remarkable chronologic constancy of selected demographic data elements is demonstrated in Table 23, 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 15. Ipecac Administration by Site and Age

Age (y)	Non-Health-Care Facility		Health Care Facility		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%
<1	955	0.9	1,470	1.3	12	0.0	2,437	2.2
1	11,527	10.4	7,505	6.8	68	0.1	19,100	17.2
2	20,988	18.9	13,455	12.1	131	0.1	34,574	31.2
3	10,204	9.2	5,924	5.3	61	0.1	16,189	14.6
4	3,209	2.9	1,841	1.7	21	0.0	5,071	4.6
5	1,097	1.0	694	0.6	6	0.0	1,797	1.6
6-12	1,199	1.1	1,275	1.2	17	0.0	2,491	2.2
13-17	359	0.3	8,374	7.6	16	0.0	8,749	7.9
>17	987	0.9	18,719	16.9	40	0.0	19,746	17.8
Unknown	182	0.2	456	0.4	8	0.0	646	0.6
Total	50,707	45.8	59,713	53.9	380	0.3	110,800	100.0

TABLE 16. Summary of Fatal Exposures

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
Alcohols					
1†‡	46 yr	Ethanol	Ingestion	Unknown	
		disulfuram			
2‡	29 yr	Ethanol	Ing/Paren	Int abuse	143 mg/dL, 1 h
		heroin			
		aspirin/oxycodone			
3†	39 yr	Ethanol	Ingestion	Int abuse	212 mg/dL
		isopropanol			10 mg/dL
4‡	50 yr	Ethanol	Ingestion	Unknown	312 mg/dL
		unknown drugs			
5	47 yr	Isopropanol	Ingestion	Int abuse	193 mg/dL, 24 h
6‡	13 yr	Isopropanol	Inhalation	Acc environ	
		household cleaner			
		paint thinner			
7*	29 yr	Methanol	Ingestion	Int misuse	157 mg/dL, 16 h
8‡	32 yr	Methanol	Inhalation	Acc occup	
9*	46 yr	Methanol	Ingestion	Int suicide	86.4 mg/dL, >28 h
10	60 yr	Methanol	Ingestion	Unknown	45 mg/dL, 24 h
11*	>17 yr	Methanol	Ingestion	Unknown	227 mg/dL
12	>17 yr	Methanol	Ingestion	Int suicide	
		ethanol			
		household bleach			
See also cases 202 (alcohol, unknown type); 12, 49, 59, 99, 100, 101, 102, 119, 180, 205, 206, 207, 209, 223, 224, 251, 252, 258, 265, 266, 300, 301, 302, 303, 352, 371, 372, 380, 384, 386, 387, 439, 479, 482, 509, 512, 529, 541, 543, 565, 566, 567, 568, 569, 574, 575, 588 (ethanol); 3, 43, 45 (isopropanol).					
Arts/crafts/office supplies					
13‡	22 yr	Typewriter correction fluid (trichloroethane)	Inhalation	Int abuse	
14‡	47 yr	Typewriter correction fluid (trichloroethane)	Ing/Inh	Int suicide	724 µg/mL§
15	32 yr	Typewriter correction fluid (trichloroethylene/trichloroethane)	Ingestion	Int suicide	
		salicylates			
		diazepam			
Automotive/aircraft/boat products					
16*	15 mo	Brake line antifreeze	Ingestion	Int misuse	12 mg/dL
17*	6 mo	Ethylene glycol antifreeze	Ingestion	Int misuse	91.1 mg/dL
		acetone			320 µg/mL
18	25 yr	Ethylene glycol antifreeze	Ingestion	Int suicide	249.6 mg/dL
19	59 yr	Ethylene glycol antifreeze	Ingestion	Unknown	127.8 mg/dL
20*	69 yr	Ethylene glycol antifreeze	Ingestion	Unknown	95 mg/dL
21	83 yr	Ethylene glycol antifreeze	Ingestion	Int suicide	199 mg/dL
22*	20 yr	Ethylene glycol antifreeze	Ingestion	Int suicide	
		triamterene			
		estrogen			
23	66 yr	Windshield de-icer (methanol)	Ingestion	Int abuse	
		auto engine cleaner (petroleum distillate)			
		lacquer thinner (ethylene glycol)			
24*	6 mo	Windshield washer solvent (methanol)	Ingestion	Unknown	211 mg/dL, 12-24 h
25	46 yr	Windshield washer solvent (methanol)	Ingestion	Unknown	
26*	27 yr	Windshield washer solvent (methanol 38%)	Ingestion	Int suicide	144 mg/dL
		unknown insecticide			
Bites and envenomations					
27‡	26 yr	Hymenoptera sting	Bite/sting	Adv rxn	
28‡	40 yr	Hymenoptera sting	Bite/sting	Adv rxn	
29‡	61 yr	Hymenoptera sting	Bite/sting	Adv rxn	
See also case 540 (<i>crotalus viridis viridis</i>).					

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
Chemicals					
30	56 yr	Acid benzodiazepines	Ingestion	Int suicide	
31‡	20 yr	Chloroform	Unknown	Unknown	
32‡	25 yr	Cyanide	Ingestion	Int suicide	
33‡	30 yr	Cyanide, potassium	Ingestion	Int suicide	1.075 mg/dL, < 2 h
34	34 yr	Cyanide	Ingestion	Int suicide	
35‡	35 yr	Cyanide	Ingestion	Int suicide	2.65 mg/dL§
36‡	40 yr	Cyanide, sodium	Ingestion	Int suicide	
37‡	41 yr	Cyanide	Ingestion	Int suicide	>1 mg/dL§
38‡	48 yr	Cyanide	Ingestion	Int suicide	1.6 mg/dL§
39*	82 yr	Cyanide, potassium	Ingestion	Int suicide	5.22 mg/dL
40	>17 yr	Cyanide	Ingestion	Int suicide	
41	60 yr	Ethylene glycol	Ingestion	Int abuse	
42	69 yr	Ethylene glycol	Ing/Paren	Int suicide	58.4 mg/dL
43‡	27 yr	Ethylene glycol isopropanol	Ingestion	Int unknown	3.1 mg/dL
44	43 yr	Ethylene glycol cocaine heroin	Ingestion Parenteral	Int suicide	30 mg/dL
45	47 yr	Formaldehyde isopropanol	Ingestion	Unknown	
46	23 yr	Hydrochloric acid (62%)	Ingestion	Int suicide	
47	58 yr	Hydrochloric acid (swimming pool)	Ingestion	Int suicide	
48	73 yr	Muriatic acid	Ingestion	Int suicide	
49*	57 yr	Methyl ethyl ketone peroxide ethanol	Ingestion	Int suicide	
50*	53 yr	Nitric acid 2% explosives containing cyclotrimethylene trinitramine and cyclotrimethylene tetranitramine acetic acid 80%	Inh/Derm	Acc occup	
51‡	26 yr	Polyacrylamide nitrogen gas	Ing/Inh	Acc occup	
52*	35 yr	Sodium azide phencyclidine	Ingestion	Int suicide	0.09 µg/mL
53*	51 yr	Strychnine	Ingestion	Int suicide	0.2 µg/mL
54	30 yr	Sulfuric acid carbon monoxide cocaine (crack)	Ing/Inh	Int unknown	8.2%
55	55 yr	Zinc chloride ammonium chloride	Ing/Inh/Ocular Dermal	Acc occup	
<i>See also cases 50 (acetic acid); 17 (acetone); 55 (ammonium chloride); 50 (explosives); 71 (tub and sink jelly containing phosphoric acid).</i>					
Cleaning substances					
56	57 yr	Ammonia (household)	Ingestion	Int suicide	
57*	59 yr	Brick cleaner (HCL)	Ingestion	Int suicide	
58	80 yr	Disinfectant (phenols 7%, ethanol 1.9%, isopropanol 0.9%)	Ingestion	Int suicide	
59	34 yr	Drain opener (NaOH) ethanol	Ingestion	Int suicide	
60	39 yr	Drain opener (93% sulfuric acid)	Ingestion	Int suicide	
61	50 yr	Drain opener (sodium hypochloride, sodium hydroxide, sodium silicate)	Ingestion	Int suicide	
62*	61 yr	Drain opener (18% HCL)	Ing/Inh	Int suicide	
63	62 yr	Drain opener (NaOH)	Ing/Derm	Int suicide	
64	64 yr	Drain opener (sulfuric acid)	Ingestion	Int suicide	
65	54 yr	Drain opener (trichloroethane 99%) salicylates	Ingestion	Int suicide	2.8 mg/dL

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
66	19 yr	Dry cleaning fluid	Ing/Inh	Int unknown	
67*	85 yr	Hypochloride bleach	Ing/Inh	Int suicide	
68‡*	8 mo	Liquid detergent (3% ammonium chloride)	Ing/Inh	Unknown	
69‡*	9 mo	Pine oil cleaner	Inh/Derm	Acc gen	
70	79 yr	Pine oil cleaner	ngestion	Acc gen	
71	55 yr	Rust remover (HF 6-8%) tub and sink jelly (phosphoric acid)	Ingestion	Int suicide	
72*	27 yr	Toilet bowl cleaner (15% HCL)	Ingestion	Int suicide	
73	34 yr	Toilet bowl cleaner (23% HCL)	Ingestion	Int suicide	
74*	57 yr	Toilet bowl cleaner (15% HCL)	Ingestion	Int suicide	
75	59 yr	Toilet bowl cleaner (23% HCL)	Ingestion	Int suicide	
76*	12 yr	Unknown cleanser	Ingestion	Acc gen	
77	15 yr	Wall/floor/tile cleaning agent (NaOH/ hypochlorite)	Inhalation	Acc gen	
78	82 yr	Wash and wax concentrate	Ingestion	Acc gen	
<i>See also cases 12 (household bleach); 6 (household cleaner).</i>					
Foreign Bodies					
79‡	10 yr	Balloon	Ing/Inh	Acc gen	
Fumes, gases and vapors					
80	26 yr	Ammonia	Inh/Derm	Acc occup	
81‡†*	1 mo	Carbon monoxide	Inhalation	Acc environ	5%
82‡	12 mo	Carbon monoxide/smoke inhalation	Inhalation	Acc environ	33%, < 1 h
83‡	4 yr	Carbon monoxide/smoke inhalation	Inhalation	Acc environ	37%, 1 h
84‡	7 yr	Carbon monoxide/smoke inhalation	Inhalation	Acc environ	44.8%
85‡	12 yr	Carbon monoxide/smoke inhalation	Inhalation	Acc environ	0.9%
86‡	17 yr	Carbon monoxide	Inhalation	Int suicide	27%
87	24 yr	Carbon monoxide	Inhalation	Acc environ	
88‡	27 yr	Carbon monoxide	Inhalation	Acc occup	
89‡	28 yr	Carbon monoxide	Inhalation	Int suicide	47.5%
90‡	30 yr	Carbon monoxide/smoke inhalation	Inhalation	Acc environ	
91‡	40 yr	Carbon monoxide	Inhalation	Int suicide	76.8%
92‡	44 yr	Carbon monoxide	Inhalation	Int suicide	56%
93‡	48 yr	Carbon monoxide	Inhalation	Acc environ	3.2%
94‡	49 yr	Carbon monoxide	Inhalation	Int suicide	63%§
95‡	51 yr	Carbon monoxide	Inhalation	Int suicide	84.4%
96‡	68 yr	Carbon monoxide	Inhalation	Int suicide	52.9%
97‡†	70 yr	Carbon monoxide	Inhalation	Acc environ	30%
98‡	61 yr	Carbon monoxide	Inhalation	Int suicide	49%
99‡	24 yr	Carbon monoxide doxepin	Ingestion	Acc environ	
100‡	27 yr	Carbon monoxide/smoke inhalation ethanol	Inhalation	Acc environ	163.8 mg/dL 33.8%
101‡	32 yr	Carbon monoxide ethanol	Inhalation	Int suicide	358 mg/dL 70.3%
102‡	64 yr	Carbon monoxide ethanol	Inhalation	Int suicide	262 mg/dL 33%§
103	19 yr	Carbon monoxide ibuprofen	Inhalation Ingestion	Int suicide	129 mg/dL§ 4%, 4 h
104‡	>17 yr	Chlorine gas (hypochlorite and sulfuric acid)	Inhalation	Acc occup	
105‡	24 yr	Hydrogen sulfide	Inhalation	Acc occup	
106	31 yr	Hydrogen sulfide	Inhalation	Acc occup	
107‡	33 yr	Hydrogen sulfide	Inhalation	Acc occup	
108*	40 yr	Hydrogen sulfide	Inhalation	Acc occup	
109‡	47 yr	Methane	Inhalation	Acc occup	
110	49 yr	Methane carbon dioxide	Inhalation	Acc occup	
111‡*	30 yr	Methane/nitrogen dioxide/nitric acid	Inhalation	Acc occup	
112‡*	30 yr	Methane/nitrogen dioxide/nitric acid	Inhalation	Acc occup	
113	40 yr	Natural gas	Inhalation	Acc environ	

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
114‡	50 yr	Natural gas	Inhalation	Unknown	
115‡	50 yr	Natural gas	Inhalation	Unknown	
116‡	70 yr	Propane ethanol	Inhalation	Acc environ	
<i>See also cases 473 (air); 54 (carbon monoxide); 110 (carbon dioxide); 51 (nitrogen gas).</i>					
Fungicides					
117‡*	23 yr	Calcium polysulfide	Ingestion	Int suicide	
Heavy Metals					
118	26 yr	Arsenic	Ingestion	Int suicide	
119†	76 yr	Lead ethanol	Ingestion	Int misuse	124 µg/L
120*	40 yr	Mercury	Inhalation	Acc misuse	12.7 µg/dL, 120 h
121*	44 yr	Mercury	Inhalation	Acc misuse	16.1 µg/dL
122*	68 yr	Mercury	Inhalation	Acc misuse	
123*	88 yr	Mercury	Inhalation	Acc misuse	
124*	70 yr	Mercury bichloride	Ingestion	Int suicide	12.4 µg/mL§
Herbicides					
125‡	27 yr	Arsenic herbicide/chlorophenoxy compound	Ingestion	Int suicide	
126*	27 yr	Arsenic herbicide	Ingestion	Int suicide	650 µg/dL
127*	30 yr	Arsenic herbicide/chlorophenoxy herbicide	Ingestion	Int suicide	
128*	65 yr	Chlorophenoxy herbicide	Ingestion	Int suicide	
129*	32 yr	Paraquat phencyclidine marijuana	Ingestion Inhalation	Int suicide	5.2 µg/mL§
130‡*	50 yr	Sodium arsenite herbicide	Ingestion	Int suicide	90 µg/dL§
<i>See also case 127 (chlorophenoxy herbicide).</i>					
Hydrocarbons					
131‡	13 yr	Butane	Inhalation	Int abuse	
132‡	14 yr	Butane	Inhalation	Int abuse	
133‡	15 yr	Butane	Inhalation	Int abuse	
134‡	15 yr	Butane	Inhalation	Int abuse	
135‡	15 yr	Butane	Inhalation	Int abuse	
136‡	16 yr	Butane	Inhalation	Int abuse	
137	16 yr	Butane	Inhalation	Int abuse	
138‡	17 yr	Butane	Inhalation	Int abuse	
139‡	19 yr	Butane	Inhalation	Int abuse	
140‡	13 yr	Fabric protector (trichloroethane/freon)	Inhalation	Int abuse	
141‡	15 yr	Fabric protector (trichloroethane/freon)	Inhalation	Int abuse	1.84 mg/dL§
142‡	18 yr	Fabric protector (trichloroethane/freon)	Inhalation	Int abuse	
143‡	17 yr	Fluorocarbon, unknown type	Inhalation	Int abuse	
144‡*	9 yr	Freon	Inhalation	Int unknown	
145‡*	16 yr	Freon	Inhalation	Int abuse	
146‡	17 yr	Freon	Inhalation	Int abuse	
147‡	19 yr	Freon	Inhalation	Int abuse	
148	20 yr	Freon	Inhalation	Int abuse	
149‡	21 yr	Freon	Inhalation	Acc occup	
150‡	27 yr	Freon	Inhalation	Unknown	
151‡*	28 yr	Freon	Inhalation	Acc occup	
152‡†	29 yr	Freon	Inhalation	Int abuse	82.9 µg/mL
153‡*	30 yr	Freon	Inhalation	Acc occup	
154‡	19 yr	Freon silicone lubricant spray	Inhalation	Int abuse	
155‡	16 yr	Freon television tuner cleaner	Inhalation	Int abuse	
156‡	>17 yr	Halon gas	Inhalation	Acc occup	
157	93 yr	Hydrocarbon water sealant	Ingestion	Acc gen	
158	84 yr	Kerosene	Ingestion	Int misuse	
159‡*	25 yr	Tetrachloroethylene	Inhalation	Acc occup	6.4 µg/mL§
160‡	46 yr	Trichloroethane	Inhalation	Acc occup	9.7 µg/mL§

See also cases 339 (charcoal lighter fluid); 6 (paint thinner).

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
Insecticides and pesticides					
161	88 yr	Carbamate	Ingestion	Int suicide	
162	50 yr	Diazinon	Ingestion	Int suicide	
163†	75 yr	Lindane	Dermal	Int misuse	
164	81 yr	Malathion	Ingestion	Int suicide	
165	81 yr	Malathion	Ingestion	Int suicide	
166‡	58 yr	Malathion 50%	Ingestion	Int suicide	
		trazodone		plasma cholinesterase	27 pH units§ 2.24 µg/mL§
167*	>17 yr	Methyl bromide	Inhalation	Acc environ	
168*	>17 yr	Methyl bromide	Inhalation	Acc environ	
169‡*	40 yr	Methyl bromide cocaine	Inhalation	Acc misuse	215 mg/dL§ 0.011 µg/mL§
		codeine	Ingestion	benzoylecgonine	0.31 µg/mL§ 0.026 µg/mL§
				morphine	0.213 µg/mL§
170	24 yr	Organophosphate	Ingestion	Int unknown	
171	39 yr	Organophosphate	Ingestion	Int suicide	
172‡	93 yr	Organophosphate	Ingestion	Int suicide	
<i>See also cases 271 (arsenic pentoxide pesticide); 26 (unknown insecticide).</i>					
Mushrooms					
173*	48 yr	Amanita phalloides	Ingestion	Acc gen	
174*	54 yr	Amanita virosa entoloma sp.	Ingestion	Acc gen	
<i>See also case 174 (entoloma sp.).</i>					
Paints and stripping agents					
175‡	30 yr	Methylene chloride	Inhalation	Acc occup	
176	59 yr	Paint and varnish remover containing: methanol acetone and benzene	Ingestion	Int unknown	52 mg/dL 20 mg/dL
177‡	>17 yr	Paint stripper (methylene chloride, methanol)	Inh/Dermal	Acc misuse	
Rodenticides					
178*	18 mo	Arsenic rodenticide	Ingestion	Acc gen	
179*	21 yr	Arsenic rodenticide (1.14%)	Ingestion	Int suicide	
180	50 yr	Arsenic trioxide (1.5%) rodenticide ethanol	Ingestion	Unknown	
181‡*	48 yr	Strychnine rodenticide	Ingestion	Int suicide	
Sporting equipment					
182‡*	2 yr	Gun bluing (selenious acid 7.75%, nitric acid 8.58% and copper sulfate 6.9%)	Ingestion	Acc gen	
Analgesics					
183	16 yr	Acetaminophen	Ingestion	Int suicide	154 µg/mL, 12 h
184	18 yr	Acetaminophen	Ingestion	Int suicide	46 µg/mL, 65-70 h
185	20 yr	Acetaminophen	Ingestion	Int suicide	
186*	23 yr	Acetaminophen	Ingestion	Int suicide	164.7 µg/mL, 16 h
187	23 yr	Acetaminophen	Ingestion	Int suicide	16.9 µg/mL
188†	31 yr	Acetaminophen	Ingestion	Int misuse	58 µg/mL
189	32 yr	Acetaminophen	Ingestion	Int suicide	200 µg/mL, 24 h
190	33 yr	Acetaminophen	Ingestion	Int suicide	<5 µg/mL, 48 h
191	33 yr	Acetaminophen	Ingestion	Int suicide	217 µg/mL, 17 h
192	34 yr	Acetaminophen	Ingestion	Int suicide	
193†	35 yr	Acetaminophen	Ingestion	Acc misuse	74 µg/mL
194†	36 yr	Acetaminophen	Ingestion	Int misuse	11 µg/mL
195	37 yr	Acetaminophen	Ingestion	Int suicide	266 µg/mL, 17 h
196	39 yr	Acetaminophen	Ingestion	Int misuse	110 µg/mL, 18 h
197	40 yr	Acetaminophen	Ingestion	Int misuse	<10 µg/mL

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
198†*	43 yr	Acetaminophen	Ingestion	Int misuse	65 µg/mL
199†	64 yr	Acetaminophen	Ingestion	Acc misuse	136 µg/mL
200†	65 yr	Acetaminophen	Ingestion	Int misuse	42 µg/mL
201†	69 yr	Acetaminophen	Ingestion	Int misuse	20.6 µg/mL
		acetaminophen/propoxyphene			
202	42 yr	Acetaminophen alcohol, unknown type	Ingestion	Unknown	
203	56 yr	Acetaminophen aspirin/propoxyphene diphenhydramine	Ingestion	Int suicide	160 µg/mL, 24 h 6.3 mg/dL [¶] , >24 h
204	23 yr	Acetaminophen carbamazepine phenobarbital	Ingestion	Int suicide	59.1 µg/mL, 19 h 39.6 µg/mL, 19 h 44.9 µg/mL, 19 h
205	27 yr	Acetaminophen ethanol	Ingestion	Int suicide	66.5 µg/mL, 16 h
206†	31 yr	Acetaminophen ethanol	Ingestion	Int misuse	312 µg/mL
207	47 yr	Acetaminophen ibuprofen ethanol	Ingestion	Int suicide	300 mg/dL
208	24 yr	Acetaminophen iron barbiturate	Ingestion	Int suicide	735 µg/mL, 72 h 297 µg/dL, 72 h
209††	40 yr	Acetaminophen ranitidine ethanol	Ingestion	Acc misuse	153 µg/mL
210	83 yr	Acetaminophen/aspirin/caffeine	Ingestion	Int suicide	24 mg/dL [¶] 172 µg/mL [¶]
211	61 yr	Acetaminophen/chlorzoxazone	Ingestion	Int unknown	
212	70 yr	Acetaminophen/codeine diazepam flurazepam	Ingestion	Int suicide	
213	85 yr	Acetaminophen/codeine ibuprofen tetracycline	Ingestion	Int suicide codeine morphine	94 µg/mL [¶] , 4 h 3.962 µg/mL [§] 1.125 µg/mL [§] 234 µg/mL [§]
214‡	27 yr	Acetaminophen/propoxyphene	Ingestion	Int suicide	36 µg/mL [¶] , 6-7 h
215‡	30 yr	Acetaminophen/propoxyphene	Ingestion	Int suicide	404 µg/mL [¶]
216	36 yr	Acetaminophen/propoxyphene	Ingestion	Int suicide	130 µg/mL [§] [¶]
217	80 yr	Acetaminophen/propoxyphene	Ingestion	Int suicide	
218	>17 yr	Acetaminophen/propoxyphene	Ingestion	Int suicide	71 µg/mL [¶]
219†	95 yr	Acetaminophen/propoxyphene acetaminophen	Ingestion	Acc misuse	180 µg/mL [¶]
220*	18 yr	Acetaminophen/propoxyphene acetaminophen/codeine	Ingestion	Int suicide	467 µg/mL [¶] , 8 h
221	50 yr	Acetaminophen/propoxyphene acetaminophen/codeine triazolam	Ingestion	Int suicide	99 µg/mL [¶] , >24 h
222††	41 yr	Acetaminophen/propoxyphene butalbital	Ingestion	Int suicide	128 µg/mL [¶] 10.9 µg/mL
223‡	46 yr	Acetaminophen/propoxyphene cyclobenzaprine ethanol	Ingestion	Int suicide	115 µg/mL [¶]
224‡	31 yr	Acetaminophen/propoxyphene ethanol benzodiazepines	Ingestion	Int suicide	170 µg/mL [§] [¶] 161 mg/dL [§]
225	15 yr	Aspirin	Ingestion	Int suicide	117 mg/dL, 16 h
226	18 yr	Aspirin	Ingestion	Int suicide	
227	36 yr	Aspirin	Ingestion	Int suicide	126 mg/dL, 24 h
228†*	38 yr	Aspirin	Ingestion	Unknown	72 mg/dL

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
229†	39 yr	Aspirin	Ingestion	Int suicide	95 mg/dL
230	42 yr	Aspirin	Ingestion	Int suicide	100 mg/dL, 7 h
231	44 yr	Aspirin	Ingestion	Int suicide	112 mg/dL, 8-10 h
232	44 yr	Aspirin	Ingestion	Int suicide	115 mg/dL, 6-8 h
233	45 yr	Aspirin	Ingestion	Int suicide	121 mg/dL
234††*	48 yr	Aspirin	Ingestion	Unknown	50 mg/dL
235	50 yr	Aspirin	Ingestion	Int suicide	73 mg/dL
236	53 yr	Aspirin	Ingestion	Int suicide	140 mg/dL§
237†	53 yr	Aspirin	Ingestion	Acc misuse	76.9 mg/dL
238	56 yr	Aspirin	Ingestion	Int suicide	84.7 mg/dL
239†	57 yr	Aspirin	Ingestion	Int misuse	68 mg/dL
240†	57 yr	Aspirin	Ingestion	Acc misuse	126 mg/dL§
241	61 yr	Aspirin	Ingestion	Int misuse	69.5 mg/dL, 2-3 h
242	62 yr	Aspirin	Ingestion	Int suicide	131 mg/dL
243	66 yr	Aspirin	Ingestion	Int suicide	90 mg/dL
244	70 yr	Aspirin	Ingestion	Unknown	45 mg/dL
245	70 yr	Aspirin	Ingestion	Int suicide	99 mg/dL
246	>17 yr	Aspirin	Ingestion	Acc misuse	82.5 mg/dL
247	29 yr	Aspirin, unknown form	Ingestion	Int suicide	107 mg/mL
248	30 yr	Aspirin	Ingestion	Int suicide	85.1 mg/dL, 34 h
		acetaminophen			210 µg/mL, 4-6 h
		alprazolam			
249	34 yr	Aspirin	Ingestion	Int suicide	120 mg/dL
		amitriptyline			
		diphenhydramine			
250	38 yr	Aspirin	Ingestion	Int suicide	94 mg/dL, 13 h
		antihypertensive, unknown type			
251	18 yr	Aspirin	Ingestion	Int suicide	94.7 mg/dL
		ethanol			
252*	60 yr	Aspirin	Ingestion	Unknown	84 mg/dL
		ethanol			<10 mg/dL
253*	58 yr	Aspirin	Ingestion	Int suicide	98.8 mg/dL, 8 h
		lisinopril			762 ng/mL, 2 h
254	71 yr	Aspirin/butalbital/caffeine	Ingestion	Unknown	
		benztropine			
		imipramine			
255	37 yr	Aspirin-butalbital/caffeine/codeine	Ingestion	Int suicide	11.6 mg/dL¶
				butalbital	4 µg/mL
		sleep aid (diphenhydramine)			
256‡	27 yr	Codeine	Ingestion	Int abuse	
		morphine			
		acetaminophen			12 µg/mL
257*	42 yr	Colchicine	Ingestion	Int misuse	
258*	57 yr	Colchicine	Ingestion	Int suicide	
		ibuprofen			
		ethanol			190 mg/dL§
259*	37 yr	Colchicine	Ingestion	Int suicide	
		lorazepam			
		fluphenazine			
260‡*	5 yr	Methadone	Ingestion	Int misuse	
261	28 yr	Methadone	Unknown	Unknown	
262	74 yr	Morphine	Ingestion	Int suicide	
263‡†	33 yr	Morphine	Unknown	Int abuse	50 µg/dL§
		cocaine			0.06 µg/mL§
		quinine			1.5 µg/mL§
264	30 yr	Opiates	Unknown	Int abuse	
265‡	31 yr	Opiates	Parenteral	Int abuse	
		ethanol			
266	26 yr	Opiates	Parenteral	Int abuse	
		ethanol			133 mg/dL
267‡	20 mo	Propoxyphene	Ingestion	Acc gen	

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
268	35 yr	Propoxyphene	Ingestion	Int suicide	
269‡	36 yr	Propoxyphene	Ingestion	Int suicide	5.66 µg/mL§
270‡	51 yr	Propoxyphene	Ingestion	Int suicide	
271	27 yr	Propoxyphene	Ingestion	Int suicide	
		arsenic pentoxide pesticide			
272‡	36 yr	Propoxyphene acetaminophen carisoprodol	Ingestion	Int suicide	120 µg/mL, 14 h
273‡	29 yr	Propoxyphene diazepam	Ingestion	Int suicide	12 µg/mL§ 0.51 µg/mL§
274‡	48 yr	Propoxyphene diazepam	Ingestion	Int suicide	
275†	34 yr	Salicylsalicylic acid	Ingestion	Int misuse	43.5 mg/dL
<i>See also cases 219, 248, 256, 272, 282, 366, 426, 433, 455, 466, 486, 501, 525, 533, 562 (acetaminophen); 220, 221, 307, 355 (acetaminophen/codeine); 562 (acetaminophen/diphenhydramine); 201, 458, 417 (acetaminophen/propoxyphene); 390, 404, 525 (aspirin); 351, 563 (aspirin/butalbital/caffeine); 2 (aspirin/oxycodone); 203 (aspirin/propoxyphene); 169, 426 (codeine); 504 (diflunisal); 103, 207, 213, 258 (ibuprofen); 396 (meperidine); 343, 571, 577 (methadone); 256 (morphine); 483, 572 (naproxen); 344, 575 (opiates); 430 (pentazocine); 439, 485, 518, 536 (propoxyphene); 15, 65, 505 (salicylates).</i>					
Anesthetics					
276†	48 yr	Lidocaine	Parenteral	Acc misuse	13.6 µg/mL
7	59 yr	Lidocaine	Parenteral	Acc misuse	
Anticoagulants					
<i>See also case 454 (warfarin).</i>					
Anticholinergics					
278	41 yr	Benztropine	Ingestion	Int suicide	
279	33 yr	Benztropine fluphenazine cyproheptadine	Ingestion	Unknown	
<i>See also cases 254, 391, 476 (benztropine); 318, 392 (trihexyphenidyl).</i>					
Anticonvulsants					
280*	2 yr	Carbamazepine	Ingestion	Acc gen	109 µg/mL, 6 h
281‡†*	11 yr	Carbamazepine ampicillin erythromycin	Ingestion	Adv rxn	17.6 µg/mL
282†*	3 yr	Phenytoin acetaminophen phenobarbital	Ingestion Rectal	Adv rxn	62.6 µg/mL
283†*	7 yr	Valproic acid	Ingestion	Adv rxn	256 µg/mL
<i>See also cases 204, 298, 395 (carbamazepine); 528 529 (phenytoin).</i>					
Antidepressants					
284‡	17 yr	Amitriptyline	Ingestion	Int suicide	690 ng/mL
				nortriptyline	230 ng/mL
285‡	23 yr	Amitriptyline	Ingestion	Int suicide	
286‡	25 yr	Amitriptyline	Ingestion	Int suicide	10,850 ng/mL§ 1,500 ng/mL§
				nortriptyline	
287	29 yr	Amitriptyline	Ingestion	Int suicide	
288	31 yr	Amitriptyline	Ingestion	Int suicide	51,300 ng/mL§ 28,400 ng/mL§
				nortriptyline	
289	34 yr	Amitriptyline	Ingestion	Int suicide	
	35 yr	Amitriptyline	Ingestion	Int suicide	348 ng/mL, 1-2 h
291‡	41 yr	Amitriptyline	Ingestion	Int suicide	
292‡	49 yr	Amitriptyline	Ingestion	Int suicide	3,072 ng/mL#
293‡	52 yr	Amitriptyline	Ingestion	Int suicide	
294	55 yr	Amitriptyline	Ingestion	Int suicide	
295	58 yr	Amitriptyline	Ingestion	Int suicide	2,323 ng/mL
296	>17 yr	Amitriptyline	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
297	20 yr	Amitriptyline chlorpromazine alprazolam	Ingestion	Int suicide	
298	33 yr	Amitriptyline doxepin carbamazepine	Ingestion	Int suicide	
299	25 yr	Amitriptyline doxepin chlorpromazine	Ingestion	Int suicide	
300	26 yr	Amitriptyline ethanol	Ingestion	Int suicide	786 ng/mL# 200 mg/dL
301	40 yr	Amitriptyline ethanol	Ingestion	Int suicide	
302	49 yr	Amitriptyline ethanol	Ingestion	Int suicide nortriptyline	1,402 ng/mL, 2.5-4.5 h 202 ng/mL, 2.5-4.5 h
303	50 yr	Amitriptyline ethanol	Ingestion	Int suicide nortriptyline	984 ng/mL§ 980 ng/mL§ 167 mg/dL§
304‡	39 yr	Amitriptyline imipramine	Ingestion	Int suicide nortriptyline	8,300 ng/mL§ 3,900 ng/mL§
305‡	42 yr	Amitriptyline lorazepam temazepam	Ingestion	Int suicide	
306‡	60 yr	Amitriptyline nortriptyline clonazepam	Ingestion	Int suicide	
307‡	46 yr	Amitriptyline propranolol, long-acting acetaminophen/codeine	Ingestion	Int suicide	10.5 mc/mL ^h , 1 h
308	45 yr	Amitriptyline temazepam	Ingestion	Int suicide	
309	69 yr	Amitriptyline theophylline fluoxetine	Ingestion	Int suicide	37.2 µg/mL
310	41 yr	Amitriptyline/perphenazine	Ingestion	Int suicide	
311	55 yr	Amitriptyline/perphenazine	Ingestion	Int unknown	
312	65 yr	Amitriptyline/ perhenazine nortriptyline	Ingestion	Int suicide	101 ng/mL 134 ng/mL
313‡	33 yr	diphenhydramine Amitriptyline/perphenazine buspirone diazepam	Ingestion	Int suicide	
314‡	20 yr	Amitriptyline/perphenazine theophylline	Ingestion	Int suicide	
315*	18 yr	Amoxapine	Ingestion	Int suicide	
316	38 yr	Amoxapine	Ingestion	Int suicide	
317	32 yr	Amoxapine buspirone	Ingestion	Int suicide	
318	30 yr	Amoxapine doxepin trihexyphenidyl	Ingestion	Int suicide	
319‡	37 yr	Cyclic antidepressant, unknown type	Ingestion	Int suicide	
320	47 yr	Cyclic antidepressant, unknown type thioridazine	Ingestion	Int suicide	
321‡	27 yr	Clomipramine	Ingestion	Int suicide	8,510 ng/mL§
322‡*	18 mo	Desipramine	Ingestion	Acc gen	1,377 ng/mL#
323*	20 mo	Desipramine	Ingestion	Acc gen	1,600 ng/mL, 2 h
	14 yr	Desipramine	Ingestion	Int suicide	1,460 ng/mL§
325	16 yr	Desipramine	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
326	17 yr	Desipramine	Ingestion	Int suicide	
327	17 yr	Desipramine	Ingestion	Int suicide	
328	18 yr	Desipramine	Ingestion	Int suicide	4,700 ng/mL
329	24 yr	Desipramine	Ingestion	Int suicide	
330	26 yr	Desipramine	Ingestion	Int suicide	
331‡	26 yr	Desipramine	Ingestion	Int suicide	
332	28 yr	Desipramine	Ingestion	Int suicide	
333	30 yr	Desipramine	Ingestion	Int suicide	
334	32 yr	Desipramine	Ingestion	Int suicide	
335‡	32 yr	Desipramine	Ingestion	Int suicide	
336	37 yr	Desipramine	Ingestion	Int suicide	
337	yr	Desipramine	Ingestion	Int suicide	
338	45 yr	Desipramine	Ingestion	Int unknown	
	19 yr	Desipramine	Ingestion	Int suicide	
		charcoal lighter fluid			
340	33 yr	Desipramine	Ingestion	Int suicide	
		cyclobenzaprine			
		lorazepam			
341	50 yr	Desipramine	Ingestion	Int suicide	
		lorazepam			
		cimetidine			
342	35 yr	Desipramine	Ingestion	Int suicide	3,600 ng/mL, <8.5 h
		mesoridazine			4,900 ng/mL, <8.5 h
343‡	38 yr	Desipramine	Ingestion	Int suicide	9,000 ng/mL§
		methadone		imipramine	200 ng/mL§
344	47 yr	Desipramine	Ingestion	Int suicide	methadone metabolite <0.08 µg/mL§
		opiates			
		barbiturates			
345	43 yr	Desipramine	Ingestion	Int suicide	
		trazodone			
346‡	27 yr	Doxepin	Ingestion	Int suicide	
347	30 yr	Doxepin	Ingestion	Int suicide	409 ng/mL, 1.5-2.5 h
				desmethyldoxepin	396 ng/mL, 1.5-2.5 h
348	42 yr	Doxepin	Ingestion	Int suicide	589 ng/mL
349‡	43 yr	Doxepin	Ingestion	Int suicide	
350‡	53 yr	Doxepin	Ingestion	Int suicide	
		alprazolam			
		imipramine			
351‡	44 yr	Doxepin	Ingestion	Int suicide	
		aspirin/butalbital/caffeine			
		perphenazine			
352	25 yr	Doxepin	Ingestion	Int suicide	20,000 ng/mL§
		ethanol			240 mg/dL§
		alprazolam			
353	39 yr	Doxepin	Ingestion	Int suicide	
		perphenazine			
354*	15 yr	Doxepin	Ingestion	Int suicide	
		verapamil			
		piroxicam			
355	36 yr	Fluoxetine	Ingestion	Int suicide	
		clonidine			
		acetaminophen/codeine			
356*	31 yr	Fluoxetine	Ingestion	Int suicide	
		pargyline			
		fluphenazine			
357	14 yr	Imipramine	Ingestion	Int suicide	
358	17 yr	Imipramine	Ingestion	Int suicide	3,017 ng/mL
				desipramine	507 ng/mL
359	17 yr	Imipramine	Ingestion	Int suicide	
360‡	17 yr	Imipramine	Ingestion	Int suicide	
361	18 yr	Imipramine	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
362‡	19 yr	Imipramine	Ingestion	Int suicide	
363	39 yr	Imipramine	Ingestion	Int suicide	
364	40 yr	Imipramine	Ingestion	Int suicide	
365	>17 yr	Imipramine	Ingestion	Int suicide	3,400 ng/mL§
366	60 yr	Imipramine	Ingestion	Int suicide	
		acetaminophen			735 mcg/mL
367	31 yr	Imipramine	Ingestion	Int suicide	1,900 ng/mL
		alprazolam			
368	30 yr	Imipramine	Ingestion	Int suicide	1,182 ng/mL
		desipramine			298 ng/mL
		chlordiazepoxide			
369‡	23 yr	Imipramine	Ingestion	Int suicide	
		diazepam			
370	36 yr	Imipramine	Ingestion	Int suicide	
		diphenhydramine			
		cyclobenzaprine			
371‡	29 yr	Imipramine	Ingestion	Int suicide	1,200 ng/mL
		disulfuram			
		ethanol			33 mg/dL
372	44 yr	Imipramine	Ingestion	Int suicide	16,000 ng/mL
		desipramine			570 ng/mL
		ethanol			135 mg/dL
373	40 yr	Imipramine	Ingestion	Int suicide	
		nortriptyline			
		lithium			6.2 mEq/l, >16 h
374	42 yr	Imipramine	Ingestion	Int suicide	
		propranolol			
		fluoxetine			
375	21 yr	Imipramine	Ingestion	Int suicide	
		thioridazine			
376†	62 yr	Lithium	Ingestion	Unknown	4.5 mEq/L
377†	61 yr	Lithium	Ingestion	Unknown	
		imipramine			
378*	37 yr	Loxapine	Ingestion	Int suicide	243 ng/mL, <31 h
379‡	17 yr	Maprotiline	Ingestion	Int suicide	1,680 ng/mL§
380	35 yr	Maprotiline	Ingestion	Int suicide	
		cocaine			
		ethanol			
381‡	21 yr	Nortriptyline	Ingestion	Int suicide	
382‡	23 yr	Nortriptyline	Ingestion	Int suicide	
383	46 yr	Nortriptyline	Ingestion	Int suicide	
384‡	25 yr	Nortriptyline	Ingestion	Int suicide	
		alprazolam			
		ethanol			135 mg/dL§
385	42 yr	Nortriptyline	Ingestion	Int suicide	24,060 ng/mL§
		chlorpromazine			33,400 ng/mL§
386	29 yr	Nortriptyline	Ingestion	Int suicide	
		ethanol			
387‡	39 yr	Nortriptyline	Ingestion	Int suicide	
		ethanol			401 mg/dL
388	33 yr	Nortriptyline	Ingestion	Int suicide	
		glyburide			
389	17 yr	Nortriptyline	Ingestion	Int suicide	
		mesoridazine			
390	53 yr	Nortriptyline	Ingestion	Int suicide	
		perphenazine			
		aspirin			
391	46 yr	Nortriptyline	Ingestion	Int suicide	
		phenelzine			
		benztropine			
392	29 yr	Nortriptyline	Ingestion	Int suicide	
		trihexyphenidyl			

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
393	34 yr	Nortriptyline trifluoperazine loxapine	Ingestion	Int suicide	
394*	20 yr	Phenelzine	Ingestion	Int suicide	
395*	30 yr	Phenelzine lithium carbamazepine	Ingestion	Int suicide	0.6 mEq/L
396*	64 yr	Phenelzine meperidine	Ing/Paren	Adv rxn	
397	37 yr	Phenelzine molindone	Ingestion	Int suicide	
398	57 yr	Tranlycypromine benzodiazepines	Unknown	Unknown	
399*	15 yr	Tranlycypromine imipramine	Ingestion	Int suicide	
				desipramine	220 ng/mL§
See also cases 249, 475, 520 (amitriptyline); 438 (amoxapine); 563, 565 (desipramine); 98, 298, 299, 318, 455, 514 (doxepin); 309, 374, 504 (fluoxetine); 254, 304, 350, 377, 399, 456 (imipramine); 373, 395, 539 (lithium); 393 (loxapine); 306, 373 (nortriptyline); 352 (pargyline); 391, 576 (phenelzine); 166, 345 (trazodone).					
Antihistamines					
400†*	39 yr	Cimetidine	Ingestion	Unknown	
401‡	5 mo	Diphenhydramine	Ingestion	Int misuse	2.2 µg/mL§
402‡	21 mo	Diphenhydramine	Ingestion	Int misuse	1.3 µg/mL§
See also cases 341 (cimetidine) 279 (cyproheptadine); 203, 249, 312, 370, 533, 578 (diphenhydramine); 480 (meclizine).					
Antimicrobials					
403*	31 yr	Chloroquine	Ingestion	Int suicide	
404*	24 yr	Chloroquine aspirin	Ingestion	Int suicide	4.6 µg/mL§ 24.1 mg/dL
See also cases 429 (amoxicillin); 281 (ampicillin); 429 (cephalexin); 431, 522 (ciprofloxacin); 281 (erythromycin); 213 (tetracycline).					
Antineoplastics					
405*	3 yr	Vincristine	Intrathecal	Acc misuse	
See also case 523 (chlorambucil).					
Asthma therapies					
36	16 yr	Theophylline (long-acting)	Ingestion	Int misuse	117.5 µg/mL
407	19 yr	Theophylline (long-acting)	Ingestion	Int suicide	165 µg/mL
408*	38 yr	Theophylline (long-acting)	Ingestion	Int suicide	160 µg/mL
409	44 yr	Theophylline (long-acting)	Ingestion	Int suicide	118.6 µg/mL
410†	56 yr	Theophylline (long-acting)	Ingestion	Acc unknown	50.4 µg/mL
411†	58 yr	Theophylline	Ingestion	Acc misuse	56 µg/mL
412	60 yr	Theophylline	Ingestion	Int suicide	77 µg/mL, 8 h
413	60 yr	Theophylline (long-acting)	Ingestion	Int suicide	>40 µg/mL, 2 h
414†	61 yr	Theophylline (long-acting)	Ingestion	Acc unknown	58.2 µg/mL
415	62 yr	Theophylline (long-acting)	Ingestion	Int suicide	126 µg/mL
416†	63 yr	Theophylline	Ingestion	Unknown	
417†	67 yr	Theophylline (long-acting)	Ingestion	Int misuse	53.1 µg/mL
418†	67 yr	Theophylline	Ingestion	Int misuse	37.9 µg/mL
419†	71 yr	Theophylline (long-acting)	Ingestion	Int misuse	237 µg/mL
420†	76 yr	Theophylline (long-acting)	Ingestion	Acc unknown	69.6 µg/mL
421†	77 yr	Theophylline (long-acting)	Ingestion	Acc unknown	77 µg/mL
422	80 yr	Theophylline	Ingestion	Unknown	80 µg/mL
423†	81 yr	Theophylline (long-acting)	Ingestion	Int misuse	50 µg/mL
424†	82 yr	Theophylline	Ingestion	Unknown	60 µg/mL
425†	82 yr	Theophylline	Ingestion	Acc misuse	59 µg/mL
426	63 yr	Theophylline acetaminophen codeine	Ingestion	Int suicide	125 µg/mL, <24 h 100.2 µg/mL, 17 h

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
427†	66 yr	Theophylline (long-acting) activated charcoal	Ingestion Inhalation	Int misuse	45.2 µg/mL
428†	72 yr	Theophylline aminophylline	Ingestion Parenteral	Acc misuse	68 µg/mL
429*	15 yr	Theophylline (long-acting) amoxicillin cephalexin	Ingestion	Int suicide	170 µg/mL, 2-3 h
430	64 yr	Theophylline chlordiazepoxide pentazocine	Ingestion	Int suicide	165.9 µg/mL
431†	75 yr	Theophylline ciprofloxacin	Ingestion	Adv rxn	63 µg/mL
432†	85 yr	Theophylline digoxin	Ingestion	Acc misuse	76.3 µg/mL 2.17 ng/mL
433‡	47 yr	Theophylline digoxin acetaminophen	Ingestion	Int suicide	71.1 µg/mL§ 5.2 ng/mL
434	57 yr	Theophylline phencyclidine	Ingestion	Int unknown	50 µg/mL
435	17 yr	Theophylline/ephedrine	Ingestion	Int suicide	102 µg/mL, 11 h
<i>See also cases 428 (aminophylline); 309, 314, 452, 453 (theophylline).</i>					
Cardiovascular drugs					
436	20 yr	Atenolol	Ingestion	Int suicide	
437	>17 yr	Atenolol	Ingestion	Int suicide	
438	56 yr	Atenolol amoxapine lorazepam	Ingestion	Int suicide	
439	29 yr	Atenolol propoxyphene ethanol	Ingestion	Int suicide	1.4 µg/mL§ 50 mg/dL§
440	18 yr	Atenolol verapamil, sustained release	Ingestion	Int suicide	1.97 µg/mL§
441	51 yr	Digoxin	Unknown	Unknown	7.4 ng/mL
442	64 yr	Digoxin	Ingestion	Unknown	9.2 ng/mL
443	75 yr	Digoxin	Ingestion	Int suicide	>20 ng/mL
444†	76 yr	Digoxin	Parenteral	Acc misuse	6.8 ng/mL
445†	76 yr	Digoxin	Ingestion	Acc misuse	6.2 ng/mL
446†	78 yr	Digoxin	Ingestion	Acc unknown	10 ng/mL
447	84 yr	Digoxin	Ingestion	Int suicide	6.3 ng/mL
448†	88 yr	Digoxin	Parenteral	Acc misuse	3.9 ng/mL
449‡	89 yr	Digoxin	Ingestion	Int suicide	336 ng/mL
450†	77 yr	Digoxin amiodarone	Ingestion	Adv rxn	3.2 ng/mL
451†	67 yr	Digoxin diltiazem	Ingestion	Acc unknown	7.3 ng/mL
452†	80 yr	Digoxin theophylline	Ingestion	Unknown	3.5 ng/mL
453‡	30 yr	Digoxin theophylline, long-acting calcium channel blocker, unknown type	Ingestion	Int suicide	70 µg/mL
454‡	79 yr	Digoxin warfarin	Ingestion	Adv rxn	4.7 ng/mL
455	69 yr	Diltiazem doxepin acetaminophen	Ingestion	Int unknown	
456‡	30 yr	Ethaverine imipramine	Ingestion	Int suicide	440 µg/mL
457‡	31 yr	Flecainide nifedipine	Ingestion	Int suicide	34 µg/dL§

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
458	30 yr	Metoprolol verapamil acetaminophen/propoxyphene	Ingestion	Int suicide	26.5 µg/mL§ 1.8 µg/mL§
459	73 yr	Metoprolol captopril	Ingestion	Int suicide	
460	21 yr	Nadolol verapamil enalapril	Ingestion	Int suicide	
461‡†	40 yr	Procainamide	Ingestion	Unknown	
462†	75 yr	Procainamide	Ingestion	Adv rxn	80 µg/mL
463	15 yr	Propranolol	Ingestion	Int suicide	
464‡	15 yr	Propranolol	Ingestion	Int suicide	
465‡	17 yr	Propranolol	Ingestion	Int suicide	
466	70 yr	Quinidine acetaminophen	Ingestion	Int suicide	
467‡	48 yr	Verapamil	Ingestion	Int suicide	
468	49 yr	Verapamil, sustained release	Ingestion	Int suicide	
469‡	53 yr	Verapamil, sustained release	Ingestion	Int suicide	
470	70 yr	Verapamil, sustained release	Ingestion	Int suicide	
471	70 yr	Verapamil, sustained release	Ingestion	Int suicide	
472	72 yr	Verapamil, sustained release	Ingestion	Int suicide	
473‡*	4 yr	Verapamil, sustained release acetaminophen/chlorpheniramine/ dextromethorphan/pseudoephedrine)	Ingestion	Acc gen	71.4 ng/mL, 6 h 8.7 µg/mL [§] , 4-5 h
474	39 yr	Verapamil air	Ingestion Parenteral	Int suicide	
475	48 yr	Verapamil alprazolam diazepam	Ingestion	Int suicide	
476	61 yr	Verapamil amitriptyline nitroglycerin (sustained release)	Ingestion	Int suicide	
477	32 yr	Verapamil benztropine	Ingestion	Int suicide	
478‡	17 yr	Verapamil digoxin	Ingestion	Int suicide	
479	28 yr	Verapamil ethanol alprazolam	Ingestion	Int suicide	51 µg/mL§
480	14 yr	Verapamil meclizine	Ingestion	Int suicide	
481	61 yr	Verapamil metoprolol quinidine	Ingestion	Int suicide	6.8 µg/mL§
482	42 yr	Verapamil nadolol ethanol	Ingestion	Int suicide	
483‡	70 yr	Verapamil naproxen	Ingestion	Int suicide	
484†	60 yr	Verapamil propranolol	Ingestion	Adv rxn	
485	27 yr	Verapamil propoxyphene chlordiazepoxide	Ingestion	Int suicide norverapamil	2,300 ng/mL 750 ng/mL

See cases 250 (anithypertensive, unknown type); 450 (amiodarone); 453 (calcium channel blocker, unknown type); 459 (captopril); 432, 433, 478 (digoxin); 451 (diltiazem); 460 (enalapril); 530 (labetolol); 253 (lisinopril); 481 (metoprolol); 482 (nadolol); 457 (nifedipine); 475 (nitroglycerin); 354 (piroxicam); 307, 374, 484 (propranolol); 481 (quinidine); 22 (triamterene); 354, 440, 458, 460 (verapamil).

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
Cold and cough preparations					
486	50 yr	Cold medicine (acetaminophen, pseudoephedrine, doxylamine, dextromethorphan)	Ingestion	Int abuse	
487	35 yr	Phenylpropranolamine/clemastine cold preparation	Ingestion	Int suicide	20.6 µg/mL, 72 h
See also case 477 (acetaminophen/chlorpheniramine/dextromethorphan/pseudoephedrine).					
Electrolytes and minerals					
488*	22 mo	Iron tablets	Ingestion	Acc gen	4,674 µg/dL
489‡	32 yr	Potassium chloride	Ing/Inh	Acc occup	
490*	15 mo	Sodium bicarbonate	Ing/paren	Acc misuse	sodium
491*	73 yr	ferrous sulfate tablets Stannous fluoride solution	Ingestion	Acc misuse	187 mEq/L 655 µg/dL 655 µg/dL 0.26 µg/mL, 192 h
See also cases 490 (ferrous sulfate tablets); 208 (iron).					
Gastrointestinal preparations					
492‡*	14 mo	Diphenoxylate/atropine	Ingestion	Acc gen	
493†	70 yr	Magnesium citrate	Ingestion	Int misuse	12 mEq/L
494*	Unk	Sucralfate	Parenteral	Acc misuse	
Hormones and hormone antagonists					
495	58 yr	Corticotropin gel	Parenteral	Adv rxn	
496‡*	29 yr	Insulin	Parenteral	Int suicide	
497	60 yr	cocaine Metformin	Ingestion	Adv rxn	
498	37 yr	Methylprednisone	Parenteral	Adv rxn	
See also cases 22 (estrogen); 388 (glyburide).					
Miscellaneous drugs					
499†	3 yr	Ipecac syrup	Ingestion	Int misuse	
500‡*	27 yr	Trichosanthin	Parenteral	Int unknown	
See also cases 427 (activated charcoal); 1, 371, 512 (disulfuram); 263 (quinine).					
Muscle relaxants					
501†	48 yr	Carisoprodol acetaminophen	Ingestion	Int abuse	
502	19 yr	Cyclobenzaprine	Ingestion	Int suicide	14.4 µg/dL
See also cases 272 (carisoprodol); 223, 340, 370 (cyclobenzaprine).					
Sedative/hypnotic and antipsychotic agents					
503*	56 yr	Alprazolam	Ingestion	Int suicide	
504	71 yr	Alprazolam fluoxetine diflunisal	Ingestion	Int suicide	
505	65 yr	Barbiturates benzodiazepines salicylates	Ingestion	Unknown	18 mg/dL
506	28 yr	Chloral hydrate	Ingestion	Int suicide	
507	30 yr	Chloral hydrate	Ingestion	Int suicide	
508	37 yr	Chloral hydrate	Ingestion	Int suicide	
509‡	50 yr	Chloral hydrate ethanol	Ingestion	Int suicide	44 mg/dL 330 mg/dL
510‡	38 yr	Chloral hydrate	Ingestion	Int suicide	<0.02 µg/mL§ 216 µg/mL§
511‡	49 yr	haloperidol temazepam Chlorazepate	Ingestion	Int suicide	<0.02 µg/mL§

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
512	25 yr	Chlordiazepoxide disulfuram ethanol	Ingestion	Int suicide	
513	60 yr	Chlorpromazine	Ingestion	Acc misuse	
514	29 yr	Chlorpromazine doxepin	Ingestion	Int suicide	
515	30 yr	Chlorpromazine fluphenazine	Ingestion	Adv rxn	
516‡	35 yr	Chlorpromazine temazepam	Ingestion	Int suicide	
517‡	38 yr	Diazepam acetaminophen/propoxyphene alprazolam	Ingestion	Int suicide	
518	54 yr	Diazepam propoxyphene	Ingestion	Int unknown	
519	54 yr	Diazepam temazepam	Ingestion	Int suicide	
520	39 yr	Ethchlorvynol amitriptyline diazepam	Ingestion	Int suicide	406 µg/mL
521‡	28 yr	Ethchlorvynol diazepam	Ingestion	Int unknown	16,000 ng/mL 2.5 mg/dL§
522	51 yr	Flurazepam chlorambucil ciprofloxacin	Ingestion	Int suicide	
523	42 yr	Flurazepam alprazolam	Ingestion	Int suicide	
524‡*	36 yr	Pentobarbital euthanasia solution	Parenteral	Int suicide	42 µg/mL
525	79 yr	Perphenazine aspirin acetaminophen	Ingestion	Int suicide	
526	37 yr	Phenobarbital	Ingestion	Int suicide	125 µg/mL
527	58 yr	Phenobarbital	Ingestion	Int suicide	232 µg/mL
528	36 yr	Phenobarbital phenytoin	Ingestion	Int suicide	55.9 µg/mL, 8-12 h 22.3 µg/mL, 8-12 h
529	36 yr	Phenobarbital ethanol phenytoin	Ingestion	Int suicide	104 µg/mL, 1.5 h 86 mg/dL, 1.5 h 9 µg/mL, 1.5 h
530†	76 yr	Phenobarbital labetolol diazepam	Ingestion	Int unknown	140 µg/mL
531‡	30 yr	Secobarbital cocaine diazepam	Ingestion	Int suicide	
532	48 yr	Secobarbital triazolam	Ingestion	Int unknown	
533‡	54 yr	Secobarbital/amobarbital acetaminophen diphenhydramine	Ingestion	Int suicide	424 µg/mL, >2 h 1 µg/mL
534	69 yr	Temazepam	Ingestion	Int suicide	
535	72 yr	Temazepam	Ingestion	Int unknown	
536	68 yr	Temazepam thiethylperazine propoxyphene	Ingestion	Int suicide	
537	65 yr	Thioridazine	Ingestion	Int suicide	
538	50 yr	Thioridazine temazepam	Ingestion	Int suicide	
539	67 yr	Thioridazine lithium	Ingestion	Int suicide	0.3 mEq/L

See also cases 248, 297, 350, 352, 367, 384, 474, 479, 517, 523 (alprazolam); 208, 344, 564 (barbiturates); 30, 224, 398, 505 (benzodiazepines); 313, 317 (buspirone); 222 (butalbital); 306 (clonazepam); 368, 430, 485 (chlordiazepoxide); 297, 299, 385 (chlorpromazine); 15, 212, 273, 274, 313, 369, 474, 520, 521, 530, 531 (diazepam); 259, 279, 356, 515 (fluphenazine); 212 (flurazepam); 510 (haloperidol); 259, 305, 340, 341, 438 (lorazepam); 342, 289, 576 (mesoridazine); 397 (molindone); 351, 353, 390 (perphenazine); 204, 282 (phenobarbital); 255 (sleep aid with diphenhydramine); 305, 308, 510, 516, 619, 538 (temazepam); 536 (thiethylperazine); 320, 375 (thioridazine); 221, 532 (triazolam); 393 (trifluoperazine).

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
Serums, toxoids and vaccines					
540*	27 yr	Crotalid antivenin crotalus viridus viridus	Parenteral	Adv rxn	
Stimulants and street drugs					
541‡	18 yr	Caffeine ethanol	Ingestion	Int suicide	202.4 µg/mL 142 mg/dL
542‡	31 yr	Caffeine	Ingestion	Int suicide	306 µg/mL
543‡	30 yr	Caffeine (diet aid) ethanol	Ingestion	Int unknown	210 µg/mL§
544‡	23 yr	Cocaine	Ingestion	Int misuse	
545	25 yr	Cocaine (crack)	Ingestion	Int abuse	
546	25 yr	Cocaine	Parenteral	Int abuse	
547‡	25 yr	Cocaine	Unknown	Int abuse	0.70 µg/mL§
				benzoylecgonine	2.2 µg/mL§
548‡	27 yr	Cocaine	Parenteral	Int abuse	
549	27 yr	Cocaine	Inhalation	Int abuse	
550‡	28 yr	Cocaine	Inhalation	Int abuse	
551‡†*	28 yr	Cocaine (crack)	Ingestion	Int abuse	<0.010 µg/mL§
552	30 yr	Cocaine	Ingestion	Int abuse	
553*	32 yr	Cocaine	Unknown	Int abuse	
554	34 yr	Cocaine	Unknown	Int abuse	
555	36 yr	Cocaine	Unknown	Unknown	
556	39 yr	Cocaine	Unknown	Int abuse	
557	39 yr	Cocaine	Unknown	Int abuse	
558‡	42 yr	Cocaine	Parenteral	Int abuse	0.34 µg/mL
				benzoylecgonine	1.7 µg/mL
559	46 yr	Cocaine	Unknown	Unknown	
560‡	47 yr	Cocaine	Unknown	Int abuse	
561‡	50 yr	Cocaine	Ingestion	Int abuse	
562	33 yr	Cocaine (crack) acetaminophen acetaminophen/diphenhydramine	Inhalation Ingestion	Int suicide	0.15 µg/mL
563	18 yr	Cocaine aspirin-butalbital/caffeine desipramine	Ingestion	Unknown	76.8 mg/dL¶
564‡	20 yr	Cocaine	Parenteral	Int abuse	3.17 µg/mL§
				benzoylecgonine	3.95 µg/mL§
		barbiturates marijuana			
565‡	35 yr	Cocaine desipramine ethanol	Inhalation Ingestion	Int abuse	400 ng/mL 85 mg/dL
566‡	25 yr	Cocaine ethanol	Parenteral	Int abuse	4.8 µg/mL§ 90 mg/dL
567	25 yr	Cocaine ethanol	Ingestion	Int abuse	
568*	28 yr	Cocaine ethanol	Inhalation	Int abuse	
569	29 yr	Cocaine ethanol	Inhalation	Int abuse	84 mg/dL
570‡	26 yr	Cocaine	Parenteral	Int abuse	
571	30 yr	Cocaine heroin methadone	Parenteral	Int unknown	
				methadone metabolites	0.4 µg/mL§ 0.08 µg/mL§

(Continued on following page)

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

Case No.	Age	Substances	Route of Exposure	Reason	Blood Levels
572	27 yr	Cocaine heroin naproxen	Ing/Paren	Unknown	
573‡	25 yr	Cocaine marijuana	Unknown	Int unknown	
574‡*	20 yr	Cocaine marijuana ethanol	Ingestion	Int misuse	
575	34 yr	Cocaine opiates ethanol	Ing/Paren	Int abuse	
576‡	26 yr	Cocaine phenelzine mesoridazine	Unknown	Unknown	
577	32 yr	Cocaine phentermine methadone	Unknown	Unknown	
578	27 yr	Cocaine phenylpropanolamine diphenhydramine	Ing/Inh	Int abuse	
579‡	43 yr	Heroin	Unknown	Int unknown	
580‡	30 yr	Heroin phencyclidine	Unknown	Int abuse	
581‡	16 yr	Methamphetamine	Unknown	Int abuse	
582	31 yr	Methamphetamine	Parenteral	Int abuse	
583*	>17 yr	Methamphetamine	Unknown	Int abuse	1.6 mg/dL§
584	25 yr	Methylphenidate	Parenteral	Int abuse	
585‡	21 yr	Phencyclidine	Unknown	Int abuse	
586‡	13-17 yr	Unknown street drug	Ingestion	Int abuse	
See also cases 44, 54, 169, 263, 380, 496, 531 (cocaine); 2, 44, 570, 571, 572 (heroin); 129, 564, 573, 574 (marijuana); 52, 129, 434, 580 (phencyclidine); 577 (phentermine); 578 (phenylpropanolamine).					
Topical					
587	59 yr	Methyl salicylate (35%)	Ingestion	Unknown	67 mg/dL
588	46 yr	Oil of wintergreen (98% methyl salicylate) ethanol	Ingestion	Int misuse	128 mg/dL, 11-12 h 182 mg/dL, <12 h
589*	70 yr	Oil of wintergreen	Ingestion	Acc gen	68 mg/dL
590*	75 yr	Oil of wintergreen	Ingestion	Int suicide	80.6 mg/dL, 0.75 h
Unknown drug See also case 4 (unknown drugs).					

* Abstract of case provided in appendix.

† Chronic exposure.

‡ Prehospital (cardiac and/or respiratory) arrest.

§ Level obtained postmortem.

¶ Acetaminophen level.

‡ Aspirin 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
Adhesives/Glues													
Cyanoacrylates	8033	3476	1149	3308	7956	67	4	1790	1751	2724	193	4	0
Epoxy	698	345	31	315	695	1	2	232	231	227	29	1	0
Toluene/xylene	2579	2051	294	226	2520	55	0	339	923	632	15	2	0
Nontoxic (white glue, etc)	1341	987	241	103	1311	25	3	70	434	108	0	0	0
Unknown	5031	2843	95	1551	4904	67	56	755	1626	1054	59	3	0
Category Total	17682	9702	2310	5503	17386	215	65	3186	4965	4745	296	10	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
Alcohols													
Ethanol (beverage)	8943	649	961	7242	1722	6890	124	7098	1055	3504	849	131	30
Ethanol (other)	15558	4296	1462	9549	6762	8314	132	9156	3203	5022	1195	187	9
Higher alcohols	158	57	20	77	153	5	0	62	47	59	5	0	0
Isopropanol	6203	4378	372	1403	5657	509	4	1565	2509	1373	140	17	4
Methanol	1099	378	100	610	982	91	1	614	394	336	49	14	7
Rubbing alcohol: unknown type	72	47	4	21	61	11	0	23	31	10	2	0	0
Rubbing ethanol: with methylsalicylate	42	30	4	8	40	2	0	17	20	9	0	0	0
Rubbing ethanol: other	539	423	29	79	500	35	0	86	294	95	6	2	0
Rubbing isopropanol: with methylsalicylate	246	181	20	45	223	20	0	84	113	51	9	0	0
Rubbing isopropanol: other	9054	6884	540	1571	8344	662	3	1926	3880	1619	125	14	2
Other alcohol	287	218	18	48	268	16	0	54	87	62	5	1	0
Unknown alcohol	1338	200	150	963	448	856	7	929	161	476	120	18	1
*Category Total	43539	17741	3680	21616	25160	17411	271	21614	11794	12616	2505	384	53
Arts/Crafts/Office Supplies													
Artist paints, non-water color	846	679	68	93	835	9	1	66	343	92	1	0	0
Chalk	1713	1568	82	54	1702	9	1	37	645	60	3	0	0
Clay	1066	936	59	60	1062	3	0	58	312	70	2	0	0
Crayon	1748	1591	99	48	1735	12	1	44	525	61	2	0	0
Glazes	281	146	19	113	275	3	1	63	100	36	4	0	0
Office supplies miscellaneous	176	100	16	59	175	1	0	30	62	44	0	0	0
Pencil	2641	1584	818	221	2611	27	0	143	593	350	5	0	0
Pens/ink	11086	8756	1774	485	11003	69	6	383	3648	560	21	2	0
Typewriter correction fluid	1760	1068	394	283	1589	163	2	320	621	499	21	1	3
Water color	1888	1633	118	127	1866	15	5	66	673	70	1	0	0
Other	4474	3755	280	410	4448	23	1	207	1363	302	17	0	0
Unknown	448	364	51	29	441	6	0	20	148	25	0	0	0
*Category Total	28127	22180	3778	1982	27742	340	18	1437	9033	2169	77	3	3
Auto/Aircraft/Boat Products													
Ethylene glycol	2530	600	189	1707	2415	97	5	1002	791	777	91	17	6
Glycols: other	1258	420	74	750	1222	34	0	492	353	514	46	1	0
Glycol and methanol	46	16	7	22	46	0	0	20	12	22	2	0	0
Hydrocarbons	1941	996	163	764	1890	43	0	514	653	757	39	1	0
Methanol	1194	485	114	580	1130	61	0	579	497	387	36	8	3
Nontoxic	43	37	2	3	43	0	0	6	18	5	0	0	0
Other	1408	625	172	601	1380	25	1	483	370	645	53	0	0
Unknown	163	64	13	83	160	3	0	77	33	82	8	0	0
*Category Total	8583	3243	734	4510	8286	263	6	3172	2727	3189	275	27	9
Batteries													
Dry cell batteries	2654	1714	570	347	2591	56	1	448	874	901	45	5	0
Automotive batteries	1474	253	138	1073	1459	9	4	570	198	822	99	3	0
Disc batteries: alkaline (MnO ₂)	138	96	30	11	137	1	0	76	86	32	1	0	0
Disc batteries: lithium	36	18	8	10	36	0	0	25	17	11	0	0	0
Disc batteries: mercuric oxide	109	57	14	38	106	3	0	83	84	10	1	0	0
Disc batteries: nickel cadmium	6	1	2	3	6	0	0	3	1	1	0	0	0
Disc batteries: silver oxide	45	33	8	4	44	1	0	33	40	0	1	0	0
Disc batteries: other	134	89	11	33	131	3	0	102	102	8	1	0	0
Disc batteries: unknown	1448	1049	268	116	1425	19	1	1053	928	85	8	0	0
Other	158	103	30	22	154	4	0	28	62	51	1	0	0
Unknown	52	30	13	8	51	1	0	20	15	16	1	0	0
*Category Total	6254	3443	1092	1665	6140	97	6	2441	2407	1937	158	8	0
Bites and Envenomations													
Coelenterate	463	77	155	227	459	0	4	103	19	205	39	1	0
Fish	1151	55	153	924	1140	2	6	464	64	639	103	1	0
Insects													
Ant/fire ant	2020	922	235	854	1993	3	23	325	101	1293	88	2	0
Bee/wasp/hornet	17401	4354	4021	8877	17196	13	186	3174	841	11959	587	14	3
Caterpillar	576	109	120	346	572	1	3	40	24	260	3	0	0
Centipede/millipede	38	16	6	16	38	0	0	1	5	20	1	0	0
Mosquito	409	186	70	152	405	0	4	72	15	295	14	0	0
Scorpion	4955	432	878	3616	4953	0	2	555	263	3480	211	7	0
Tick	3231	971	760	1468	3210	0	13	813	859	814	33	2	0
Other insect	5227	1410	859	2900	5165	7	50	1527	387	3184	175	1	0
Mammals													
Bat	87	13	16	54	86	0	1	61	23	14	4	0	0
Cat	388	77	79	225	388	0	0	172	35	192	7	1	0
Dog	632	176	210	237	627	0	2	280	64	306	26	1	0
Fox	1	0	0	1	1	0	0	1	0	0	0	0	0
Human	73	33	18	21	69	3	0	20	10	28	2	0	0
Raccoon	35	3	6	25	35	0	0	20	2	15	0	0	0
Rodents/lagomorphs	1166	362	441	343	1162	1	3	220	158	473	1	0	0
Skunk	113	8	34	67	112	0	1	24	9	55	3	0	0
Other mammal	523	137	145	231	517	1	3	184	72	196	4	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
Reptile: other/unknown	556	296	148	106	551	2	3	81	112	186	1	0	0
Snakes													
Rattlesnake	407	38	57	308	399	4	1	372	30	122	140	40	1
Copperhead	257	23	47	184	255	0	1	243	12	128	81	5	0
Coral	17	0	3	12	17	0	0	17	0	9	3	0	0
Cottonmouth	33	1	12	20	33	0	0	31	6	12	7	3	0
Crotalid: unknown	5	0	0	5	5	0	0	4	2	1	2	0	0
Exotic snakes: non- poisonous	195	11	44	138	195	0	0	83	16	91	2	0	0
Exotic snakes: poisonous	67	8	15	43	65	1	1	46	6	27	12	3	0
Exotic snake: unknown if poisonous	8	1	1	5	8	0	0	4	2	3	0	0	0
Non-poisonous snake	523	65	283	170	521	2	0	100	111	245	3	0	0
Unknown snake	1783	190	664	901	1769	3	8	930	338	836	95	18	0
Spiders													
Black widow	2350	331	306	1678	2345	0	2	779	401	1200	237	11	0
Brown recluse	1111	139	141	820	1100	1	8	658	50	494	172	10	0
Other spider	196	44	37	113	194	1	0	37	22	121	3	0	0
Unknown insect or spider	12713	2804	1999	7806	12631	6	64	3001	702	7670	496	8	0
Tarantula bite/envenomation	40	3	10	25	39	0	1	8	5	23	0	0	0
*Category Total	58750	13295	11973	32918	58255	51	390	14450	4768	34596	2555	128	4
Building/Construction Products													
Caulking compounds and putties	1901	1617	54	220	1895	4	0	126	719	155	19	0	0
Cement, concrete (excluding glues)	1135	382	47	697	1126	5	2	572	219	456	146	6	0
Insulation: asbestos	419	45	34	331	416	2	0	115	81	84	4	2	0
Insulation: fiberglass	1033	542	85	395	1013	13	5	145	257	344	24	1	0
Insulation: urea/formaldehyde	106	44	6	55	106	0	0	25	25	32	7	0	0
Insulation: other	170	78	15	77	170	0	0	28	42	51	3	0	0
Insulation: unknown	96	50	6	38	95	0	1	23	24	28	3	0	0
Soldering flux	332	159	36	133	330	2	0	110	103	113	14	0	0
Other	1110	795	49	257	1104	5	1	160	340	177	24	0	0
Unknown	79	30	2	46	78	1	0	27	17	31	0	0	0
*Category Total	6381	3742	334	2249	6333	32	9	1331	1827	1471	244	9	0
Chemicals (excluding specific uses of these chemicals listed elsewhere in this table)													
Acetone	1311	531	97	665	1249	48	2	463	285	510	31	4	0
Acids: hydrofluoric	1032	92	34	894	1021	7	1	822	97	507	242	11	0
Acids: hydrochloric	2474	214	320	1894	2408	50	1	1111	309	1334	167	6	3
Acids: other	4262	786	387	3003	4176	63	6	2100	740	2148	303	15	3
Acids: unknown	558	60	57	429	542	15	0	288	57	284	46	1	1
Alkali	5917	2491	572	2781	5814	65	13	2450	1397	2374	528	31	0
Ammonia	5152	1749	556	2778	4955	175	6	1948	837	2478	317	11	1
Borates/boric acid	2487	1588	187	686	2369	98	5	520	817	316	25	3	0
Chlorates	39	20	4	14	39	0	0	10	18	11	0	0	0
Cyanide	1017	108	89	785	938	42	28	448	327	189	28	5	9
Dioxin	17	1	3	12	17	0	0	6	2	2	1	0	0
Formaldehyde/formalin	1329	301	189	826	1272	43	9	559	281	550	38	2	1
Glycol: ethylene	500	136	55	298	436	52	1	248	155	150	36	15	3
Glycol: other	1972	1233	106	609	1922	26	17	494	565	481	39	5	0
Ketones	1207	388	58	745	1189	10	4	624	255	579	66	5	1
Methylene chloride	1376	310	144	913	1355	15	1	653	228	744	71	1	0
Nitrates and nitrites	780	252	192	325	732	37	3	252	235	223	17	3	0
Phenol/creosote	1320	266	97	938	1289	13	16	633	202	641	121	2	0
Strychnine	20	3	2	15	11	7	0	15	4	2	1	0	1
Toluene diisocyanate	635	61	34	533	633	0	1	315	89	312	55	2	0
Other	17116	7448	1772	7728	15731	815	297	6374	3861	4505	581	56	4
Unknown	2490	1474	254	732	2416	13	51	410	758	343	30	1	0
*Category Total	53011	19512	5209	27603	50514	1594	462	20743	11519	18683	2743	179	27
Cleaning Substances (Household)													
Ammonia cleaners	4344	2332	287	1697	4217	104	7	985	1235	1537	95	3	1
Automatic dishwasher: alkali	6613	5841	145	611	6581	23	1	372	3311	1126	42	2	0
Automatic dishwasher: anionic/nonionic	41	309	6	24	339	1	1	19	156	46	1	0	0
Automatic dishwasher: other/unknown	1329	1130	43	149	1324	4	0	115	680	254	7	3	0
Bleaches: borate	664	440	32	190	642	12	9	125	249	179	11	0	0
Bleaches: hypochlorite	31009	14858	2300	13579	30075	792	49	6960	7187	12389	714	15	1
Bleaches: other non- hypochlorite	935	560	62	303	917	10	5	136	266	303	10	0	0
Bleaches: other/unknown	461	311	24	123	446	10	2	65	139	136	3	0	0
Cleaners: anionic/nonionic	7443	6065	324	1026	7306	121	6	628	2838	1477	50	0	0
Cleaners: other/unknown	1507	1039	78	377	1470	30	3	266	562	405	28	0	0
Disinfectants: hypochlorite	2826	1105	385	1315	2781	35	5	802	591	1341	113	3	0
Disinfectants: phenol	3360	2317	235	786	3173	173	3	641	1085	941	65	3	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
Disinfectants: pine oil	9595	7631	413	1490	9278	289	8	2037	4057	2159	137	8	2
Disinfectants: other/unknown	1021	551	80	376	991	25	2	307	301	342	30	1	0
Drain cleaners: acid	647	74	41	521	629	15	0	297	69	384	63	4	3
Drain cleaners: alkali	2279	611	169	1465	2099	165	1	1040	364	1077	204	31	3
Drain cleaners: other/unknown	147	30	13	101	138	9	0	58	26	50	8	2	1
Fabric softeners: cationic	1170	1008	47	105	1146	16	8	82	454	163	3	1	0
Fabric softener: other/unknown	53	45	1	7	50	2	1	6	21	12	0	0	0
Glass cleaners: ammonia	1598	1266	106	219	1564	33	0	150	575	396	17	0	0
Glass cleaners: anionic/ nonionic	32	25	1	6	30	2	0	5	14	10	1	0	0
Glass cleaners: isopropanol	1821	1507	108	197	1797	23	0	140	606	360	8	0	0
Glass cleaners: other/unknown	5441	4561	325	526	5343	89	2	412	1988	1164	27	2	0
Hand dishwashing: anionic/ nonionic	8246	6165	499	1533	8158	61	16	374	2211	2597	37	3	0
Hand dishwashing: other/ unknown	1277	857	107	304	1258	16	2	92	347	365	9	0	0
Laundry detergents: anionic/ nonionic	6994	5807	231	925	6895	73	19	685	2324	1955	54	1	0
Laundry detergents: alkali	4070	3548	111	397	4017	28	23	603	1474	1327	54	5	0
Laundry detergents: other/ unknown	1812	1434	80	293	1758	23	26	254	645	548	31	2	0
Miscellaneous cleaner: acid	554	264	30	254	543	10	1	190	182	207	19	0	1
Miscellaneous cleaner: alkali	7981	4461	601	2842	7781	176	13	2535	2166	3142	341	25	2
Miscellaneous cleaner: anionic/ nonionic	8248	5968	485	1739	7994	124	112	1180	2523	2116	88	2	0
Miscellaneous cleaner: cationic	3451	2126	234	1061	3357	72	10	876	1158	1005	100	6	1
Miscellaneous cleaner: ethanol	333	244	30	57	320	13	0	68	116	97	4	0	0
Miscellaneous cleaner: glycols	1433	1130	84	210	1419	10	2	173	474	358	14	1	0
Miscellaneous cleaner: isopropanol	677	512	33	128	669	6	1	92	277	152	6	0	0
Miscellaneous cleaner: methanol	64	43	2	19	63	1	0	14	28	10	2	0	0
Miscellaneous cleaner: phenol	8	3	1	4	8	0	0	1	3	3	0	0	0
Miscellaneous cleaner: other/ unknown	2852	1781	194	854	2773	52	16	627	934	775	61	2	1
Oven cleaner: acid	11	1	1	9	11	0	0	7	1	6	1	1	0
Oven cleaner: alkali	3411	1051	294	2031	3348	43	10	1503	444	1810	325	12	0
Oven cleaner: detergent type	2	2	0	0	2	0	0	0	0	1	0	0	0
Oven cleaner: other/unknown	238	69	16	150	232	5	0	109	41	103	20	2	0
Rust remover: alkali	45	19	5	21	43	1	1	4	18	11	2	1	0
Rust remover: anionic/nonionic	1	0	1	0	1	0	0	0	0	1	0	0	0
Rust remover: hydrofluoric acid	1211	144	78	984	1191	18	1	831	119	707	242	13	1
Rust remover: other acid	335	195	14	119	330	5	0	75	109	98	8	0	0
Rust remover: other/unknown	199	57	11	130	196	2	1	42	45	82	4	1	0
Spot/dry cleaning: anionic/ nonionic	1103	877	40	180	1100	3	0	118	448	311	8	0	0
Spot/dry cleaning: glycol	73	56	3	14	73	0	0	11	31	22	0	0	0
Spot/dry cleaning: perchloroethylene	115	67	11	37	111	4	0	40	37	26	1	0	0
Spot/dry cleaning: other halogenated hydrocarbon	123	60	8	54	117	5	0	40	31	46	4	0	0
Spot/dry cleaning: isopropanol	20	15	1	4	20	0	0	5	4	7	0	0	0
Spot/dry cleaning: other nonhalogenated hydrocarbon	272	188	20	64	265	6	1	31	113	82	2	0	0
Spot/dry cleaning: other/ unknown	176	103	12	60	173	3	0	46	55	50	5	0	1
Starch/fabric finishes/sizing	674	571	43	54	659	14	1	29	233	74	5	0	0
Toilet bowl cleaner: acid	3017	1332	205	1452	2904	106	2	910	804	1363	129	2	4
Toilet bowl cleaner: alkali	243	177	8	56	242	1	0	31	110	48	3	0	0
Toilet bowl cleaner: other/ unknown	2030	1699	60	262	2009	17	1	193	786	233	15	4	0
Wall/floor/tile cleaner: acid	3457	1575	168	1686	3411	40	3	887	972	1528	142	4	0
Wall/floor/tile cleaner: alkali	3583	1908	177	1465	3505	62	7	1067	873	1628	161	8	1
Wall/floor/tile cleaner: anionic/nonionic	1463	1110	64	277	1442	10	9	145	515	359	14	0	0
Wall/floor/tile cleaner: cationic	506	357	29	119	498	8	0	85	164	112	0	0	0
Wall/floor/tile cleaner: ethanol	5	3	0	2	5	0	0	2	2	0	0	0	0
Wall/floor/tile cleaner: glycols	477	348	22	104	468	7	0	65	165	105	4	0	0
Wall/floor/tile cleaner: isopropanol	399	352	15	30	387	10	1	39	163	85	2	0	0
Wall/floor/tile cleaner: methanol	7	6	0	1	7	0	0	4	2	4	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
Wall/floor/tile cleaner: other/ unknown	735	448	55	222	719	11	2	195	246	234	19	0	0
*Category Total	156567	100749	9308	45400	152818	3029	394	29926	48167	50044	3573	173	24
Industrial Cleaners													
Acids	915	158	63	683	895	18	0	489	146	512	84	4	0
Alkali	1567	324	127	1102	1532	24	2	973	248	758	206	12	1
Anionic/nonionic	258	82	25	148	245	9	1	113	59	113	17	1	0
Cationic	363	54	40	265	344	17	0	208	65	190	27	0	0
Other/unknown	982	186	86	696	945	31	2	535	149	508	73	5	0
*Category Total	4085	804	341	2894	3961	99	5	2318	667	2081	407	22	1
Cosmetics/Personal Care Products													
Bath oil, bubble bath	4936	4630	160	133	4905	18	10	176	1735	736	8	0	0
Creams, lotions, make-up	12367	10601	481	1215	12118	143	83	629	4162	1075	31	3	0
Dental: false teeth cleaning	1017	260	67	681	1002	13	0	123	395	151	4	1	0
Dental: toothpaste with fluoride	1392	1132	107	146	1315	40	33	101	464	371	15	0	0
Dental: toothpaste without fluoride	116	94	8	13	116	0	0	4	31	24	0	0	0
Dental: other	399	273	41	84	392	2	4	47	120	82	0	0	0
Deodorants	8294	7335	337	583	8171	97	14	360	2574	1132	23	0	0
Depilatories	466	193	69	198	408	20	37	129	112	205	21	0	0
Douches	279	191	7	80	263	6	10	51	101	45	3	0	0
Eye products	989	866	17	102	979	4	6	57	324	84	5	0	0
Hair coloring agents	919	465	51	393	854	13	48	249	245	325	46	1	0
Hair sprays	4682	3330	691	635	4445	215	8	519	1464	1431	40	2	0
Hair rinses, conditioners, relaxers	2393	1911	133	336	2321	39	22	409	885	473	48	1	0
Hair: shampoos	8556	7224	414	866	8352	154	35	605	2886	1906	41	4	0
Hair care: other	2667	1667	175	803	2557	47	57	667	799	736	98	4	0
Lipsticks, lip balms, with camphor	463	417	26	19	458	3	2	16	161	51	1	0	0
Lipsticks, lip balms, without camphor	2117	2036	45	26	2105	9	3	26	583	99	1	0	0
Mouthwash: ethanol	3916	2494	506	902	3526	362	12	656	1531	775	73	11	0
Mouthwash: non ethanol	459	309	79	68	423	28	7	136	173	106	7	0	0
Mouthwash: fluoride	1185	868	235	75	1166	14	5	56	503	115	3	0	0
Mouthwash: unknown	84	34	32	18	76	7	1	9	32	25	0	0	0
Nail polish	8220	7581	310	287	8157	56	1	592	2933	1915	25	2	0
Nail polish remover: acetone	5056	4251	305	466	4926	115	4	743	2288	937	23	0	0
Nail polish remover: other	1154	939	81	127	1129	24	0	112	496	222	1	0	0
Nail polish remover: unknown	2886	2278	209	380	2793	85	4	464	1098	575	23	1	0
Nail products, miscellaneous	1991	1572	87	320	1963	16	9	425	666	574	55	2	0
Perfume, cologne, aftershave	30278	28188	838	1159	29955	290	10	1919	13033	4278	66	1	0
Peroxide	8557	5073	669	2717	8291	229	17	727	2619	1917	75	3	0
Powders: talc	2497	2275	100	112	2457	24	13	297	765	722	18	3	0
Powders: without talc	799	772	15	11	793	3	3	33	232	151	2	0	0
Soaps	8015	6757	344	879	7849	107	49	517	2602	1662	40	1	0
Suntan/sunscreen products	3058	2566	202	274	3008	6	42	244	863	954	16	0	0
*Category Total	130207	108582	6841	14108	127273	2189	549	11098	46875	23854	812	40	0
Deodorizers (Not for Personal Use)													
Air freshener	9000	8141	344	480	8945	43	9	513	3613	1077	18	1	0
Diaper pail	1399	1361	26	8	1395	2	0	57	670	87	0	0	0
Toilet bowl	1039	985	11	35	1034	4	1	85	458	86	4	0	0
Other	2279	1805	119	326	2245	25	3	393	907	467	18	1	0
Unknown	179	141	9	27	174	3	0	34	75	44	1	0	0
*Category Total	13896	12433	509	876	13793	77	13	1082	5723	1761	41	2	0
Dyes													
Chlorate-containing	2	1	1	0	2	0	0	0	1	0	0	0	0
Fabric	527	434	33	56	523	0	3	41	218	47	0	0	0
Food (eg, easter egg)	1265	1135	84	39	1246	12	5	35	461	70	4	0	0
Leather	169	132	10	24	159	10	0	26	70	24	1	0	0
Other	436	318	56	60	431	4	1	49	179	39	4	0	0
Unknown	102	69	11	20	98	1	3	16	29	15	1	0	0
*Category Total	2501	2089	195	199	2459	27	12	167	958	195	10	0	0
Essential Oils	2427	1721	389	306	2295	115	12	436	690	1064	24	2	0
Fertilizers													
Household plant food	3722	2717	337	646	3703	15	2	153	1462	183	7	0	0
Outdoor fertilizers	1720	1253	139	310	1715	4	1	160	669	174	12	0	0
Plant hormones	67	30	5	32	64	1	2	20	16	5	0	1	0
Other	564	385	54	117	559	3	0	31	215	55	0	0	0
Unknown	1507	1065	140	281	1494	9	3	147	554	209	15	0	0
*Category Total	7580	5450	675	1386	7535	32	8	511	2916	626	34	1	0
Fire Extinguishers	1869	264	409	1154	1807	52	2	598	396	828	39	0	0
Food Products/Food Poisoning	48336	13029	5812	28882	41261	322	6509	5804	8136	14324	987	15	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
Foreign Bodies/Toys/Miscellaneous													
Ashes	726	669	23	33	720	6	0	39	206	81	2	0	0
Bubble blowing solutions	2667	2530	105	25	2664	1	0	53	820	674	10	0	0
Charcoal	763	678	18	64	743	9	6	34	269	67	3	0	1
Christmas ornaments	1473	1358	60	47	1467	5	1	102	498	122	3	0	0
Coins	5316	4586	599	106	5291	22	0	1696	2097	598	39	0	0
Desiccants	11343	10232	667	358	11284	44	4	428	3587	218	4	1	0
Diapers/urine	1747	1559	49	123	1735	8	3	91	541	118	4	2	0
Glass	1205	629	116	449	1184	10	9	155	377	123	5	1	0
Incense, punk	331	309	11	9	328	2	0	17	121	30	1	0	0
Soil	1762	1627	39	85	1753	6	2	69	607	111	7	0	0
Thermometer	11555	6645	3202	1617	11493	53	4	591	3764	352	5	1	0
Toys	3623	3150	375	80	3612	7	3	199	1286	252	11	0	1
Other	13577	9494	2417	1566	13389	117	56	1792	4434	1899	73	2	0
Unknown	268	186	35	44	260	4	4	68	110	29	4	0	0
*Category Total	56356	43652	7716	4606	55923	294	92	5334	18717	4674	171	7	2
Fumes/Gases/Vapors													
Carbon dioxide	328	42	81	198	304	20	2	121	53	130	8	1	1
Carbon monoxide	6889	830	857	5066	6613	223	8	4216	671	3314	629	89	24
Chloramine	1550	79	72	1389	1524	24	0	491	92	959	96	0	0
Chlorine: acid mixed with hypochlorite	430	16	42	371	423	6	0	122	32	299	23	0	1
Chlorine: other	4876	553	825	3433	4802	39	17	1992	472	3058	357	11	0
Hydrogen sulfide	769	70	58	621	764	2	1	347	94	326	54	8	4
Methane and natural gas	1637	239	170	1197	1552	72	2	740	240	707	80	6	7
Polymer fume fever	3	2	0	1	3	0	0	0	2	0	0	0	0
Propane and other simple asphyxiants	1389	117	260	995	1258	124	0	654	167	667	79	6	2
Other	1957	206	183	1516	1911	27	6	987	274	928	163	6	7
Unknown	609	53	45	504	598	4	4	212	64	304	18	2	0
*Category Total	20437	2207	2593	15291	19752	541	40	9882	2161	10692	1507	129	46
Fungicides (Nonmedicinal)													
	1502	586	128	766	1475	17	6	442	409	442	49	5	1
Heavy Metals													
Aluminum	752	394	87	261	691	6	51	112	187	114	13	0	0
Arsenic (excluding pesticides)	524	114	34	365	439	41	1	291	106	107	21	16	2
Barium	17	2	6	9	16	0	1	11	1	6	3	1	0
Cadmium	67	8	1	58	61	2	0	42	17	12	3	0	0
Copper	738	174	212	344	705	19	5	256	159	286	35	3	0
Fireplace flame colors	15	13	1	1	14	1	0	2	7	2	0	0	0
Gold	4	2	1	1	4	0	0	0	4	0	0	0	0
Lead	2005	956	258	765	1932	32	5	752	582	223	47	4	1
Manganese	28	2	7	17	25	1	0	11	6	14	1	0	0
Mercury	2187	918	274	961	2087	74	7	504	700	231	30	9	5
Metal fume fever	1057	61	33	953	1048	7	1	378	65	598	90	0	0
Selenium	62	21	7	34	55	2	4	17	17	5	2	0	0
Silver	38	19	0	19	32	1	1	17	6	3	4	0	0
Other	828	293	95	428	803	9	14	342	200	228	49	2	0
Unknown	26	9	2	15	25	0	0	12	7	2	1	1	0
*Category Total	8348	2986	1018	4231	7937	195	90	2747	2064	1831	299	36	8
Herbicides													
Carbamate herbicide	80	12	4	62	80	0	0	34	18	37	4	0	0
2,4-D or 2,4,5-T	1671	606	154	890	1634	27	7	510	408	529	48	1	3
Diquat	105	24	24	56	102	3	0	46	22	31	6	0	0
Paraquat	134	9	7	116	124	10	0	93	24	36	7	2	1
Triazine herbicide	463	110	27	322	455	6	1	177	76	178	20	0	0
Other herbicide	72	22	6	41	69	2	1	32	22	24	3	2	0
Other	2814	791	284	1705	2770	26	4	796	726	798	69	7	2
Unknown	192	60	21	104	189	2	1	55	42	54	2	2	0
*Category total	5531	1634	527	3296	5423	76	14	1743	1338	1687	159	14	6
Hydrocarbons													
Benzene	108	25	5	76	106	2	0	56	25	31	4	0	0
Diesel fuel	1507	460	128	901	1462	37	0	437	354	682	46	0	0
Gasoline	17160	6159	3012	7868	16422	689	2	3370	4359	8326	291	14	0
Carbon tetrachloride	93	9	8	74	88	2	1	49	19	39	5	0	0
Freon and other propellants	4264	598	362	3241	4110	129	6	1260	1011	1500	99	8	15
Halogenated hydrocarbon (other)	1316	200	146	948	1206	97	3	708	213	638	63	4	4
Kerosene	3528	2510	213	784	3464	48	3	1301	1121	1289	145	16	1
Lighter fluid/naphtha	3722	2522	247	931	3580	133	3	1220	1408	1198	129	10	2
Lubricating oils/motor oils	3519	2703	212	579	3482	34	2	493	1699	574	25	2	0
Mineral seal oil	1930	1767	43	112	1902	26	1	324	1182	245	15	1	0
Mineral spirits/varsol	5570	3344	479	1691	5403	148	6	1401	1909	1845	131	9	1
Toluene/xylene	2438	714	208	1490	2285	139	5	1066	504	1055	126	10	0
Turpentine	1530	810	191	512	1368	141	6	541	437	517	33	1	0
Other	3974	2123	348	1459	3830	129	5	1274	1294	1276	138	7	7
Unknown	7957	5287	462	2152	7812	117	13	2232	3136	2265	253	17	1
*Category Total	58616	29231	6064	22818	56520	1871	56	15732	18671	21480	1503	99	31

(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
<i>Insecticides/Pesticides (Excluding rodenticides)</i>													
Arsenic pesticides	1405	1180	60	151	1359	41	0	450	886	139	21	1	3
Borates/boric acid	1843	1544	55	231	1782	55	0	294	797	136	3	1	0
Carbamate only	5041	3279	261	1451	4932	82	11	1066	1939	838	99	16	1
Carbamate with other pesticide	385	158	43	177	373	9	2	101	105	111	3	0	0
Chlorinated hydrocarbon only	3717	2022	379	1280	3526	119	53	1286	1435	754	96	17	1
Chlorinated hydrocarbon with other pesticide	201	97	14	87	196	4	1	49	72	49	2	1	0
Metaldehyde	288	222	11	50	281	6	1	72	158	22	4	0	0
Nicotine	34	14	0	18	34	0	0	12	11	13	1	0	0
Organophosphate only	11034	4001	787	6081	10706	239	47	3663	3356	2987	371	46	7
Organophosphate with carbamate	2958	1349	290	1280	2826	115	8	603	956	741	48	6	0
Organophosphate with chlorinated hydrocarbon	262	78	28	156	253	9	0	81	77	66	8	1	0
Organophosphate with other pesticide	1102	491	101	498	1070	23	8	285	354	292	19	0	0
Organophosphate/carbamate/ chlorinated hydrocarbon	68	28	11	28	63	5	0	19	25	22	2	0	0
Piperonyl butoxide alone	141	50	13	73	130	6	4	45	29	39	4	2	0
Piperonyl butoxide with pyrethrins	4115	1830	476	1770	3960	79	63	923	1020	1360	99	4	0
Pyrethrins alone	3409	1324	351	1685	3279	70	48	1010	744	1067	123	3	0
Repellants (insect)	4409	3175	747	451	4342	29	30	632	1395	1342	35	3	0
Rotenone	134	51	15	67	130	2	2	23	44	39	1	2	0
Veterinary insecticide	2981	1810	282	849	2919	41	18	490	1139	670	38	2	0
Other	2430	1531	215	633	2388	25	11	318	540	268	31	2	0
Unknown	2326	791	226	1269	2216	88	11	725	525	627	58	4	0
*Category Total	48283	25025	4365	18285	46765	1047	318	12147	15607	11582	1066	111	12
Lacrimators	4084	1225	1341	1466	3924	107	5	787	274	2758	103	0	0
Matches/Fireworks/Explosives	3523	3188	162	150	3490	26	0	235	1334	247	17	0	1
<i>Moth Repellants</i>													
Paradichlorobenzene	396	323	12	56	389	5	0	44	186	39	2	1	0
Naphthalene	2649	2300	93	239	2635	9	0	595	1428	240	19	0	0
Other	23	15	1	6	22	1	0	7	18	3	0	0	0
Unknown	2623	2280	131	198	2596	24	2	513	1313	190	10	0	0
*Category Total	5691	4918	237	499	5642	39	2	1159	2945	472	31	1	0
Mushrooms	9388	7560	638	1131	8920	368	78	2294	6154	1215	231	15	3
Paints and Stripping Agents	19927	11935	1517	6320	19579	285	37	3499	5577	4751	381	14	3
Photographic Products	880	484	111	279	867	7	2	190	225	228	17	0	0
<i>Plants</i>													
Amygdalin/cyanogenic glycosides	3139	2445	418	250	3098	22	18	197	1380	181	7	0	0
Anticholinergic	573	284	147	137	408	159	4	259	209	129	67	8	0
Cardiac glycosides	2339	1742	331	242	2266	63	3	490	1248	226	26	3	0
Colchicine	15	11	1	1	14	1	0	2	9	1	1	0	0
Depressants	39	29	5	5	37	2	0	13	18	3	1	0	0
Dermatitis	15007	9287	1696	3906	14679	119	198	1412	3871	4713	304	7	0
Gastrointestinal irritants	17776	15470	984	1228	17534	164	66	1180	7895	1752	97	1	0
Hallucinogenic	243	177	35	31	213	25	4	39	137	23	3	0	0
Nicotine	244	108	42	94	231	6	7	78	82	72	13	0	0
Nontoxic plant	24412	22195	1090	952	24240	86	64	599	8139	1080	36	3	0
Oxalate	18129	16742	665	633	18023	72	21	757	8921	2707	58	2	0
Soanine	2250	1953	136	150	2228	11	10	406	1412	236	9	0	0
Stimulants	364	293	35	33	352	8	3	104	229	46	4	3	0
Toxalbumins	219	141	44	34	209	10	0	114	108	67	6	0	0
Other	2076	1623	182	259	1976	47	47	252	808	273	24	0	0
Unknown	13879	11795	1162	801	13673	91	94	1339	6264	1598	78	5	1
*Category Total	100704	84295	6973	8756	99181	886	539	7241	40730	13107	734	32	1
Polishes and Waxes	5306	4322	231	721	5227	62	11	602	2248	1084	42	2	0
Radioisotopes	171	20	29	117	164	5	1	81	48	26	5	0	0
<i>Rodenticides</i>													
Monofluoroacetate	6	3	0	3	6	0	0	4	1	1	1	0	0
ANTU	4	2	0	2	3	1	0	3	0	0	0	0	0
Anticoagulant: standard	3985	3529	116	309	3804	163	2	1149	1749	188	15	3	0
Anticoagulant: long-acting	6116	5599	137	341	5921	178	3	2234	3216	267	20	2	0
Barium carbonate	1	1	0	0	1	0	0	0	0	0	0	0	0
Cyanide	2	0	0	2	2	0	0	1	0	2	0	0	0
Strychnine	190	45	22	112	111	66	2	138	53	29	11	5	1
Vacor	4	3	0	1	3	1	0	3	1	1	0	0	0
Other	628	460	33	126	585	35	1	264	240	71	5	1	1
Unknown	826	653	46	114	758	57	2	390	370	63	5	0	0
*Category Total	11762	10295	354	1010	11194	501	10	4186	5630	622	57	11	2
Sporting Equipment	908	551	236	116	882	19	3	251	407	151	10	0	1
Swimming Pool/Aquarium													

(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
<i>Products</i>	4418	2517	507	1359	4376	23	13	643	1510	1114	72	4	0
<i>Tobacco Products</i>	9868	9235	201	392	9733	106	18	2002	4366	2239	93	5	0
<i>Unknown Nondrug Substance</i>	7700	3944	1079	2578	7375	127	92	1591	2371	1958	140	8	0

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_x, prescription; ANTU, alpha-naphthylthiourea.
 * Medical outcome data were also collected in categories labelled "unknown, nontoxic," "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 Substance: 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
<i>Analgesics</i>													
<i>Acetaminophen only</i>													
Adult formulation	19322	5974	5850	7301	9104	9810	115	12175	7435	3430	720	99	26
Pediatric formulation	49405	47122	1795	308	48860	453	59	6627	22734	2025	112	7	0
Unknown formulation	8893	4499	1790	2531	5289	3446	49	4525	3484	1363	322	61	12
<i>Acetaminophen combination with</i>													
<i>Aspirin (with other ingredients)</i>													
Aspirin (no other ingredients)	257	101	54	101	152	97	7	109	97	58	5	0	0
Codeine	1335	286	406	634	512	765	42	818	394	409	30	5	1
Oxycodone	6872	1384	1013	4377	2567	3833	373	4610	1733	2226	343	61	4
Propoxyphene	1921	282	190	1423	666	1080	138	1254	409	616	109	21	0
Other narcotic/analog	3581	577	432	2527	1214	2168	115	2595	865	1172	242	59	13
Other drug (adult formulation)	2366	322	294	1717	836	1242	213	1506	485	779	107	12	0
Other drug (pediatric formulation)	3431	649	714	2030	1179	2082	95	2429	932	1128	163	31	1
Aspirin only	165	41	29	93	72	80	9	100	45	49	7	2	0
<i>Aspirin only</i>													
Adult formulation	5449	1845	1461	2087	2600	2664	96	3198	1860	1257	271	30	15
Pediatric formulation	849	753	78	15	805	35	5	206	441	80	7	1	0
Unknown formulation	10341	2377	3384	4447	3702	6316	155	7413	2799	2895	747	78	17
<i>Aspirin in combination with</i>													
Codeine	1067	175	120	758	346	649	48	752	207	373	72	8	1
Oxycodone	641	94	77	463	223	364	39	435	131	184	32	9	0
Propoxyphene	134	18	13	100	39	87	6	108	29	45	11	2	1
Other narcotic	291	56	45	189	98	166	20	206	81	93	9	2	2
Other drug (adult formulation)	3257	804	656	1756	1314	1809	87	2157	964	992	172	19	2
Other drug (pediatric formulation)	2	1	0	1	1	1	0	1	0	1	0	0	0
<i>Narcotics</i>													
Codeine	1594	753	225	601	1001	465	109	733	504	430	58	10	1
Meperidine	546	95	48	392	213	267	45	384	94	200	46	7	1
Methadone	256	41	11	200	86	147	15	214	21	78	44	12	3
Morphine, R _x	268	53	19	191	120	121	17	192	47	67	20	12	3
Oxycodone	101	16	14	70	42	47	10	63	24	31	7	0	0
Pentazocine	324	37	29	252	117	156	44	208	50	114	26	8	0
Propoxyphene	943	114	95	714	272	605	41	744	183	292	71	31	11
Other/unknown	46	259	97	579	467	366	88	528	215	310	77	16	5
<i>Nonaspirin salicylates</i>													
<i>Other nonsteroidal antiinflammatory</i>													
Colchicine	105	37	11	56	66	28	10	69	36	30	2	0	3
Ibuprofen, OTC	15197	9346	2532	3198	10654	4271	150	5268	6541	1952	174	19	1
Ibuprofen, R _x	6220	1828	1012	3304	2817	3200	109	3660	2037	1300	169	24	2
Ibuprofen, unknown if OTC or R _x	4313	1326	891	2039	1937	2254	84	2526	1491	974	140	19	1
Indomethacin	789	254	122	407	387	331	54	430	249	209	33	4	0
Other	7665	3005	1063	3525	4248	2871	435	3813	2722	1628	223	26	1
Unknown	11	4	2	4	6	4	1	7	3	1	1	0	0
Phenacetin	9	2	2	5	6	2	1	3	3	2	1	0	0
Phenazopyridine	761	536	69	152	617	112	25	268	337	164	20	4	0
Salicylamide	64	45	5	14	47	12	4	21	36	12	1	0	0
Other analgesic	82	18	14	50	35	41	6	52	24	21	2	2	0
Unknown analgesic	76	16	18	40	27	45	3	52	19	21	0	1	0
<i>Category total</i>	160591	85507	24774	48932	103237	52696	2957	70780	60035	27177	4635	705	126
<i>Anesthetics</i>	5137	3845	333	913	4861	168	96	1066	2196	942	63	13	2

(Continued on following page)

TABLE 18. Demographic Profile of Exposure Cases by Generic Category of Substance: 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
<i>Anticholinergic</i>	3170	1007	345	1779	1568	1369	155	2169	902	1028	304	49	5
<i>Anticoagulants</i>	642	351	31	250	505	116	16	321	261	101	21	8	1
<i>Anticonvulsants</i>													
Carbamazepine	3769	1430	610	1687	2274	1294	108	2554	1032	1250	452	111	3
Phenytoin	3637	870	361	2370	1859	1468	168	2613	905	1160	416	41	2
Succinimides	107	49	26	32	84	21	2	49	41	26	3	1	0
Valproic acid	929	340	202	376	669	215	29	471	389	193	39	13	1
Other	73	15	11	47	57	16	0	35	18	27	3	3	0
Unknown	1	0	0	1	0	1	0	1	0	0	0	0	0
<i>*Category Total</i>	8516	2704	1210	4513	4943	3015	307	5723	2385	2656	913	169	6
<i>Antidepressants</i>													
Amitriptyline	5170	821	482	3780	1482	3457	94	4492	894	1674	952	405	30
Amoxapine	372	39	31	299	87	272	8	326	60	136	59	20	5
Desipramine	1593	269	278	1026	501	1011	55	1321	355	520	211	75	25
Doxepin	2701	206	215	2242	584	2011	51	2349	366	949	430	206	15
Imipramine	2898	625	561	1669	1123	1632	82	2317	684	956	393	141	23
Maprotiline	186	29	24	133	60	121	4	163	41	66	22	10	2
Nortriptyline	1785	156	241	1360	430	1252	61	1514	301	626	255	101	15
Protriptyline	56	11	7	37	18	36	1	49	13	24	4	2	0
Other cyclic antidepressant	184	26	9	147	61	112	8	152	38	54	27	14	1
Unknown cyclic antidepressant	374	27	39	302	79	275	7	332	45	96	88	43	1
Cyclic antidepressant formulated with a benzodiazepine	427	70	27	330	130	281	6	354	94	155	52	28	0
Cyclic antidepressant formulated with a phenothiazine	856	180	75	589	297	520	15	711	183	267	132	49	4
Lithium	2847	293	245	2262	987	1628	144	2368	654	899	348	95	4
MAO inhibitors	649	75	22	546	192	317	126	532	115	221	110	29	9
Trazodone	1881	194	155	1499	533	1259	51	1493	387	740	145	30	2
Other antidepressant	3005	257	380	2324	737	2052	146	2394	721	1040	234	66	3
Unknown antidepressant	45	6	6	33	10	32	1	40	7	14	2	1	1
<i>*Category Total</i>	25029	3284	2797	18578	7311	16268	860	20907	4958	8437	3464	1315	140
<i>Antihistamines</i>													
H2 blockers	2546	1000	379	1141	1525	890	98	1195	963	438	70	7	2
Diphenhydramine (unknown if OTC or Rx)	8972	5103	1182	2616	6207	2511	174	3877	3162	2535	341	44	4
Diphenhydramine (Rx)	154	60	23	71	90	55	5	87	52	46	7	1	0
Diphenhydramine (OTC)	2570	660	431	1461	1151	1361	29	1521	628	926	133	8	1
Other	10135	4982	1682	3395	6864	2907	272	4574	4007	2340	285	36	1
<i>*Category Total</i>	24377	11805	3697	8684	15837	7724	578	11254	8812	6285	836	96	8
<i>Antimicrobials</i>													
Antibiotic: topical	3839	3126	180	513	3718	56	56	207	1363	251	12	1	0
Antibiotic: systemic	34157	21775	4481	7663	25941	5246	2739	8339	11273	4966	412	24	3
Antibiotic: unknown	2060	725	469	835	1076	661	302	834	505	557	40	2	0
Antifungal: topical	4526	3717	181	599	4441	42	39	206	1558	451	7	0	0
Antifungal: systemic	401	222	38	140	318	54	27	114	151	56	6	0	0
Antifungal: unknown	21	16	1	4	18	2	1	3	11	3	0	0	0
Antihelmintic:													
diethylcarbamazine	1664	1164	44	439	1648	14	1	120	678	71	3	0	0
Antihelmintic: piperazine	558	438	43	74	545	13	0	64	237	46	2	0	0
Antihelmintic: other	584	244	48	284	561	6	16	229	161	168	25	1	0
Antihelmintic: unknown	21	15	2	4	20	1	0	3	9	2	0	0	0
Antiparasitic: antimalarials	140	36	21	77	81	38	20	96	54	29	10	1	2
Antiparasitic: metronidazole	908	242	109	542	492	294	110	405	244	240	24	1	0
Antiparasitic: other	488	294	56	131	398	54	32	109	146	52	6	1	0
Antitubercular: isoniazid	270	59	79	128	113	137	15	205	60	56	48	25	0
Antitubercular: rifampin	55	20	9	23	34	15	6	32	14	14	4	2	0
Antitubercular: other	8	3	0	5	6	2	0	6	1	5	0	0	0
Antitubercular: unknown	1	0	1	0	1	0	0	0	1	0	0	0	0
Antiviral: topical	30	18	3	9	29	1	0	2	10	4	0	0	0
Antiviral: systemic	389	130	41	215	213	153	20	215	129	75	13	5	0
Antiviral: unknown	29	5	3	19	11	14	4	16	13	5	1	0	0
Other antimicrobial	79	44	8	26	57	11	8	24	29	12	1	0	0
Unknown antimicrobial	8	3	1	4	6	1	1	4	2	2	0	1	0
<i>*Category Total</i>	50236	32296	5818	11734	39727	6815	3397	11233	16649	7065	614	64	5
<i>Antineoplastics</i>	530	201	22	299	463	34	28	251	192	146	13	2	2
<i>Asthma Therapies</i>													
Aminophylline/theophylline	6512	2017	1721	2717	3989	2106	295	4253	1908	2022	703	93	34
Terbutaline	5554	4160	726	632	4884	470	174	2123	2355	1503	132	8	0
Other beta agonists	472	218	100	151	330	122	12	245	138	164	21	2	0
Other	278	179	44	55	243	23	10	53	116	39	7	0	0
Unknown	12	5	2	5	7	5	0	5	4	1	0	0	0
<i>*Category Total</i>	12828	6579	2593	3560	9453	2726	491	6679	4521	3729	863	103	34

(Continued on following page)

TABLE 18. Demographic Profile of Exposure Cases by Generic Category of Substance: 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
<i>Cardiovascular Drugs</i>													
Alpha blockers	28	8	0	19	18	5	4	20	6	7	2	0	0
Antiarrhythmics	978	304	56	612	806	130	35	453	430	149	42	20	5
Antihypertensives	4666	2528	348	1755	3554	961	100	2766	1925	1043	309	55	4
Beta blockers	4736	1901	486	2304	3179	1403	94	2888	2036	922	245	65	17
Calcium antagonists	3647	1365	216	2038	2661	867	88	2025	1552	660	203	96	26
Cardiac glycosides	1872	963	89	812	1497	292	58	1100	859	283	138	37	17
Hydralazine	404	181	51	168	288	97	15	228	177	86	8	3	0
Long-acting nitrates	593	350	20	221	514	70	5	226	298	88	5	1	0
Nitroglycerin	1999	1487	100	396	1779	202	12	640	1036	219	23	2	0
Nitroprusside	44	6	1	37	22	1	21	37	6	8	11	3	0
Vasodilator: other	992	678	61	246	869	100	18	305	479	130	17	4	1
Vasodilator: unknown	5	3	0	2	5	0	0	2	3	0	0	0	0
Vasopressors	3	3	0	0	3	0	0	1	3	0	0	0	0
Other	314	186	36	88	284	20	8	94	148	52	8	0	0
Unknown	30	18	2	10	21	9	0	16	10	9	0	0	0
<i>*Category Total</i>	20311	9981	1466	8708	15500	4157	458	10801	8968	3656	1011	286	70
<i>Cough and Cold Preparations</i>													
	90798	68916	9528	11916	79727	9125	1561	25154	37448	22596	1191	62	3
<i>Diagnostic Agents</i>													
	422	210	20	181	361	17	43	182	151	98	14	6	0
<i>Diuretics</i>													
	4456	2486	475	1459	3357	961	95	1984	1841	889	117	14	1
<i>Electrolytes and Minerals</i>													
Calcium	1740	1507	84	133	1669	53	16	142	597	118	7	0	0
Fluoride	4028	3625	276	116	3981	31	12	375	1807	663	14	1	1
Iron	4279	3003	450	783	3467	748	39	2238	1924	963	148	19	3
Magnesium	252	86	32	128	221	19	10	109	69	81	9	5	0
Potassium	872	542	69	252	742	108	12	268	377	111	8	2	1
Sodium	1852	1369	235	232	1777	60	11	364	680	348	19	1	0
Zinc	834	469	60	295	784	24	23	215	217	187	33	3	0
Other	93	55	5	31	86	1	6	17	24	16	0	0	0
Unknown	1	1	0	0	1	0	0	0	1	0	0	0	0
<i>*Category Total</i>	13951	10657	1211	1970	12728	1044	129	3728	5696	2487	238	31	5
<i>Eye/Ear/Nose/Throat Preparations</i>													
	12477	8364	845	3186	12106	210	143	2197	4763	2543	157	8	0
<i>Gastrointestinal Preparations</i>													
Antacids: salicylate- containing	2748	2449	158	130	2651	61	31	226	1215	163	10	0	0
Antacids: other	12007	10981	373	599	11816	121	58	383	3913	530	10	1	1
Antidiarrheals: nonnarcotic	499	347	33	115	464	17	14	56	176	45	4	21	0
Antidiarrheals: diphenoxylate/atropine	1311	772	116	415	1026	219	55	797	563	349	53	12	1
Antidiarrheals: paregoric	299	230	25	41	269	22	7	109	147	62	8	1	0
Antidiarrheals: other narcotic	192	178	4	6	192	0	0	5	57	53	0	0	0
Antispasmodics: anticholinergic	1734	696	291	726	948	692	65	1031	624	484	88	9	0
Antispasmodics: other	17	6	4	7	9	7	1	9	9	4	0	0	0
Laxatives	11680	9175	859	1577	10919	597	128	1942	3241	3062	170	9	1
Other	2087	1453	152	455	1732	266	76	553	724	285	36	2	1
Unknown	42	27	5	10	33	6	3	9	17	7	0	0	0
<i>*Category Total</i>	32616	26314	2020	4081	30059	2008	438	5120	10686	5044	379	34	4
<i>Hormones and Hormone Antagonists</i>													
Androgens	206	81	18	103	127	64	13	74	56	20	5	2	0
Corticosteroids	3439	2266	261	885	2995	241	179	482	1038	298	30	6	2
Estrogens	1520	1179	94	240	1358	121	33	222	602	99	11	1	0
Insulin	537	76	33	416	340	156	29	303	158	120	38	15	1
Oral contraceptives	9049	8158	465	377	8641	362	32	754	2849	386	8	0	0
Oral hypoglycemics	1467	808	130	518	1139	304	13	1094	687	325	144	23	1
Progestins	716	482	93	138	631	56	25	131	277	56	5	1	0
Thyroid preparations	3307	2456	209	622	2953	307	36	955	1567	287	34	7	0
Other hormones	406	246	30	125	309	81	13	188	155	109	24	1	1
Other hormone antagonists	136	68	12	54	102	28	6	54	52	15	1	2	0
Unknown hormone or antagonist	11	2	1	8	8	2	1	5	2	1	0	1	0
<i>*Category Total</i>	20794	15822	1346	3486	18603	1722	380	4262	7443	1716	300	59	5
<i>Miscellaneous Drugs</i>													
Allopurinol	256	180	19	56	217	36	3	93	130	26	8	1	0
L-dopa	210	104	4	99	176	26	6	78	84	41	9	2	0
Disulfiram	663	47	20	586	199	365	81	470	92	231	53	5	3
Ergot alkaloids	689	349	84	251	472	154	54	374	285	154	34	1	0
Homeopathic	1052	761	58	218	891	116	35	242	437	123	14	1	0
Methylsergide	5	1	1	3	1	2	1	4	3	0	1	0	0
Neuromuscular blocking	10	3	1	6	7	2	1	9	1	4	1	1	0
Other	5153	3085	462	1553	4376	552	182	1274	1646	1234	125	16	1
<i>*Category Total</i>	8038	4530	649	2772	6339	1253	363	2544	2678	1813	245	27	4

(Continued on following page)

TABLE 18. Demographic Profile of Exposure Cases by Generic Category of Substance: 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
Muscle Relaxants													
Cyclobenzaprime	2261	496	240	1482	744	1428	47	1823	527	747	241	44	3
Methocarbamol	718	95	112	499	220	454	27	534	160	251	36	4	0
Other	1959	309	222	1403	630	1205	70	1459	415	704	178	26	1
Unknown	46	6	5	35	10	33	1	36	6	10	1	0	0
*Category Total	4984	906	579	3419	1604	3120	145	3852	1108	1712	456	74	4
Narcotic Antagonists													
Radiopharmaceuticals	12	3	0	9	11	0	1	8	6	0	1	0	0
Sedative/Hypnotics/Antipsychotics													
Barbiturates: long acting	3893	1071	425	2346	1970	1737	69	2621	930	1181	431	142	5
Barbiturates: short acting	2009	258	188	1541	542	1351	54	1587	319	720	191	78	7
Barbiturates: unknown	20	1	2	16	4	14	1	13	5	5	0	1	2
Benzodiazepines	27248	4398	1947	20478	7947	18221	413	21477	4783	10162	2264	456	33
Chloral hydrate	442	120	27	285	183	227	23	346	50	151	64	26	5
Ethchlorvynol	297	15	14	259	48	235	1	276	19	90	58	21	2
Glutethimide	160	4	14	140	11	136	2	151	13	70	27	20	0
Meprobamate	522	80	42	395	154	336	15	421	108	163	73	19	0
Methaqualone	93	13	12	66	14	76	1	83	16	27	9	2	0
Sleep aids (OTC)	5558	338	801	4313	968	4433	26	4777	1068	2156	418	31	0
Phenothiazines	9139	1466	963	6593	3187	5284	460	7344	2026	3396	907	190	21
Other	1312	190	93	1009	404	805	70	1013	286	438	102	33	3
Unknown	140	11	17	108	25	113	0	132	16	31	8	1	0
*Category Total	50833	7965	4545	37549	15457	32968	1135	40241	9639	18590	4552	1020	78
Serums, Toxoids, Vaccines													
Stimulants and Street Drugs	663	179	64	409	493	11	154	280	103	209	26	0	1
Amphetamines													
Amyl/butyl nitrites	4474	1480	1055	1870	2387	1909	83	3079	1167	1384	370	40	5
Caffeine	191	14	25	149	73	113	0	129	17	64	27	5	0
Cocaine	5625	1310	2192	2068	2397	3010	101	3158	1102	2439	297	11	3
Cocaine	3617	208	286	3055	515	2984	17	3211	382	1249	526	132	41
Diet aid:													
phenylpropanolamine	2063	1047	433	567	1309	696	36	1046	772	568	68	3	1
Diet aid:													
phenylpropanolamine and caffeine	376	139	90	144	186	176	6	245	115	128	18	1	0
Diet aid: other, OTC	130	73	17	38	89	37	4	55	40	33	3	0	0
Diet aid: other, Rx	32	17	4	11	22	10	0	19	18	6	1	0	0
Diet aid: unknown	119	40	26	53	58	58	0	82	42	30	10	0	0
Heroin	520	15	17	476	56	455	1	475	45	155	88	47	6
LSD	887	27	352	492	156	709	0	709	60	401	132	5	0
Marijuana	911	136	277	483	272	615	5	650	92	312	79	6	2
Mescaline/peyote	232	73	43	111	158	73	0	110	37	83	18	0	0
Phencyclidine	389	33	80	266	95	284	1	355	24	117	94	25	5
Phenylpropanolamine look-alike drugs													
Other stimulants	228	58	63	105	76	139	1	186	51	99	21	1	0
Other hallucinogens	75	11	12	50	19	56	0	59	9	31	8	0	0
Other hallucinogens	3	0	2	1	1	2	0	2	1	2	0	0	0
Unknown hallucinogens	2	0	1	1	0	1	0	2	0	0	1	0	0
Other street drugs	73	26	11	35	42	28	1	35	18	23	2	0	0
Unknown stimulant/street drugs	76	3	23	48	12	63	0	69	11	25	10	0	1
*Category Total	20023	4710	5009	10023	7923	11418	256	13676	4003	7149	1773	276	64
Topicals													
Acne preparations	1232	767	139	314	1157	18	57	125	374	275	12	1	0
Boric acid/borates	386	258	27	101	375	7	2	45	154	59	4	0	0
Calamine	5136	4212	227	668	5084	33	12	461	1792	433	18	0	0
Camphor	6792	5473	329	959	6645	124	14	1903	3395	1188	62	8	0
Camphor and methyl salicylate													
Diaper products	1241	955	73	207	1192	22	26	275	488	335	16	2	0
Hexachlorophene antiseptics	13390	12923	131	269	13364	9	12	212	4421	729	7	0	0
Hydrogen peroxide	157	91	10	53	150	5	0	40	62	29	0	0	0
Iodine or iodide antiseptics	7354	4613	590	2100	7199	138	6	487	2071	1395	37	0	0
Mercury antiseptics	1815	799	225	774	1558	202	34	545	591	389	44	3	0
Methyl salicylate	988	799	42	141	945	31	7	113	423	82	2	0	0
Silver nitrate	6576	5432	296	813	6508	47	17	860	2649	1380	24	7	4
Topical steroids	91	16	21	53	84	5	2	31	15	35	7	0	0
Topical steroid with antibiotic	5167	4449	128	560	5122	12	28	119	1605	294	11	0	0
Wart preparations	1327	1099	76	142	1297	9	18	59	414	144	3	0	0
Podophyllin	1939	1426	188	319	1887	40	7	280	656	529	18	0	0
Other liniment	75	41	8	26	65	6	4	32	26	26	1	1	0
Other topical antiseptic	1121	821	82	214	1099	16	6	118	462	229	7	0	0
*Category Total	2133	1568	121	423	2057	53	19	325	904	301	20	2	0
Miscellaneous Veterinary													
Vitamins	56920	45742	2713	8136	55788	777	271	6030	20502	7852	293	24	4
Multiple Vitamin Tablets: Adult Formulations	2503	1229	153	1106	2469	27	1	299	970	407	21	1	0
No iron, no fluoride	2246	1748	219	268	2041	128	71	276	919	266	8	0	0

(Continued on following page)

TABLE 18. Demographic Profile of Exposure Cases by Generic Category of Substance: 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
With iron, no fluoride	5409	4384	558	445	4883	467	36	1484	2550	692	46	3	0
With iron, with fluoride	46	36	5	5	40	5	1	16	25	6	0	0	0
No iron, with fluoride	224	214	8	2	223	1	0	16	109	17	0	0	0
Multiple Vitamin Tablets: Pediatric Formulations													
No iron, no fluoride	9106	8083	951	44	8960	123	12	434	3696	593	15	1	0
With iron, no fluoride	9872	8856	948	39	9733	123	7	1708	4857	1273	71	1	0
With iron, with fluoride	441	419	16	5	435	6	0	74	183	47	1	0	0
No iron, with fluoride	2302	2215	76	9	2287	13	1	133	893	81	0	0	0
Multiple Vitamin Liquids: Adult Formulations													
No iron, no fluoride	39	22	9	8	33	6	0	17	11	5	2	0	0
With iron, no fluoride	41	25	2	13	32	6	3	18	19	6	0	0	0
With iron, with fluoride	3	3	0	0	3	0	0	1	3	0	0	0	0
No iron, with fluoride	1	1	0	0	1	0	0	0	1	0	0	0	0
Multiple Vitamin Liquids: Pediatric Formulations													
No iron, no fluoride	314	291	19	3	307	3	2	22	125	33	0	0	0
With iron, no fluoride	303	283	15	3	297	6	0	62	147	32	1	0	0
With iron, with fluoride	105	104	0	1	105	0	0	12	49	9	0	0	0
No iron, with fluoride	573	563	3	4	565	5	3	33	211	36	0	0	0
Multiple Vitamin, Unspecified Adult Formulation													
No iron, no fluoride	71	57	6	8	68	3	0	12	30	7	0	0	0
With iron, no fluoride	797	643	78	74	715	73	4	235	405	93	13	0	0
With iron, with fluoride	12	10	0	2	10	2	0	5	6	3	0	0	0
No iron, with fluoride	3	3	0	0	3	0	0	1	0	1	0	0	0
Multiple Vitamin, Unspecified Pediatric Formulation													
No iron, no fluoride	206	186	20	0	204	2	0	12	90	17	1	0	0
With iron, no fluoride	276	246	30	0	272	3	0	67	127	39	1	2	0
With iron, with fluoride	6	5	1	0	6	0	0	1	5	1	0	0	0
No iron, with fluoride	50	49	0	0	50	0	0	1	38	1	0	0	0
Other vitamins													
Vitamin A	707	502	65	134	627	53	20	138	275	75	6	0	0
Niacin (B3)	1681	393	92	1177	1011	82	580	241	175	989	28	0	0
Pyridoxine (B6)	241	167	23	47	203	28	9	40	98	20	8	0	0
Other B complex vitamins	869	594	79	187	718	92	50	147	322	116	3	0	0
Vitamin C	1981	1602	222	150	1855	101	21	134	731	173	6	0	0
Vitamin D	224	174	13	34	205	15	3	75	88	21	2	0	0
Vitamin E	796	652	43	96	742	38	14	65	304	50	3	0	0
Other	660	534	38	87	593	48	17	112	280	66	6	1	0
Unknown	1317	1083	130	99	1233	68	9	177	471	106	7	0	0
*Category Total	40922	34147	3669	2944	38460	1500	863	5769	17243	4874	228	8	0
Miscellaneous Unknown Drugs	15319	6041	2022	6836	11619	2650	498	7506	4251	3816	618	72	1

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, Rx, prescription; MAO, monoamine oxidase.

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

TABLE 19. Frequency of Plant Exposures by Plant Type

Botanical Name	Common Name	Frequency
<i>Philodendron</i> spp	Philodendron	6361
<i>Dieffenbachia</i> spp	Dumbcane	4049
<i>Euphorbia pulcherrima</i>	Poinsettia	3080
<i>Crassula</i> spp	Jade plant	2601
<i>Ilex</i> spp	Holly	2397
<i>Capsicum annuum</i>	Pepper	2304
<i>Brassica & Schefflera</i> spp	Schefflera	2158
<i>Toxicodendron radicans</i>	Poison ivy	1694
<i>Epipremnum aureum</i>	Pothos, devil's ivy	1512
<i>Pyracantha</i> spp	Firethorn	1467
<i>Saintpaulia</i> spp	African violet	1461
<i>Taxus</i> spp	Yew	1416
<i>Spathiphyllum</i> spp	Peace lily	1376
<i>Phytolacca americana</i>	Pokeweed, inkberry	1290
<i>Solanum dulcamara</i>	Climbing nightshade	934
<i>Ficus benjamina</i>	Weeping fig tree	927
<i>Rhododendron</i> spp	Rhododendron, azalea	914
<i>Ficus elastica</i>	Rubber plant	883
<i>Begonia</i> spp	Begonia	873
<i>Chrysanthemum</i> spp	Chrysanthemum	848

TABLE 20. Substances Most Frequency Involved in Human Exposure

Substance	No.	%*
Cleaning substances	160,652	10.2
Analgesics	160,591	10.2
Cosmetics	130,207	8.2
Plants	100,704	6.4
Cough and cold preparations	90,798	5.7
Pesticides (includes rodenticides)	60,045	3.8
Bites/envenomations	58,750	3.7
Hydrocarbons	58,616	3.7
Topicals	56,920	3.6
Foreign bodies	56,356	3.6
Chemicals	53,011	3.4
Sedative/hypnotics/antipsychotics	50,833	3.2
Antimicrobials	50,236	3.2
Food poisoning	48,336	3.1
Alcohols	43,539	2.8
Vitamins	40,922	2.6

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 21. Categories with Largest Numbers of Deaths

Category	No.	% of All Exposures in Category
Antidepressants	140	.559
Analgesics	126	.078
Stimulants and street drugs	64	.320
Sedative/hypnotics	78	.153
Cardiovascular drugs	70	.345
Alcohols	53	.122
Gases and fumes	46	.225
Asthma therapies	34	.265
Hydrocarbons	31	.053
Chemicals	27	.051
Cleaning substances	25	.016
Pesticides (including rodenticides)	14	.023

TABLE 22. Decontamination Trends

Year	Human Exposures Reported	% of Exposures Involving Children <6 Years	Ipecac Administration (% 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

TABLE 23. 7-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

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

APPENDIX

Case 7. A 29-year-old man presented to the emergency department (ED) approximately 16 hours after ingesting an unknown amount of methanol. Because he had been despondent over the loss of his job, his parents had removed all ethanol from the house. The patient found the methanol in the garage and mistook it for ethanol. On the evening before admission, he experienced polyuria and nightmares. On the morning of admission, he had several episodes of vomiting, visual hallucinations, and a progressive decrease in his mental status. In the ED, the patient was unresponsive to verbal and noxious stimuli, and had a generalized seizure. Vital signs were blood pressure (BP), 140/70 mm Hg; pulse rate, 105 beats/min; respiration, 30 breaths/min; and temperature, 36° C. Laboratory results included white blood cell count (WBC), 24,500/mm³; sodium, 142 mEq/L; potassium, 5.4 mEq/L; chloride, 99 mEq/L; bicarbonate, 8 mEq/L; creatinine, 1.3 mg/dL; glucose, 390 mg/dL; and lactate dehydrogenase, 592 IU/L. Arterial blood gases were pH, 6.78; Pco₂, 18 mm Hg; Po₂, 147 mm Hg; and bicarbonate, 3 mEq/L. Blood

methanol level was 157 mg/dL. The patient was started on an ethanol infusion and hemodialyzed until his methanol level fell below 20 mg/dL. Problems caused by recurrent clotting of hemodialysis cartridges, central diabetes insipidus, and cardiogenic shock led to his death 3 days after admission.

Case 9. A 46-year-old man was brought to the ED after a suspected ingestion of methanol. The patient had been treated and released from the same ED the prior morning for nausea, vomiting, and weakness of unknown etiology. Upon second presentation, the patient was unresponsive and dependent on a ventilator. Four hours after the second presentation, the patient's arterial blood gases were pH, 7.34; Pco_2 , 16 mm Hg; Po_2 , 120 mm Hg; and bicarbonate, 9 mEq/L. A methanol level drawn more than 28 hours after the ingestion was 86.4 mg/dL. The patient was unresponsive to deep pain, on a ventilator, and receiving dopamine to support his blood pressure. Despite poison center recommendations, a consulting nephrologist decided that hemodialysis would not be beneficial at that time, because it had been more than 20 hours since the ingestion.

The patient was transferred to a second hospital where ethanol therapy and hemodialysis were initiated. The patient remained unresponsive and hemodynamically unstable. After hemodialysis for 6 hours, the patient's arterial blood gases were pH, 7.5; Pco_2 , 24 mm Hg; Po_2 , 102.7 mm Hg, and bicarbonate, 19.5 mEq/L. Large volumes of intravenous fluids and dopamine were needed to maintain the blood pressure. There was no change in the clinical status of the patient for the next 48 hours, and the patient was removed from the ventilator approximately 96 hours after the ingestion. Postmortem examination confirmed methanol poisoning associated with severe metabolic acidosis, acute bronchopneumonia, pulmonary edema, and severe cerebral edema with focal cortical necrosis.

Case 11. A woman of unknown age was found sitting up and uncommunicative in the street. No history of ingestion was available. In the ED, she was comatose, unresponsive to deep pain, and her pupils reacted sluggishly to light. Laboratory results included potassium, 6.0 mEq/L; bicarbonate, 2.6 mEq/L; glucose, 240 mg/dL; and blood urea nitrogen (BUN), 7 mg/dL. Admission arterial blood gases revealed pH, 6.8; Pco_2 , 17 mm Hg, and Po_2 , 96 mm Hg. Toxicologic analysis was positive for methanol at 227 mg/dL. Ethylene glycol and isopropyl alcohol levels were negative. Five hours after presentation, treatment included dopamine to maintain blood pressure, intravenous ethanol therapy, and 6 hours of hemodialysis. The methanol level was 45 mg/dL 21 hours after presentation, and hemodialysis was restarted and continued for an additional 6 hours at which time the methanol level dropped to 0 mg/dL. On the second hospital day, a computed tomography (CT) scan showed an intracranial bleed. The patient died 3 days after presentation.

Case 16. A 15-month-old boy had flu-like symptoms for 2 to 3 days and was given a cough and cold preparation. On the day of admission, he became drowsy and went to sleep after receiving a bottle from the baby sitter. When he awakened 1.5 hours later, he seemed not to be aware of his surroundings and had varying levels of consciousness. In the ED the child was difficult to arouse and appeared pale. His pupils were equal and reactive. Arterial blood gases were pH, 6.9; Pco_2 , 12 mm Hg; and bicarbonate, 2 mEq/L. Anion gap was greater than 30 mEq/L. He was intubated and given sodium bicarbonate. His sodium was 153 mEq/L and potassium was 2.4 mEq/L. The patient was admitted to the intensive care unit (ICU), and an intracranial pressure monitor was placed in the right frontal area. Pressures were 60 to 70 cm H_2O . Two hours after admission to the ICU, it was determined that there was a bottle of brake line antifreeze (98.5% methanol) in the house. A methanol level was 12 mEq/L. The patient experienced hypertension, tachycardia, and areflexia 5.5 hours after presentation. His pupils became unequal, then fixed and dilated. The intracranial pressure monitor showed a decreased pressure of 40 to 42 cm H_2O . Intravenous ethanol was begun. Hemodialysis was attempted 8.5 hours after presenting, but vascular access could not be obtained. He became hypotensive to 30/20 mm Hg, and norepinephrine was given. Ethanol

level was 136 mg/dL. Arterial blood gases were pH, 7.11; Pco_2 , 18.6 mm Hg; Po_2 , 220 mm Hg; and bicarbonate, 5.7 mEq/L. Other laboratory results included sodium, 170 mEq/L; potassium, 3.1 mEq/L; glucose, 550 mg/dL; BUN, 14 mg/dL; and serum osmolality, 413 mOsm/kg H_2O . A cerebral blood flow study showed no flow to the brain. The patient died 23 hours after presenting to the ED. The coroner reported methanol present on the clothing. Postmortem revealed diffuse cerebral edema with brain stem herniation and a formic acid level of 452 mcg/ml.

Case 17. A 6-month-old boy was brought to the ED with respiratory distress and cyanosis, following a mysterious exposure to ethylene glycol antifreeze. This infant had been treated for a previous ethylene glycol exposure 2 months earlier. The initial ethylene glycol level was 91.1 mg/dL, acetone 116 mg/L, and arterial pH 7.18. Treatment included sodium bicarbonate and ethanol. The infant was on supplemental oxygen, and respirations remained spontaneous. On the second hospital day, the infant was continued on ethanol therapy, started on peritoneal dialysis until vascular access was achieved, then underwent hemodialysis. His ethylene glycol level was 85.7 mg/dL and 4 hours later was 75.0 mg/dL. Serum acetone was 320 mg/L. Later on the second hospital day, the infant's respiratory status deteriorated and he required intubation. A dopamine infusion was started for hypotension of 68/40 mm Hg. Calcium oxalate crystals were visualized in the urine at this time. Poor respiratory status and hypotension continued on the third hospital day. The systolic blood pressure remained 40 to 50 mm Hg despite the administration of norepinephrine, epinephrine, dopamine, and dobutamine. The patient developed pulmonary edema. On the fourth hospital day, the patient's pupils became fixed and dilated and he died. On postmortem examination the infant weighed 13 kg (an increase from 7 kg in the ED). The lungs had crepitation and exuded excess frothy fluid. The cranial cavity examination was normal except for small size of the ventricles. Microscopically, there were fatty changes in the liver and autolytic changes in the pancreas. The pulmonary microvasculature was filled with erythrocytes. The alveoli contained proteinaceous debris and red blood cells. The kidneys showed crystals consistent with calcium oxalate. The brain tissue showed perineuronal and perivascular spaces associated with disrupted neuropil. There were sparse and scattered crystals consistent with calcium oxalate seen in sections of the brain. Retinal hemorrhages were not found. The manner of death was classified as homicide.

Case 20. A 69-year-old mentally retarded man with a history of hypertension treated with methyldopa/hydrochlorothiazide became ill and was brought to the ED. On admission, the patient had several seizures and then became apneic, requiring intubation and ventilatory assistance. His axillary temperature was 39.5°C. Diazepam and phenytoin were given for seizure control. Forty-eight hours later, the admission ethylene glycol level was reported as 95 mg/dL. Treatment included intravenous ethanol (begun 48 hours after admission) and hemodialysis. The patient responded only to deep pain, urine output decreased to 10 mL over an 8 hour period, and urinalysis showed greater than 100 white blood cells, greater than 50 red blood cells, epithelial cells, and 4+ bacteria per high power field. Blood urea nitrogen was 77 mg/dL and creatinine was 8.9 mg/dL. Arterial blood gases were pH, 7.45; Pco_2 , 33 mm Hg; and Po_2 , 12 mm Hg. An ethylene glycol level drawn 5 days after admission was 5.67 mg/dL. Renal function continued to deteriorate (BUN, 94 mg/dL; creatinine, 11 mg/dL), requiring hemodialysis on alternate days. The patient was receiving intravenous phenytoin, cefotaxime, and aztreonam. Ethanol was discontinued 6 days after admission, at which time the ethylene glycol level was negative. The patient was responding occasionally to deep pain and had a cough and gag reflex. Blood pressures were 160/70 to 180/90 mm Hg on methyldopa. He had been placed on total parenteral nutrition and had 15 mL of urine in a 24-hour period. An electroencephalogram showed diffuse disturbances with seizure activity in the frontal region. At this point, the patient was unresponsive to deep pain, hypertensive with a

blood pressure of 200/100 mm Hg, and anuric. He would occasionally take a spontaneous breath. Sixteen days after admission, a repeat electroencephalogram showed no activity. The patient was declared dead 17 days after admission.

Case 22. A 20-year-old man ingested one cup of antifreeze and a handful of triamterene and conjugated estrogens 7.5 hours before presenting to the ED. He was asymptomatic. Despite poison center recommendations, the patient received no treatment. Twelve hours after the ingestion, the patient became violent, physically assaulting a nurse and punching a wall. He was taken away by the police for involuntary commitment to the state hospital. En route to the hospital, he became unresponsive and was taken to the closest ED. In the ED, the patient was intubated, placed on a ventilator, and required sedation for agitation. Blood pH on arrival was 7.06. He was started on an ethanol infusion and hemodialysis was performed. Renal shutdown was also reported at this time. A grand mal seizure and labile blood pressure on dopamine were noted 25.5 hours after ingestion. A CT scan showed cerebral edema. Hemodialysis was repeated. The patient remained slightly acidotic despite a continuous infusion of sodium bicarbonate. His blood pressure decreased again to a systolic of 40 to 50 mm Hg, 36 hours after the exposure, with pulse rate increasing to 180 to 190 beats/min. The patient continued to be anuric. At intervals, norepinephrine, dobutamine, and dopamine were administered, with little change in his blood pressure over the next 24 hours. Sixty-seven hours after the exposure, the patient was in a deep coma with unequal pupils, a weakly palpable femoral pulse rate of 150 beats/min, a core temperature of 39.5° C, cold extremities, absent gag reflex, and no response to pain. Several hours later, he died.

Case 24. A 6-month-old boy apparently ingested an unknown quantity of windshield washer solvent containing methanol from a formula bottle about 12 to 24 hours before presentation. The grandparents found the infant in an automobile with two adults who were unconscious from ethanol intoxication. The infant was unremarkable at that time and was put to bed by his grandparents. However, approximately 8 hours later the infant was unresponsive. In the health-care facility, the child was comatose, with pH, 6.63; bicarbonate, 1.9 mEq/L; and methanol, 211 mg/dL. An ethanol infusion was started and the infant was hemodialyzed approximately 10 hours after presentation. After 3 hours of hemodialysis, the methanol level was 31 mg/dL. During hemodialysis, he deteriorated. He was pronounced dead 5 days after presentation to the ED.

Case 26. A 27-year-old woman was found unconscious by her roommate. At the patient's side, there was a half-full bottle of windshield washer solvent (containing 38% methanol) and an unknown insecticide spray. She was last seen awake approximately 12 hours earlier. On arrival to the ED, she was comatose and reacted to pain. Her arterial blood gases were pH, 6.76; PCO₂, 26 mm Hg; and PO₂, 57 mm Hg. Anion gap was 34 mEq/L. Her pH improved to 7.04 after 500 mEq of sodium bicarbonate. Intravenous ethanol preparations were not available, so 80 mL of vodka was given through a nasogastric (NG) tube prior to transfer to the regional medical center. During the transfer the patient developed seizures, and a phenytoin drip was started. Upon arrival at the medical center, the patient was comatose with a blood pressure of 120/90 mm Hg, pulse of 90 beats/min, and respirations of 14 breaths/min. Arterial blood gases were pH, 7.26; PCO₂, 17 mm Hg, and PO₂, 487 mm Hg. Serum osmolality was 430 mOsm/kg H₂O with an osmolal gap of 90 mOsm/kg H₂O. Her methanol level was 144 mg/dL. Ethylene glycol was not detected. Glucose was 1,128 mg/dL. The level was confirmed, and she was immediately started on an intravenous insulin drip. The patient was admitted to the ICU, where her acidosis was corrected with sodium bicarbonate. Hemodialysis was initiated on arrival to the ICU. Her methanol blood level gradually decreased to 15.7 mg/dL after 6 hours of hemodialysis. After 4 hours of hemodialysis, her blood pressure decreased and did not respond to fluids and dopamine. Thirteen hours after admission, no brain stem function was observed. In addition, a brain flow study showed no cerebral blood

flow. Ventilator support was discontinued, and the patient died 23 hours after admission.

Case 39. A friend found this 82-year-old man unresponsive. A container of potassium cyanide was open on the front porch, and a coffee cup, containing a similar white powder, was on the table. On arrival at the hospital, the patient had a systolic blood pressure of 50 mm Hg with a pulse rate of 60 beats/min. His pupils were fixed and dilated. The patient was intubated and amyl nitrite was administered through the respirator, while sodium nitrite and sodium thiosulfate were given intravenously. In addition, dopamine was given. A whole blood cyanide level drawn 30 minutes after arrival was 5.22 mg/dL. The patient underwent hemodialysis for 3 hours without any improvement. The patient was declared brain dead and life support measures were discontinued 22 hours after admission. Postmortem cyanide level was 0.008 mg/dL. The material in the coffee cup was identified as potassium cyanide.

Case 49. A 57-year-old man with a history of ethanol abuse was covered with vomitus when he was found lying on the floor. He had ingested an unknown amount of methyl ethyl ketone peroxide and ethanol as a suicide gesture. On arrival to the ED, he was lethargic and cyanotic. His blood pH was 7.18. He was given oxygen, intravenous fluids, and sodium bicarbonate. His blood pressure increased to 160/104 mm Hg. In the ICU, the patient became hypotensive. Intravenous fluids were increased and dopamine was started. He developed ventricular arrhythmias for which he was treated with lidocaine. His lungs were congested and he had guaiac positive, brownish red watery diarrhea. An electrocardiogram showed an acute inferolateral myocardial infarction. He developed acute pulmonary edema. The patient continued to do poorly and all attempts at resuscitation were unsuccessful. Postmortem examination confirmed the ingestion as the cause of death.

Case 50. A 53-year-old man fell into a vat containing 80% acetic acid, 2% nitric acid, and the explosives cyclotrimethylene trinitramine and cyclotrimethylene tetranitramine at 9°C. The patient was sprayed with water, then taken to the ED where a severe acidosis was noted. Bronchoscopy showed extensive mucosal injury with 80% narrowing of the right mainstem bronchus and 50% narrowing of the left main stem bronchus. He was transferred to the regional burn center 20 hours after exposure. Physical examination at that time showed an edematous man with leathery skin, nearly 100% third degree burns, opaque corneas, diffuse bilateral rhonchi and wheezing, and a distended abdomen. Infiltrates noted on chest roentgenogram were consistent with adult respiratory distress syndrome or widespread infection. Laboratory results included hemoglobin, 10.9 g/dL; hematocrit, 32.4%; WBC count, 26,900/mm³; platelets, 90,000/mm³; prothrombin time (PT), 14.1 seconds; partial thromboplastin time (PTT), 47.9 seconds; BUN, 39 mg/dL; creatinine, 1.9 mg/dL; magnesium, 1.1 mg/dL; and calcium, 6.7 mg/dL. Electrolytes were unremarkable. Eight days after his exposure, the patient had a terminal cardiac arrest.

Case 52. A 35-year-old man who worked as a biophysicist at a medical research lab ingested an unknown amount of sodium azide. En route to the hospital by ambulance, he was confused, pale, and diaphoretic with a systolic blood pressure of 80 mm Hg. In the ED, he was lavaged. He sustained a cardiopulmonary arrest and could not be resuscitated. Postmortem examination showed slight cardiomegaly and marked pulmonary edema and congestion. Postmortem blood phencyclidine level was 0.09 µg/ml. Postmortem urine toxicologic analysis showed oxycodone and phencyclidine.

Case 53. A 51-year-old veterinarian ingested 4.8 grams of strychnine in a suicide attempt. Within 15 minutes of the ingestion, he walked into the ED and was evaluated. Approximately 30 minutes after the ingestion, he had a tonic seizure that was treated with diazepam. The comatose patient was intubated, lavaged, and given activated charcoal. Initial arterial blood gases showed a severe acidosis with a pH of 6.8 that was corrected with sodium bicarbonate. He also developed hypotension and bradycardia. Tonic spasms of the face, jaw, and platysma were treated with diazepam, pancuro-

nium bromide, and phenobarbital. The patient was hypocalcemic and required calcium replacement. A Swan-Ganz (Baxter Healthcare Corp, Irvine, CA), catheter was inserted and showed adequate filling pressures. Urine output decreased, but responded to furosemide. Twelve hours after the ingestion, the patient became hyperthermic to 40.5° C. His serum creatine phosphokinase was 2,160 IU/L. Five days after the ingestion he developed purulent sputum, and a chest roentgenogram was interpreted as possible left lower lobe pneumonia or an effusion. An electroencephalogram showed no brain activity on the fourth hospital day, and the patient was pronounced dead 9 days after the ingestion. A serum strychnine level 5 hours after ingestion was 3.8 mg/L, declining to 0.2 mg/L at 36 hours.

Case 57. A 59-year-old man arrived at the ED with significant pain 1 hour after drinking a bottle of brick cleaner containing hydrochloric acid. On physical examination, he had stable vital signs and there were no oral burns. He had a distended abdomen without peritoneal signs. Because of increasing abdominal distention and pain, he underwent an exploratory laparotomy, which showed total necrosis of the stomach, duodenum, and upper jejunum, and partial burns of the ileum, transverse colon, liver, and spleen. No organs were removed during surgery. He became more acidemic and developed a coagulopathy and adult respiratory distress syndrome. He died shortly after the laparotomy. Postmortem examination showed diffuse third degree burns of the stomach, duodenum, and jejunum.

Case 62. A 61-year-old man came to the ED 1 hour after drinking one cup of a drain opener (hydrochloric acid 18%). The patient had vomited once prior to admission and was experiencing increased salivation. No other symptoms were noted and there was no evidence of oral burns. The patient was lavaged with normal saline. At the follow-up 2 hours later, it was believed that the patient had not ingested the drain opener, but was suffering from an acute psychotic episode. His only symptom was nonspecific chest pain. Cardiopulmonary arrest occurred approximately 8 hours after the ingestion. Postmortem confirmed bronchospasm secondary to hydrochloric acid aspiration as the cause of death. A perforated esophagus and "charred" stomach were also observed.

Case 67. An 85-year-old woman intentionally ingested an unknown amount of hypochlorite bleach earlier in the morning. On arrival to the ED, she was vomiting blood and was in respiratory distress. She also had diarrhea and burns to the mouth. She was admitted to the hospital for aspiration pneumonitis and observation. The patient's respiratory status continued to deteriorate and she had a respiratory arrest and was intubated 4 days after the ingestion. She was comatose with decerebrate posturing. Cardiac monitor showed atrial fibrillation. She died 11 days after the ingestion.

Case 68. An 8-month-old boy was found on the floor at home in cardiopulmonary arrest. He had obviously vomited. A bottle of a liquid detergent (3% quaternary ammonium chloride) was on the floor immediately next to him. The patient was brought to the ED, but could not be resuscitated.

Case 69. A 9-month-old boy was left unattended on a bed when he apparently rolled off the bed and fell into a container of pine oil cleaner (isopropanol 11%, pine oil 19.9%) diluted with water. The child was found face down in the container and was transported to the hospital in full arrest. He was resuscitated after 5 minutes of cardiopulmonary resuscitation, but had central nervous system depression. Over the next 3 days, he developed a pneumothorax, pulmonary edema, cor pulmonale, hypotension, and nonoliguric renal failure. Aggressive treatment included intubation with mechanical ventilation, and intravenous dopamine, dobutamine, and isoproterenol. The baby died 101 hours after the accident. No specific terminal event was identified. Postmortem examination showed hemorrhagic pneumonitis with diffuse alveolar damage, biventricular dilation of the heart, cerebral edema with features of anoxic encephalopathy, acute tubular necrosis, and thymic involution. Death resulted from complications of near drowning and probable aspiration of cleaning solution.

Case 72. A 27-year-old woman ingested 4 to 5 ounces of a toilet bowl cleaner containing 15% hydrochloric acid approximately an hour before an ambulance was called. When the paramedics arrived, she was alert and oriented, and had just vomited. She arrived at the ED 15 minutes later with abdominal pain, brown, blood tinged saliva, gagging, and a hoarse voice. Blood pressure was 83/54 mm Hg, pulse rate was 86 beats/min, and respirations were 24 breaths/min on 3 liters of oxygen by nasal cannula. No visible burns were noted in the oropharynx. Initial laboratory was remarkable only for a hemoglobin of 13.9 g/dL and a WBC count of 16,200/mm³. Chest roentgenogram results was normal. Approximately 3 hours after ingestion, she was transported by helicopter to a referral hospital. Her condition deteriorated with increased abdominal pain and tenderness, and pale, cool extremities. Blood pressure was 147/60 mm Hg, pulse rate 155 beats/min, respirations 40 breaths/min, and temperature 38.3°C. Arterial blood gases showed a pH, 6.98; PCO₂, 27 mm Hg; PO₂, 262 mm Hg; and bicarbonate, 4 mEq/L. Initial treatment consisted of intravenous fluids, sodium bicarbonate, and whole blood. Her abdomen became increasingly distended and a large hematoma formed at the site of an intramuscular injection. She was taken to the operating room, where perforations of the stomach and diaphragm were noted. Her stomach, 120 cm of jejunum, pancreas, spleen, and gall bladder were removed. The family at that time refused further surgery to remove the esophagus. Over the next 4 days, she continued to require packed red blood cells, plasmanate, and other blood products. She remained alert and oriented with stable vital signs. Four days after the ingestion, she developed cyanosis and died shortly thereafter.

Case 74. A 57-year-old man ingested several ounces of a toilet bowl cleaner containing 15% hydrochloric acid. On presentation to the hospital, he was obtunded and hypotensive. Purulent drainage with a small amount of blood was noted from the mouth. Within several hours he developed a severe metabolic acidosis, hypothermia, adult respiratory distress syndrome, disseminated intravascular coagulation, and renal failure. Subcutaneous emphysema of the chest wall was noted and chest tubes were inserted. Peritoneal lavage showed grossly bloody return. During emergency surgery, a nonviable esophagus and stomach were removed. Intraoperatively, it was noted that the patient had burns of the exterior of the posterior lungs. Treatment consisted of intravenous hetastarch, mannitol, normal saline, boluses of sodium bicarbonate, and a dopamine infusion. Two days after the ingestion, PO₂ was 47 mm Hg on 95% oxygen and a positive end expiratory pressure of 18 cm H₂O. Cardiac output was 5 L/min and systemic vascular resistance 732 dyn · s/cm⁵ on dopamine and amrinone. Other pertinent laboratory values included BUN, 46 mg/dL; creatinine, 2.6 mg/dL; PT, 37 seconds; platelets, 80,000/mm³; and calcium, 3.8 mg/dL. He continued to have hemodynamic instability on vasopressor support, increasing renal dysfunction; and severe adult respiratory distress syndrome, and died 4 days after initial presentation.

Case 76. A 12-year-old, developmentally delayed boy ingested an unknown amount of an unknown cleanser (pH 13.5) from an unmarked bottle. Almost instantly he began coughing, had pain in his throat, and respiratory distress. He was intubated in the ED. During the first week of his hospitalization, he received steroids, antibiotics, and parenteral nutrition. Pneumomediastinum was noted and bronchoscopy showed a left broncho-esophageal fistula. Selective right mainstem intubation was performed. Esophagogastrosocopy identified second and third degree burns to the esophagus and stomach. A diverting esophagostomy and a gastrostomy tube (for enteral nutrition) were placed. In the following 6 weeks, the patient was maintained in a heavily sedated state while mechanical ventilation was discontinued. He was transferred out of the ICU with a tracheostomy in place. The patient's mentation returned to baseline. One week following discharge from the ICU, the patient was found dead in his bed from a suspected tracheostomy complication.

Case 81. A 6-week-old girl was found without respirations and brought to the ED. On arrival, the infant was in cardiopulmonary

arrest. She was intubated and resuscitated. Her carboxyhemoglobin level was 5.0% when first determined at least 19 hours after presentation. The following day, she had a cardiac arrest and could not be resuscitated. The day prior to this presentation the infant had been seen in the ED and was to be admitted to rule out sepsis, but the mother refused and left. Three weeks earlier an oil burning stove had backed up and the infant and cat were covered with soot. At that time when the infant was brought to the ED, she was asymptomatic and was discharged. The cat died suddenly several days prior to the final admission.

Case 108. A 40-year-old man arrived by ambulance with a history of a 15 to 20 minute exposure to hydrogen sulfide gas while cleaning a septic tank. The patient was unresponsive and receiving 100% oxygen. On initial examination his pulse rate was 110 to 120 beats/min. He was intubated and sewage material was suctioned from his lungs. His arterial blood gases were pH, 7.15; PO_2 , 79 mm Hg; and bicarbonate, 28 mEq/L. Chest roentgenogram showed bilateral infiltrates. The patient was started on intravenous imipenem/cilastatin and gentamicin and was admitted to the ICU. Six hours after the exposure, his blood pressure was 100/70 mm Hg, pulse rate was 120 to 140 beats/min, and temperature, 39.3° C. Arterial blood gases were pH, 7.3; PCO_2 , 26 mm Hg; and PO_2 , 83 mm Hg. He had ST segment elevation. The patient had brief periods of alertness throughout the initial 24 hours. Approximately 30 hours after the exposure, the patient suddenly deteriorated and had a cardiac arrest.

Cases 111 and 112. A 30-year-old man and his coworker were working 30 feet above a silage. They had forgotten to turn on the exhaust fan. They were overcome by the silage gas (methane, nitrogen oxide, nitric acid) and fell on top of the silage. Paramedics retrieved them 40 minutes after they fell. Cardiopulmonary resuscitation was initiated immediately and they were transported to the local hospital, where cardiopulmonary resuscitation was continued, but was unsuccessful.

Case 117. A 23-year-old depressed woman intentionally ingested calcium polysulfide fungicide and was found unresponsive. On arrival to the ED, she was in cardiopulmonary arrest. She underwent cardiopulmonary resuscitation and also received intravenous sodium nitrite. Venous and arterial blood "locked normal". Initial laboratory results included WBC count, 25,800/mm³; pH, 7.26; and bicarbonate, 6 mEq/L. In the ICU, the patient was comatose with occasional decorticate movements. She had a sinus tachycardia. Three hours after the ingestion, her arterial blood gases on 100% oxygen were pH, 7.26; PCO_2 , 14 mm Hg; and PO_2 , 534 mm Hg. Ten hours after admission, her methemoglobin level was 14%. At approximately 11 hours after admission, the patient had another cardiopulmonary arrest, and could not be resuscitated. Postmortem examination showed pulmonary edema and congestion, and mottling of both the myocardium and hepatic parenchyma.

Cases 120-123. Four family members, ages 40, 44, 68, and 88 years old, presented to the ED with nausea, vomiting, and shortness of breath. They gave a history of exposure to freon from an old refrigerator 2 days previously. All four family members were admitted, because of respiratory distress. Cultures for *Legionella* were negative. The refrigerator was checked and was not leaking freon. A history of making lead sinkers in the basement was then obtained, but all lead levels were unremarkable. Twenty-four hours after admission, the 44-year-old man became febrile to 38.3° C, had right upper quadrant abdominal pain, and a WBC count of 16,000/mm³. On the following day, his temperature increased to 39° C and he developed a productive cough. His abdominal pain had resolved. A history was then obtained that the patient was employed at a plant where silver was extracted. He had brought a chemical sludge from work to extract silver at home. During this process, he had exposed all the family members to mercury fumes. His blood mercury level was 16.1 µg/dL. The patient was started on dimercaprol. He developed tachycardia and tachypnea and required intubation and mechanical ventilation. A blood mercury level 10 days after admission

was 10 µg/dL. The patient continued to deteriorate and developed a pneumothorax requiring insertion of a chest tube. Twenty-four days after the exposure, the patient died.

The 40-year-old woman also had a history of chronic bronchitis and sarcoidosis. On arrival to the ED, she was tachycardic and tachypneic. She quickly deteriorated and required intubation and mechanical ventilation. The following day she was febrile to 40.1° C and a chest roentgenogram showed pneumonia in the right lung. When it was learned that she had been exposed to mercury, dimercaprol was started. Five days after the exposure, her blood mercury was 12.7 µg/dL. Over the following days, her respiratory status continued to deteriorate and she became hypotensive. In addition, she developed a pneumothorax necessitating insertion of a chest tube. Her blood mercury level decreased to 9 µg/dL. The patient developed adult respiratory distress syndrome, renal failure, refractory hypotension, and died.

The 68-year-old man had worked with the 44-year-old man in the basement using the chemical sludge to recover silver. Within a few hours after arrival to the ED, he required intubation and mechanical ventilation. His hospital course included fever, a pneumothorax, and hypotension requiring vasopressor support. He received dimercaprol. The patient had a cerebrovascular accident and was unresponsive to all pain. A CT scan showed an intracranial bleed. An electroencephalogram did not show any brain wave activity. The patient died 11 days after the exposure.

The 88-year-old woman had a history of atrial fibrillation and presented to the ED in pulmonary edema. She required intubation and mechanical ventilation. When it was determined that she had been exposed to mercury, she was started on dimercaprol. Her hospitalization included the development of adult respiratory distress syndrome, hypotension, anemia, and renal failure. She died 15 days after admission.

Case 124. A 70-year-old woman presented 48 hours after ingesting 3 mercury bichloride tablets, 473 mg. Approximately 5 hours after the ingestion, she developed abdominal cramps, melena, and hematemesis. Her urine output had been steadily decreasing, and she was anuric in the ED. On physical examination in the ED, the patient was irritable and lethargic. Vital signs were blood pressure, 200/90 mm Hg; pulse rate, 97 beats/min; respirations, 16 breaths/min; and temperature, 37.5° C. Laboratory results included hemoglobin, 8.9 g/dL; hematocrit, 27.1%; sodium, 128 mEq/L; potassium, 4.9 mEq/L; chloride, 102 mEq/L; bicarbonate, 15 mEq/L; glucose, 97 mg/dL; creatinine, 7.5 mg/dL; BUN, 58 mg/dL; and lactate dehydrogenase, 5,748 IU/L. Three days after the ingestion, the blood mercury level was 2.4 µg/mL. Dimercaprol and hemodialysis were started approximately 4 days after the ingestion for 4 days. Six days after the ingestion, dimercaptosuccinic acid was given extracorporeally into the arterial hemodialysis port as hemodialysis continued for 13 more treatments. Despite good results in removing the serum mercury, the patient's neurologic and respiratory status deteriorated, requiring intubation and ventilatory support approximately 1 week after admission. She remained anuric and obstipated, and developed sepsis. She died 27 days after the ingestion. Postmortem mercury levels were blood, 12.4 µg/mL; urine, 2.8 µg/mL; liver, 11.2 µg/g; and kidney, 11.4 µg/g.

Case 126. A 27-year-old man ingested approximately 240 mL of an arsenic herbicide in a suicide attempt. The patient vomited spontaneously soon after the ingestion. En route to the health-care facility, he received ipecac syrup and vomited clear emesis. He was also given intravenous fluids. On arrival at the ED, approximately 35 minutes after the ingestion, he was awake and alert. His blood pressure was 88/40 mm Hg, pulse rate was 114 beats/min, and respirations were 28 breaths/min. He had a large emesis of pink-streaked liquid containing frank blood. Tachycardia and hypotension persisted despite intravenous fluids. An orogastric tube was inserted an hour after the ingestion, and he was lavaged with normal saline. The patient developed ventricular tachycardia that rapidly degenerated

to ventricular fibrillation unresponsive to lidocaine or defibrillation. The patient died 80 minutes after the ingestion. No chelating agents were used. Arsenic levels were obtained from blood, urine, and gastric contents 3.5 hours after the ingestion, and were 650 µg/dL; 170 µg/dL, and 90 µg/dL, respectively.

Case 127. A 30-year-old woman ingested unknown amounts of a 16% arsenate herbicide and a 0.4% chlorophenoxy herbicide. On presentation to the ED, she was asymptomatic with normal vital signs. She received activated charcoal and a cathartic. Within 2 hours, the patient had a seizure, required intubation, and was transported to a facility where dimercaprol was available. The patient became hypotensive, and required dopamine and norepinephrine. Two days after the ingestion, the patient developed adult respiratory distress syndrome. A massive stroke occurred on the seventh day, and the patient died 9 days after the ingestion. The initial 24 hour urine arsenic level returned on day 4 and was 71,000 µg/L.

Case 128. A 65-year-old man intentionally ingested 100 mL of a chlorophenoxy herbicide. He was comatose, acidotic, and in renal failure. He was intubated and placed on a ventilator. Laboratory results showed a pH of 7.2 and elevated BUN and creatinine levels. He received dopamine, sodium bicarbonate, potassium, and other medications. By approximately 6 days after the ingestion, he had developed multiple organ system failure. Postmortem examination showed bilateral bronchopneumonia, bilateral hydrothoraces, and diffuse petechial hemorrhages in the brain. In addition, the patient had a floppy mitral valve, cardiomegaly, left ventricular hypertrophy, biventricular dilation, and biatrial enlargement.

Case 129. A 32-year-old man was brought to the hospital after being found wandering naked outdoors. He gave a history of having smoked marijuana laced with pencyclidine. An unlabelled, gallon jug of black-colored liquid that smelled like motor oil was brought to the ED with the patient. He confided to his sister that he had ingested one-half gallon of paraquat. Time of ingestion could not be precisely determined. On physical examination, the patient was sleepy but could respond verbally. Vital signs were described as normal except for an axillary temperature of 34.5°C. Horizontal and vertical nystagmus were present, the patient was drooling, but no intra-oral lesions were noted. He vomited, and there was no blood in the emesis. Initial laboratory evaluation included sodium, 140 mEq/L; potassium, 2.5 mEq/L; chloride, 103 mEq/L; bicarbonate, 14 mEq/L; BUN, 12 mg/dL; creatinine, 1.6 mg/dL; and WBC count, 19,000/mm³. Arterial blood gases were pH, 7.37; PCO₂, 33 mm Hg; PO₂, 62 mm Hg; and bicarbonate, 18 mEq/L. Anion gap was elevated at 23 mEq/L. Twelve hours after presentation, the patient appeared disoriented and did not respond verbally. Respiratory rate was 28 breaths/min and rectal temperature was 39.0°C. He began having liquid, yellow stools, then developed acute respiratory failure, bradycardia, and shock. He died 19 hours after presenting to the ED. A blood paraquat level drawn at least 18 hours after ingestion was 5.2 µg/dL.

Case 130. A 50-year-old woman drank 240 to 300 mL of an herbicide containing 40% sodium arsenite. When the paramedics arrived at the scene 1.5 hours after the ingestion, the patient was in cardiopulmonary arrest. Resuscitation was initiated, and the patient arrived in the ED 2.5 hours after the ingestion still in cardiopulmonary arrest. Continued resuscitation efforts, including dimercaprol, were unsuccessful. Postmortem examination confirmed arsenic poisoning. Blood toxicologic analysis revealed arsenic; 90 µg/dL; chloridiazepoxide, 0.22 µg/mL; norchloridiazepoxide, 0.07 µg/mL; amitriptyline, 220 ng/mL; and nortriptyline, 510 ng/mL.

Case 142. An 18-year-old man was found in full cardiac arrest in electromechanical dissociation after huffing a fabric protector (trichloroethane/freon) with his brother. A junctional rhythm with pulses was initially obtained en route to the hospital, but could not be maintained. The patient was pronounced dead at the hospital.

Case 144. A 9-year-old boy was found in full cardiopulmonary arrest with a tube from a freon tank in his mouth. He could not be

resuscitated. Postmortem examination showed bilateral pulmonary edema and congestion. Toxicologic analysis confirmed the presence of freon in the blood.

Case 151 and 153. Two plumbers, ages 28 and 30 years old, were working in a manhole without respiratory protective equipment. A canister of freon was being used to freeze a pipe. The 28-year-old plumber, working nearer the canister, was overcome by the freon. The second plumber attempted to rescue him, but was overcome as well. Cardiopulmonary resuscitation was initiated unsuccessfully at the scene. Both patients arrived in the ED in full arrest, 30 minutes after the exposure. Postmortem confirmed asphyxiation secondary to freon inhalation.

Case 159. A 25-year-old man who was not using an appropriate breathing apparatus was exposed to tetrachloroethylene fumes while cleaning the inside of a tank. He had a cardiopulmonary arrest and could not be resuscitated. Postmortem toxicologic analysis showed a blood tetrachloroethylene level of 6.4 µg/mL.

Case 167. This patient entered a tented house (fumigated with methyl bromide) apparently to burglarize it. He was seen running from the house by neighbors, who called 911 when the patient passed out on the lawn. In the ED, the patient was unconscious, seizing, and had pulmonary edema. Life support efforts failed, and the patient died within 5 hours.

Case 168. An adult man was pulled out from under a house that had been tented and fumigated with methyl bromide. He was believed to have been a homeless person who sought refuge in the house for the night. On arrival to the ED, he had a systolic blood pressure of 96 mm Hg and a pulse rate of 88 beats/min. He was intubated, placed on a ventilator, and his blood pressure was maintained with dopamine. The patient had a cardiopulmonary arrest and could not be resuscitated.

Case 169. A 40-year-old man was found by police outside an apartment house that was tented for termite eradication with methyl bromide. The victim was a known intravenous drug abuser who was apparently inside the building for some time attempting to burglarize the property. When paramedics arrived, the patient was comatose, seizing, pupils were fixed and dilated, and vital signs were absent. The patient responded to resuscitative efforts. Upon arrival in the ED, he had a blood pressure of 100/50 mm Hg, pulse rate of 90 beats/min, and respirations of 18 breaths/min. Shortly after arrival, seizures resumed and were treated with diazepam, phenytoin, and pancuronium. Laboratory values included WBC count, 31,200/mm³; creatinine, 1.8 mg/dL; creatine phosphokinase (CPK), 319 IU/L; lactate dehydrogenase, 655 IU/L; and aspartate aminotransferase (AST), 308 IU/L. Arterial blood gases were pH, 6.76; PCO₂, 113 mm Hg; and PO₂, 48 mm Hg. A chest roentgenogram showed severe pulmonary edema. During the next few hours the PO₂ dropped to 29 mm Hg despite ventilatory support, furosemide, and dexamethasone. A CT scan showed a large zone of decreased attenuation of the central cerebellum. At approximately 35 hours after admission, the patient became asystolic and could not be resuscitated.

Postmortem examination showed numerous old intravenous injection sites on both arms. The lungs were filled with a frothy, brownish-red fluid. Sections showed total destruction of the normal honeycomb lung appearance with severe edema present. Microscopically, the alveoli were destroyed and replaced with large numbers of neutrophils. The white matter of the brain contained necrotic neurons with lymphocytic infiltration. The cerebellum had necrotic Purkinje cells. Postmortem toxicologic analysis revealed bromide, 215 mg/dL; cocaine, 0.011 µg/mL; benzoylecgonine, 0.31 µg/mL; codeine, 0.026 µg/mL; and morphine, 0.213 µg/mL.

Case 173. A 48-year-old woman with gastrointestinal symptoms was told she had gastroenteritis by her physician. Four days after the onset of her symptoms, she was taken to the ED combative, confused, and jaundiced. On physical examination, her blood pressure was 110/50 mm Hg, pulse rate 120 beats/min; respirations, 28 breaths/min; and temperature, 36.4°C. Her pupils were dilated and

reactive to light. On abdominal examination, she had tenderness to palpation in the right upper quadrant. Laboratory results included glucose, 40 mg/dL; creatinine, 3.1 mg/dL; total bilirubin, 5.5 mg/dL; alanine aminotransferase (ALT), 7,230 IU/L; ammonia, 570 μ g/dL; PT, 155 seconds; and PTT, 72.7 seconds. An arterial blood gas on room air showed a pH of 7.03 and P_{O_2} of 137 mm Hg. Additional history showed that the woman had picked and consumed wild mushrooms 5 days before admission. Mushrooms subsequently found in the same area were identified as *Amanita phalloides*, although remaining mushrooms in the home were of nontoxic varieties. The patient deteriorated, and she died 6 days after the ingestion while awaiting a liver transplant. Postmortem examination showed massive hepatic necrosis, acute tubular necrosis, cerebral edema, pulmonary edema, and focal hemorrhages of several organs.

Case 174. A 54-year-old man ingested approximately 8 to 10 ounces of a mixture of *Amanita virosa* and *Entoloma* species mushrooms. About 3 hours later he developed mild nausea, vomiting, and diarrhea which seemed to abate, but then recurred explosively several hours later. He also noted blurred vision, sweating, and leg cramps. Medical history was significant for two myocardial infarctions, hypertension, and alcohol and drug abuse. On physical examination, his blood pressure was 120/90 mm Hg, pulse rate 104 beats/min, and he was afebrile. He had mild left upper abdominal tenderness. Laboratory results included hemoglobin, 18.2 g/dL; WBC count, 12,500/mm³; platelets, 425,000/mm³; BUN, 23 mg/dL; creatinine, 1.6 mg/dL; bilirubin, 0.6 mg/dL; AST, 63 IU/L; ALT, 51 IU/L; and PT, 15 seconds. Serum toxicologic analysis was negative for acetaminophen. Urine toxicologic analysis was positive for methamphetamine. He was treated with activated charcoal and a cathartic, intravenous fluids for dehydration, cimetidine, and high dose intravenous penicillin. On hospital day 2, AST was 7,840 IU/L and it peaked the following day at 9,577 IU/L. Prothrombin time was 23.6 seconds on day 2 and peaked at 51.6 seconds on day 5. Because of his age and cardiac history, he was rejected as a candidate for liver transplant. On day 4, he developed florid hepatic encephalopathy. Despite vigorous supportive measures, he died 8 days after the ingestion. Postmortem examination showed massive hepatic necrosis consistent with amatoxin-induced hepatotoxicity. Cerebral edema was also present.

Case 178. An 18-month-old girl allegedly drank a liquid rodenticide at an unknown time. Upon arrival to the ED, the patient had diarrhea and was in shock. Arsenic was considered as the potential toxin due to the product description. The hospital did not have dimercaprol. A helicopter team was sent to transfer the patient to a pediatric medical center. Prior to their arrival, the patient's pulse rate was 200 beats/min, which then progressed to complete heart block. The patient received atropine, sodium bicarbonate, calcium chloride, and bretylium. She was also intubated because of her shallow respirations. One dose of dimercaprol was administered by the transport team upon their arrival, but the patient died prior to transfer. Postmortem examination showed gastritis, cerebral edema, and visceral congestion. There was a metallic, garlicky odor to the tissue. Postmortem arsenic levels were gastric contents, 13.63 μ g; kidney, 6.25 μ g/g; and liver, 7.4 μ g/g. Arsenic was not found in the blood.

Case 179. A 21-year-old man was brought to the ED after allegedly ingesting an unknown amount of an arsenic rodenticide (1.14%). Initial vital signs included a blood pressure of 140/80 mm Hg, and a pulse rate of 68 beats/min. After stabilization, the patient was admitted to the intensive care unit where he received dimercaprol, ethylenediaminetetraacetic acid, and D-penicillamine. On his third hospital day, his medical course was complicated by both renal and liver failure. The patient underwent hemodialysis, with little change in his status. The following morning, he died. Postmortem arsenic blood level was 160 μ g/dL.

Case 181. A 48-year-old woman ingested strychnine, which had been kept in the barn and used as a rodenticide for many years.

When the paramedics arrived, the patient was in cardiopulmonary arrest and resuscitation was initiated. In the ED, she was intubated. After 30 minutes of cardiopulmonary resuscitation, she was hemodynamically stable, but remained comatose with fixed and dilated pupils. She had no seizures. Initial pH was 6.5 and after 10 ampules of sodium bicarbonate it increased to 7.2. Activated charcoal and magnesium sulfate were given by NG tube and a Swan Ganz catheter was inserted. The patient was started on mannitol, dopamine, and an insulin drip. Thirty hours after the ingestion, the electroencephalogram findings showed a flat line with the exception of occipital fluttering. The patient remained on dopamine with a systolic blood pressure in the 80s mm Hg. The patient developed renal failure, and died approximately 48 hours after the ingestion.

Case 182. A 2½-year-old boy was brought to the ED with a history of ingesting less than an ounce of gun bluing (containing 7.75% selenious acid, 8.58% nitric acid, and 6.9% copper sulfate). The child had begun vomiting at home and "turned blue" almost immediately after the ingestion. An ambulance was on the scene within 10 minutes and the emergency medical technician found the child semiconscious and flaccid with respirations of 15 breaths/min. During the 8 minute transport to the nearest hospital, the patient's pulse dropped dramatically and he was nearly apneic. In the ED, the patient became apneic and developed a junctional rhythm and then asystole. He was intubated and cardiopulmonary resuscitation and gastric decontamination were begun. The patient developed a pneumothorax. Resuscitative efforts, lasting 90 minutes, were unsuccessful.

Case 186. A 23-year-old man presented to the ED with a chief complaint of nausea 16 hours after ingesting 150 tablets of acetaminophen, 500 mg. On physical examination, his systolic blood pressure was 158 mm Hg; pulse rate 88 beats/min; and respirations, 40 breaths/min. On abdominal examination, there was tenderness to palpation. Laboratory results included potassium, 6.9 mEq/L; PT, 21.3 seconds; PTT, 48 seconds; platelets, 51,000/mm³; bilirubin, 2.3 mg/dL; AST, 2,950 IU/L; ALT, 2,500 IU/L; ammonia, 300 μ g/dL; and lactic acid, 17.8 mEq/L. Arterial blood gases were pH, 6.98; P_{CO_2} , 21 mm Hg; P_{O_2} , 142 mm Hg; and bicarbonate, 4.6 mEq/L. Acetaminophen level was 164.7 μ g/mL. The patient was started on N-acetylcysteine. Over the next 2 days, he developed respiratory insufficiency requiring mechanical ventilation, gastrointestinal bleeding, and worsening hepatic failure. The acetaminophen level remained high at 51.3 μ g/mL (creatinine 4 mg/dL). Experimental hepatic dialysis was performed and a noncompatible liver transplant was performed. After the transplant, he remained unresponsive and pressor dependent. He died 5 days after presentation.

Case 198. A 43-year-old woman, with a history of depression and two previous operations for cerebral arteriovenous malformation repair, ingested 46 tablets of acetaminophen, 500 mg, over a period of 48 hours. On physical examination 28 hours later, she was lethargic and confused. Her serum acetaminophen concentration was 65 μ g/mL. Aspartate aminotransferase was in excess of 4,000 IU/L. She was started on oral N-acetylcysteine and cimetidine. Sixteen hours later her mental status was worsening. Laboratory values included acetaminophen, 25 μ g/mL; AST, 6,690 IU/L; and ammonia, 433 μ g/dL. Fourteen hours later, because of increasing encephalopathy, the patient underwent orthotopic liver transplantation. Pathology of the patient's own liver showed massive centrilobular necrosis. Cerebral edema progressed to herniation. The patient died 3 days after the transplantation.

Case 220. An 18-year-old man presented to an ED 8 hours after ingesting unknown amounts of acetaminophen/propoxyphene and acetaminophen/codeine. He was comatose with a systolic blood pressure of 70 mm Hg and was in a junctional rhythm. Admitting laboratory results included potassium, 6.0 mEq/L; bicarbonate, 22 mEq/L; BUN, 25 mg/dL; and creatinine, 4.0 mg/dL. The patient was intubated, hyperventilated, and given dopamine. After 8 mg of naloxone, he began to withdraw to pain. Antibiotics were administered for aspiration pneumonitis. His acetaminophen level was 467 μ g/mL.

and he was started on oral N-acetylcysteine. Seventeen hours after the ingestion, the patient underwent hemodialysis. Complications within 20 hours of the ingestion included left arm compartment syndrome requiring fasciotomy, and coagulopathy requiring blood, platelets, and fresh frozen plasma. On the third hospital day, the patient required fasciotomies of both legs and was placed on an intravenous drip of aminocaproic acid. On the fourth hospital day, his creatinine was 8.1 mg/dL and his WBC count peaked at 29,000 cells/mm³. Six days after admission, the patient was declared brain dead and removed from the ventilator. Postmortem examination showed hepatocellular necrosis, cerebral edema, and cerebral hemorrhage. A postmortem serum acetaminophen level was 80 µg/mL.

Case 228. A 38-year-old man presented to the ED because of vomiting and abdominal and chest discomfort. He had been drinking ethanol heavily the night before and also admitted to taking several doses of aspirin, at least 20 over several hours, for his symptoms. In the ED, he was diaphoretic, anxious, alert, and oriented. His vital signs were blood pressure, 122/62 mm Hg; pulse rate, 120 beats/min; respirations, 40 breaths/min; and temperature, 37.0°C. Bowel sounds were decreased. Laboratory results included hemoglobin, 17.6 g/dL; WBC count, 15,900/mm³ with marked neutrophilic leukocytosis; potassium, 6.7 mEq/L; bicarbonate, 8 mEq/L; anion gap, 31 mEq/L; lactate, 2.4 mg/dl; BUN; 33 mg/dL; creatinine, 2.1 mg/dL; AST, 277 IU/L; and gamma-glutamyl transpeptidase, 165 IU/L. Arterial blood gases showed pH 7.32; Pco₂, 15 mm Hg; and Po₂, 88 mm Hg. Chest roentgenogram was clear, but the abdominal films showed possible free air in the abdomen. Electrocardiogram showed sinus tachycardia with peaked T waves consistent with hyperkalemia. In the ED the patient vomited heme positive coffee ground material. He was treated with antacids, intravenous fluids, and oxygen. After admission to the ICU, subsequent abdominal films excluded any major intra-abdominal catastrophe. Toxicologic analysis showed a salicylate level of 72 mg/dL. Methanol, ethanol, and ethylene glycol levels were negative. He was treated with bicarbonate, fluids, insulin, a bolus of 50% glucose, and empirical antibiotics. Initial response appeared favorable with the pH increasing to 7.42, the WBC count declining to 10,000/mm³, and potassium decreasing to 4.2 mEq/L. Repeat salicylate level 3 hours later was 64 mg/dL. However, the patient developed rapidly progressive adult respiratory distress syndrome with increasing hypoxia and hypotension. Six hours after admission, the patient had a cardiac arrest and could not be resuscitated. Postmortem examination showed bilateral pulmonary edema, cerebral edema, and 90% occlusion of left anterior descending and right coronary arteries with severe aortic atherosclerosis.

Case 234. On the evening before admission, a 48-year-old arthritic woman who took aspirin chronically complained of a vague illness. The following morning she experienced nausea and had trouble breathing. She had a cardiopulmonary arrest at home and was successfully resuscitated. On arrival in the ED, she was comatose with a pH of 6.9. She had pneumonia, pulmonary edema, biventricular failure, and hypoglycemia requiring an infusion of 20% glucose. A serum salicylate level was 50 mg/dL. Hemodialysis was attempted, but discontinued because of hypotension refractory to vasopressor therapy. The patient died 24 hours after her initial cardiopulmonary arrest.

Case 252. A 60-year-old man presented to the ED 24 hours after ingesting one case of beer while watching the Super Bowl. Eighteen hours after the ingestion, the patient woke up dizzy and combative. Vital signs in the ED were stable. He was lavaged with negative return. Arterial blood gases were pH, 7.43; Pco₂, 18.6 mm Hg; PO₂, 103 mm Hg; and bicarbonate, 12 mEq/L. He had an anion gap of 30 mEq/L, but no osmolal gap. Toxicologic analysis showed a salicylate level of 84 mg/dL and an ethanol level of less than 10 mg/dL. The patient then admitted he had taken a handful of aspirin. By 31 hours after the exposure, the patient was somnolent but not agitated. Blood pressure was 142/60 mm Hg and he had Kussmaul breathing

with a respiratory rate of 26 to 28 breaths/min. He was given normal saline and sodium bicarbonate, and vomited 1500 mL of coffee ground material. By 38 hours after the exposure, the patient was extremely restless requiring meperidine for sedation. Blood gases continued to show compensated metabolic acidosis. The patient had a cardiac arrest and died before hemodialysis could be initiated.

Case 253. A 58-year-old man with a history of hypertension called the paramedics after ingesting 20 tablets of lisinopril, 10 mg, and 100 tablets of aspirin, 325 mg. When the paramedics arrived, the patient was alert, oriented, dyspneic, and vomiting. His blood pressure was 226/130 mm Hg with a pulse rate of 120 beats/min. On arrival to the ED, he was slightly drowsy, but oriented. Blood pressure was 120/90 mm Hg, pulse rate, 118 beats/min, and respirations, 24 breaths/min. No fever was present. Arterial blood gases were pH, 7.43; Pco₂, 23 mm Hg; Po₂, 98 mm Hg; and bicarbonate, 15 mEq/L. Two hours after ingestion, his salicylate level was 78.8 mg/dL and lisinopril level was 762 ng/mL. The patient received activated charcoal and sorbitol, but immediately vomited. It was then repeated through an NG tube, but the patient vomited again. Whole bowel irrigation was then started through the NG tube. Five hours after the ingestion, the patient became agitated, obtunded, and diaphoretic. His blood pressure was 254/165 mm Hg, with a pulse rate of 156 beats/min, respirations of 36 breaths/min, and rectal temperature of 39.5°C. Arterial blood gases were pH, 7.26; Pco₂, 42 mm Hg; Po₂, 74 mm Hg; and bicarbonate, 19 mEq/L. His potassium was 7.8 mEq/L. Electrocardiogram showed a tachycardia with a rate of 152 beats/min with hyperacute T waves. He was intubated and given insulin, an ampule of 50% glucose, sodium bicarbonate, sodium polystyrene sulfonate, and nitroprusside. Six hours after the ingestion, nitroprusside was discontinued when his blood pressure was 180/95 mm Hg and his pulse rate was 155 beats/min. Eight hours after the ingestion, laboratory results included salicylate level, 98.8 mg/dL; lisinopril level, 583 ng/mL; and potassium, 6.6 mEq/L. Arterial blood gases were pH, 7.37; Pco₂, 30 mm Hg; Po₂, 85 mm Hg; and bicarbonate, 17 mEq/L. At that time he rapidly dropped his blood pressure to 45/35 mm Hg and was started on dopamine. He then developed ventricular tachycardia, was countershocked, and went into asystole. He could not be resuscitated. Postmortem toxicologic analysis showed salicylate, lidocaine, and caffeine.

Case 257. A 42-year-old man with a history of acute gouty arthritis was given a prescription for 30 tablets of colchicine, 0.6 mg. Over the next 3 days, he ingested all 30 tablets in an attempt to relieve his joint pain. He presented to the ED with the chief complaints of nausea, vomiting, and diarrhea that had begun during the first day of colchicine ingestion. He was admitted to the ICU, where his hypotension initially responded to intravenous fluids, but then he required dopamine, dobutamine, and norepinephrine. His condition rapidly deteriorated and he had hypoxemia and a metabolic acidosis. He was intubated and placed on a ventilator. A presumptive diagnosis of septicemia was made, and intravenous antibiotic therapy was instituted. White blood cell count was 15,900/mm³ on admission, but plummeted to 2,400/mm³. Despite standard resuscitation measures, the patient died following sudden cardiac asystole occurring 36 hours after admission. A postmortem report confirmed acute colchicine toxicity.

Case 258. A 57-year-old man presented to the ED with shortness of breath 36 hours after ingesting 20 tablets of colchicine, six tablets of ibuprofen, and an unknown amount of ethanol. Earlier the patient had been nauseated and had vomited at home. On arrival to the ED department, his blood pressure was 100/80 mm Hg, pulse rate, 116 beats/min, and respirations, 24 breaths/min. Physical examination was unremarkable. Laboratory results included sodium, 142 mEq/L; potassium, 4.2 mEq/L; chloride, 107 mEq/L; bicarbonate, 14 mEq/L; BUN, 13 mg/dl; creatinine, 1.1 mg/dL; and glucose, 101 mg/dL. Arterial blood gases showed pH, 7.21; Pco₂, 34 mm Hg; and Po₂, 104 mm Hg. A few hours after admission, the patient became asystolic and could not be resuscitated. Postmortem examination

showed pulmonary edema and hemorrhages, hypertrophy of the heart, and fatty liver changes. Postmortem ethanol level was 190 mg/dL.

Case 259. A family member found a 37-year-old woman smeared with fecal material, in the bath tub. She had an extensive psychiatric history with multiple suicide attempts. Pill bottles and an empty liquor bottle were found next to her. On arrival to the ED, she was obtunded with stable vital signs. She underwent gastric lavage and received activated charcoal. She became more arousable and admitted to taking 50 chloxicine 0.6 mg, lorazepam, fluphenazine, and benztropine in a suicide attempt. Blood toxicologic analysis was negative for alcohol, lorazepam, and benztropine. Trace amounts of alcohol were present in the urine. The patient became agitated, delusional, and hypotensive. Physical examination showed mild epigastric tenderness, a petechial rash, blood pressure of 95/60 mm Hg, pulse rate of 110 beats/min, respirations of 23 breaths/min, and a rectal temperature of 35.3° C. An electrocardiogram showed sinus tachycardia. Laboratory results included hemoglobin, 17.1 g/dL; WBC count, 33,600/mm³ with a differential of 31% neutrophils, 11% bands, 41% metamyelocytes, and 15% lymphocytes; platelets, 200,000/mm³; calcium, 6.8 mg/dL; phosphorus, 4 mg/dL; magnesium, 1.4 mg/dL; amylase, 411 IU/L; lipase, 3,024 units; CPK, 6,424 IU/L (repeat level, 11,470 IU/L); alkaline phosphatase, 534 IU/L; AST, 634 IU/L; ALT, 85 IU/L; PT, 23.4 seconds; and PTT, 69.2 seconds. Despite vasopressor support, she deteriorated over the next 24 hours, and died shortly thereafter. Postmortem examination showed changes in the lung consistent with acute bronchopneumonia. The liver was congested and sections contained endothelial cells in mitotic arrest. The stomach and small intestine demonstrated marked autolysis. There was acute tubular necrosis of the kidneys and marked adrenal hemorrhage. In the spleen, there were cells in various phases of metaphase or undergoing degeneration in the mitotic phase. The bone marrow was hypocellular with a marked decrease in myeloid and megakaryocytic lines. Peripheral blood smear showed Pelger-Huet changes in the neutrophils.

Case 260. Upon the advice of a friend, a woman in a methadone maintenance program gave her 5 year-old daughter a 10 mg dose of methadone to "help her stop coughing". Five hours later, the mother found the child cyanotic and unresponsive. A neighbor called 911, and resuscitation was attempted en route to the hospital. On arrival, the child's core temperature was 31.7° C. Resuscitation attempts with naloxone, warm lavage, warm intravenous fluids, and blankets were continued for 1.5 hours without success. The mother was charged with murder.

Case 280. A 2½-year-old girl ingested 27 chewable tablets of carbamazepine, 100 mg. On arrival to the ED, she was unresponsive and had shallow respirations. The patient was lavaged with normal saline and received activated charcoal and a cathartic. Her initial carbamazepine level was 59 µg/mL. The patient was admitted to the ICU and started having seizures. The patient was then transported by air ambulance to a tertiary care facility. Six hours after the ingestion, the carbamazepine level was 109 µg/mL. She was still seizing and having unspecified cardiac arrhythmias. On arrival at the second hospital, the patient was unresponsive and not assisting the ventilator. Heart rate was 120 beats/min with junctional and atrial ectopy. Pupils were nonreactive, and the patient had decerebrate posturing. Seizures were treated with diazepam, phenobarbital, and phenytoin. The patient developed an ileus, which was treated with NG suctioning and the insertion of a rectal tube. The patient became hypotensive, and required multiple vasopressors. She later experienced a series of arrests, and died 2 days after the ingestion. Postmortem showed aspiration pneumonia with pleural effusions, renal medullary congestion, and congestive hepatomegaly.

Case 281. An 11-year-old girl with a seizure disorder treated with phenobarbital for the past 9 months, presented to the ED with a 4-day history of a skin rash. Two weeks before she developed the rash, she was started on carbamazepine. She was also started on ampicillin 1 week before the rash developed. When the rash oc-

curred ampicillin was discontinued and erythromycin instituted. In the ED, she was lethargic with a blood pressure of 110/50 mm Hg, pulse rate of 104 beats/min, respirations of 20 breaths/min, and temperature of 39.3° C. She had a diffuse, erythematous, confluent maculopapular rash with scattered petechiae. She also had bullae throughout her oropharynx. Lung examination showed diffuse rhonchi. Laboratory results included WBC count, 3,300/min³; PT, 13.6 seconds; PTT, 39 seconds; AST, 947 IU/L; gamma-glutamyl transpeptidase, 109 IU/L; lactate dehydrogenase, 1,830 IU/L; and ammonia, 18 µg/dL. The carbamazepine level was 17.6 µg/mL. Over the next 24 hours her condition deteriorated and she developed gastrointestinal bleeding and respiratory distress. The bullae in her upper airway increased and she was intubated. A chest roentgenogram showed a progressive left lower lobe infiltrate. Shortly after intubation, the patient had a cardiopulmonary arrest and during the resuscitation there was continuous suctioning of bright red blood from her nose and endotracheal tube. A chest roentgenogram during resuscitation showed opacification bilaterally. Resuscitation measures were unsuccessful. The cause of death, determined by the pathologist, was respiratory arrest, pulmonary infiltrates, and Stevens-Johnson syndrome. The postmortem examination showed extensive petechial bullous and desquamative skin changes, and sloughing of oral, esophageal, tracheal, and vaginal mucosa. Other postmortem findings included bilateral diffuse pulmonary consolidation, bilateral hemothoraces, adrenal medullary hemorrhage, and splenomegaly.

Case 282. A 3-year-old girl with severe mental retardation and a seizure disorder was transferred from a community hospital with progressive hepatic failure. Medications for the previous 7 months included phenytoin (10 mg/kg/d) and phenobarbital (5 mg/kg/d). Two days prior to transfer, she developed a rectal temperature of 41.1° C and had several brief generalized seizures. She had bilateral otitis media and was admitted for antibiotic and anticonvulsant therapy. In the next 36 hours she received 5 doses of acetaminophen, 325 mg. On the third hospital day she was noted to have an enlarged liver and appeared jaundiced. At that time her laboratory results included AST, 18,776 IU/L; ALT, 13,294 IU/L; lactate dehydrogenase, greater than 43,000 IU/L; total bilirubin, 2.2 mg/dL; creatinine, 1.3 mg/dL; BUN, 18 mg/dL; and ammonia, 47 µg/dL. She was lethargic and poorly responsive to verbal stimuli. An acetaminophen level was 62.6 µg/mL at 11 hours, dropping to 57.7 µg/mL 20 hours after the last dose. Phenytoin and phenobarbital were discontinued because of concerns that they may have contributed to progressive hepatic failure. The patient continued to deteriorate with a progressive coagulopathy (PT of 60 seconds, PTT of 80 seconds); upper and lower gastrointestinal bleeding, and progressive renal failure (creatinine 3.3 mg/dL 2 days after transfer). Diagnosis of hepatic failure with hepatorenal syndrome was made. Hepatitis serologies and other viral studies showed no evidence of recent infection. The total dose of acetaminophen (62.5 mg/kg) given 36 hours prior to patient transfer was not thought to be the cause of her liver impairment, but liver biopsy was clinically impossible. In reviewing her medical history, it appeared there was a previous episode of elevated liver function tests some time after phenytoin therapy had been initiated. The working diagnosis at the time of the child's demise, 5 days after transfer, was hypersensitivity reaction to phenytoin therapy. Postmortem examination showed a large retroperitoneal hematoma, massive liver necrosis with chronic inflammation and intracanalicular cholestasis. There was extensive cerebral edema and multifocal lymphocytic myocarditis.

Case 283. A 7-year-old boy presented to the hospital comatose and in pulmonary edema. The patient had been taking valproic acid since the age of 3 for a seizure disorder. Initial serum valproic acid level was 256 µg/mL, decreasing to 139 µg/mL. Other laboratory studies included AST, 2,061 IU/L; ALT, 1,012 IU/L; alkaline phosphate, 92 IU/L; ammonia, 261 µg/dL; and total bilirubin, 1.2 mg/dL. He was intubated and ventilated, and died approximately 7 hours after admission to the ICU.

Case 315. An 18-year-old man ingested 60 tablets of amoxapine,

100 mg, about an hour before his mother called the poison center. The patient was dizzy and couldn't focus his eyes. The patient had a seizure en route to the hospital and two additional seizures in the ED. He was intubated, and treated with intravenous diazepam and phenytoin. On gastric lavage, pill fragments were seen, but there was a question as to the identity of the pills found. He received activated charcoal, a cathartic, and intravenous sodium bicarbonate. The electrocardiogram was normal except for a tachycardia at a rate of 120 beats/min. The blood pH was 7.23, and he was mechanically hyperventilated. The patient was admitted to the ICU. Five and one-half hours after the ingestion, the patient had status epilepticus lasting 25 to 45 minutes. He received phenytoin and phenobarbital and his systolic blood pressure dropped to 30 to 40 mm Hg. The patient was profoundly hyperthermic to 42.8°C for 45 minutes, then developed acute anuric renal failure. Ectopy, QRS segment widening, and bundle branch block occurred 12.5 hours after the ingestion. Pulseless ventricular tachycardia followed, and cardiopulmonary resuscitation was initiated. He was successfully cardioverted, but could not maintain a blood pressure, despite dopamine, phenylephrine, and norepinephrine. Thirteen hours after the ingestion, he died from profound cardiovascular collapse.

Case 322. An 18-month-old girl experienced a seizure and cardiac arrest reportedly after returning from playing outside unsupervised. The patient was transported to the ED where she was intubated. An electrocardiogram initially showed an idioventricular rhythm at a rate below 50 beats/min. Administration of epinephrine and atropine resulted in an abnormal rhythm thought to be secondary to digitalis toxicity. Fab fragments were administered with no effect on rate or rhythm. An isoproterenol drip was started and charcoal with sorbitol was administered per NG tube. Initial acidosis (pH 6.9) was treated with sodium bicarbonate and increased to 7.31. P_{O_2} s remained in the 40 to 60 mm Hg range. A urine drug screen was positive for methamphetamines and tricyclic antidepressants. Serum tricyclic level was 1,377 ng/mL. She developed recurrent seizures that were treated with phenobarbital. The patient was defibrillated for ventricular fibrillation, and treated with lidocaine, epinephrine, sodium bicarbonate, atropine, and dopamine. Six hours after presentation blood pressure was 106/48 mm Hg, pulse rate, 148 beats/min, and respirations, 50 beats/min. Her pupils were dilated and nonreactive. She remained unresponsive, with increased intracranial pressure treated with mannitol, furosemide, and hyperventilation. Multiple doses of activated charcoal were given. Her course was further complicated by the development of an ileus as well as diabetes insipidus. Hypotension was treated with dopamine and dobutamine. Tricyclic level 3 days after the ingestion had decreased to less than 25 ng/mL. Arterial blood gases were pH, 7.51; PCO_2 , 25 mm Hg; PO_2 , 110 mm Hg; and bicarbonate, 23 mEq/L. The patient was declared brain dead and lift support withdrawn 4 days after the ingestion. The medical examiner confirmed desipramine overdose as the cause of death.

Case 323. A 20-month-old boy was found sucking on the coating of several tablets of desipramine, 50 mg, and may have ingested 12 to 16 tablets. On the way to the nearest hospital, the child had a brief seizure. In the ED, the pulse rate was 200 beats/min, blood pressure was not palpable, and QRS interval was 0.14 seconds. Within the first 2 hours after presentation, the child sustained two cardiac arrests. A temporary pacemaker was inserted. Phenytoin and sodium bicarbonate were administered. As a last resort, intravenous physostigmine 1.5 mg was administered, without success. A desipramine blood concentration drawn 2 hours after ingestion was 1,600 ng/mL.

Case 354. A 15-year-old girl presented to the ED after ingesting 100 tablets of doxepin, 150 mg, 20 tablets of piroxicam, and an unknown amount of triazolam and verapamil. She was admitted to the ICU in stable condition. By 36 hours after the ingestion, the patient had developed gastrointestinal bleeding, renal failure, and metabolic acidosis. While an external pacemaker was being inserted, she had a cardiac arrest and was resuscitated. Recommendations were made

for the administration of multiple doses of charcoal and calcium. Thirty-eight hours after the ingestion, the patient developed noncardiogenic pulmonary edema, and an exchange transfusion was begun. Four hours later, the patient had a left ventricular assistance device in place and was on cardiopulmonary bypass. Her blood pressure was 101/61 mm Hg; pulse rate 100 beats/min. Fifty hours after the ingestion, the patient remained unresponsive, continued on bypass, underwent peritoneal dialysis, and was receiving epinephrine and dopamine infusions. She died 56 hours after the ingestion.

Case 356. A 31-year-old woman with Huntington's chorea, bipolar affective disorder, and a history of panic attacks reported that 2 hours earlier she had taken an unknown quantity of fluoxetine, 20 mg, and "hundreds of other pills". An ambulance was dispatched and the paramedic observed that the patient was alert, responsive, and depressed. She complained of a headache and feeling anxious. She was given ipecac syrup and the emesis contained numerous pills. On arrival to the ED, her blood pressure was 130/100 mm Hg, pulse rate, 87 beats/min, respirations 32 breaths/min, and temperature 36°C. The neurologic examination was complicated by her underlying disease. Electrocardiogram showed possible junctional rhythm, low voltage on the frontal leads, and nonspecific T-wave abnormalities. Urine drug screen was positive for nicotine and fluoxetine. Further history revealed ingestion of approximately 40 tablets of fluoxetine, 20 mg, pargyline, fluphenazine, lorazepam, diphenhydramine, and ibuprofen. Twelve hours after the ingestion, there was a distinct change in the patient's status, and she was transferred to the ICU. She continued to receive intravenous fluids and charcoal. Eighteen hours after the ingestion, she became more obtunded and had trouble following simple commands. She developed rigid withdrawal of all extremities with slight opisthotonic posturing. Rectal temperature was elevated to 39°C. The pupils reacted sluggishly to light. The diagnosis of neuroleptic malignant syndrome was made. She was intubated and placed on a ventilator, and a Swan-Ganz catheter was inserted. Serial chest roentgenograms showed adult respiratory distress syndrome. In 6 hours her CPK increased from 1,133 IU to 28,988 IU, and her CPK myocardial band increased from 7 IU to 37 IU. The patient's blood pressure continued to drop and she required maximum infusions of dopamine, norepinephrine, and phenylephrine, as well as large amounts of fluid. Her temperature was 42.7°C, which gradually decreased after the use of a cooling blanket and ice packing. After blood, urine, and sputum were cultured (all results eventually proved negative), she was started on antibiotics. Arterial blood gases on 100% oxygen were pH, 7.32; PCO_2 , 42 mm Hg; and PO_2 , 64 mm Hg. The patient was given sodium bicarbonate. The patient then developed frothy pink sputum, pouring out from the endotracheal tube as well as bubbling from her nose and mouth. At the right groin access site, there was oozing and moderately large hematomas were forming. The NG irrigation showed coffee ground material. Lung examination showed diffuse rales. Neurologic status decompensated drastically. The patient was given intravenous hydrocortisone, dantrolene, and albumin. Her pulse rate dropped to 40 beats/min with an unobtainable blood pressure and she could not be resuscitated.

Case 378. A 37-year-old woman was found at home with blood around her mouth after taking approximately 90 tablets of loxapine, 10 mg. A tonic-clonic seizure was observed. Her history included previous polydrug overdose attempts, and a recent discharge from the state mental health hospital with a diagnosis of chronic schizophrenia. On arrival at the ED, she was unresponsive. She was intubated, lavaged, and given activated charcoal, magnesium citrate, naloxone and a bolus of 50% glucose, without response. She was admitted to the ICU where her condition deteriorated. On the second hospital day, her renal status deteriorated and her CPK level was markedly elevated. Hemoperfusion was performed 26 hours after admission. Loxapine levels were drawn before, during, and after the procedure and were 243 µg/L, 230 µg/L, and 197 µg/L, respectively. She remained anuric and hypotensive. She went into asystole and died 3 days after the ingestion.

Case 394. A 20-year-old woman presented with lethargy about 2 hours after ingesting an unknown amount (170 tablets missing) of phenelzine 15 mg. In the ED, her blood pressure was 170/130 mm Hg, pulse rate, 100 beats/min, respirations 17 breaths/min, and temperature 36.1°C. The patient was lavaged and given a cathartic, but did not receive activated charcoal. Within 24 hours of admission to the intensive care unit, she was intubated and hemodialyzed. Complications included metabolic acidosis, adult respiratory distress syndrome, disseminated intravascular coagulation, acute renal failure secondary to disseminated intravascular coagulation, gangrene of her hands and feet, and three cardiac arrests.

Case 395. A 30-year-old woman, chronically on phenelzine, lithium, and carbamazepine, presented an hour after a suicidal ingestion. In the ED, she had a blood pressure of 70/40 mm Hg, pulse rate of 170 beats/min, and a temperature of 42.2°C. The patient was rigid, diaphoretic and unresponsive to deep pain. She also had seizures. The initial treatment included intravenous thiamine, a bolus of 50% glucose, dopamine, gastric lavage, and activated charcoal. She was placed in an ice bath which rapidly decreased her temperature to 38.9°C. Her blood pressure continued to deteriorate and norepinephrine was added, without response. The patient developed refractory metabolic acidosis, disseminated intravascular coagulopathy, and died in profound shock approximately 13.5 hours after the ingestion. Initial lithium level was 0.6 mEq/L and repeat level was 0.5 mEq/L.

Case 396. A 64-year-old inpatient with a long history of depression, treated with phenelzine, was given an intramuscular injection of meperidine for pain. Two hours later he was noted to have altered mental status, delirious behavior, and twitching of the extremities. His vital signs were stable at this time. Shortly thereafter he became hyperpyrexia to 40°C, and developed bradycardia which progressed to asystole. Cardiopulmonary resuscitation was initiated and the patient received atropine, epinephrine, and sodium bicarbonate. Two hours later he had another cardiopulmonary arrest, and was revived with the same treatment regimen. Pertinent laboratory results included potassium, 6 mEq/L; glucose, 21 mg/dL; and pH, 7.1. The patient received a bolus of 50% glucose. The potassium level increased to 7.6 mEq/L, and a few minutes later he arrested again and could not be resuscitated. He died approximately 7 hours after the administration of meperidine. Although an acute myocardial infarction (previous history of myocardial infarction), and sepsis (patient on gentamicin and piperacillin during the hospital stay) were not excluded, phenelzine-meperidine drug interaction was suspected as a cause of this patient's disease.

Case 399. A 15-year-old boy was seen in the ED approximately 16 hours after reportedly ingesting three tablets each of tranlycypromine and imipramine. At the initial examination the patient was delirious and thrashing about. His systolic blood pressure was 87 mm Hg and he was tachycardic. Within the next hour his condition deteriorated, with a systolic pressure as low as 40 to 60 mm Hg and a rhythm demonstrating bradycardia and episodes of ventricular fibrillation. He was acidotic with a potassium of 6.1 mEq/L. He received intravenous norepinephrine, phenytoin, atropine, and lidocaine. By 20 hours after the ingestion, he had experienced five episodes of cardiac arrest before developing a hyperthermic (up to 42.8°C), hypermetabolic crisis. He was treated with intravenous dantrolene and epinephrine, yielding transient stabilization, but he died 21 hours after the ingestion. Postmortem toxicologic analysis showed desipramine at 220 ng/mL; tranlycypromine was not detected.

Case 400. A 39-year-old woman was found at home asystolic after ingesting 24 g of cimetidine. She had been revived, but was hypotensive. Hemodialysis was considered. The patient had anisocoria and a CT scan showed diffuse cerebral edema. Urine and blood toxicologic analyses were positive for cimetidine. The patient had a flat line electroencephalogram. She was then pronounced dead and was disconnected from life support. No other causes could be found for her death.

Case 403. A 31-year-old man was found at home with an empty

bottle known to have contained more than 16 chloroquine, 250 mg. The patient was diaphoretic with a systolic blood pressure of 80 mm Hg, 1 to 1.5 hours after the ingestion. On arrival to the ED, he was in a wide complex rhythm with a systolic blood pressure of 70 mm Hg. The patient was intubated, hyperventilated, and received intravenous epinephrine, sodium bicarbonate, and a 1 mg/kg dose of diazepam. In addition, he underwent gastrointestinal decontamination with lavage and activated charcoal. The patient had refractory acidosis and remained hypotensive with a wide complex rhythm. He died 2.5 to 3 hours after the ingestion.

Case 404. A 24-year-old woman ingested an unknown amount of chloroquine and aspirin. By the time she arrived at the ED, she had respiratory and central nervous system depression. Arterial blood gases were pH, 7.1; Pco₂, 61 mm Hg; and Po₂, 55 mm Hg. She was intubated and mechanically ventilated. She then sustained a cardiac arrest and was given diazepam 1 mg/kg, sodium bicarbonate, epinephrine, isoproterenol, and dopamine. Her two terminal rhythms were electromechanical dissociation and asystole. She died within an hour of her presentation to the ED. An initial salicylate level was 24.1 mg/dL, drawn at an unknown time after ingestion. Postmortem examination showed green discoloration of the brain. Postmortem chloroquine levels were: blood, 4.6 µg/mL; and liver, 18 mg/100 g.

Case 405. A 3½-year-old boy with Down's syndrome, ventricular septal defect, and acute lymphoblastic leukemia was admitted for chemotherapy with intravenous vincristine and intrathecal methotrexate. During the course of this chemotherapy administration, the patient was inadvertently given vincristine intrathecally. This was recognized immediately, and within 4 hours after the exposure, an epidural drain was placed and bilateral ventriculostomies were performed for central nervous system irrigation. He was irrigated with normal saline then fresh frozen plasma and lactated Ringer's solution for 36 hours. Pentobarbital coma was induced 6 hours after the exposure and continued for 24 hours. He also received dexamethasone, prophylactic antibiotic coverage, folic acid, and glutamic acid. During the 2 weeks after the exposure, the patient had recurrent high fevers, but cultures from multiple sites remained negative. Following discontinuation of the pentobarbital coma, the patient responded to painful stimuli, had a gag reflex, and had equal and symmetric deep tendon reflexes. However, during a 10-day period after the exposure, the patient gradually developed an ascending paralysis, encephalopathy, and loss of deep tendon reflexes. During this time, repeat electroencephalograms showed diffuse slowing. A CT scan showed increase in the size of the ventricular system, blood in the periventricular space, and a subarachnoid hemorrhage. He developed thrombocytopenia and despite continuous platelet transfusions, the platelet count could not be maintained over 50,000/mm³. Thirteen days following the exposure, the patient developed seizures and had repeated hypotensive episodes. Fifteen days after the exposure, the patient had a cardiopulmonary arrest and no further resuscitation efforts were instituted.

Case 408. A 38-year-old asthmatic man, on chronic sustained release theophylline, ingested an unknown amount in a suicide attempt. Ipecac syrup was given about 2 hours after the ingestion, and vomiting continued all day. His initial theophylline level was 160 µg/mL. He sustained a generalized tonic-clonic seizure, followed by ventricular fibrillation and cardiac arrest. He was converted to normal sinus rhythm with epinephrine alone, intubated, ventilated, and paralyzed. Hypotension required fluid resuscitation. A subsequent theophylline level was 133 µg/mL, dropping to 43 µg/mL after 6 hours of charcoal hemoperfusion. Phenobarbital was administered with no recurrence of seizure activity. No purposeful movements were noted. An electroencephalogram was performed on the third hospital day, showing only generalized slowing. The patient developed a coagulopathy following discontinuation of charcoal hemoperfusion, despite a normal coagulopathy laboratory profile. Hemostasis was eventually obtained with aminocaproic acid. Renal failure ensued, secondary to rhabdomyolysis. Life support was discontinued 6 days after the ingestion.

Case 429. A 15-year-old boy with a history of psychological problems was brought to the ED after he ingested an unknown amount of a friend's sustained release theophylline, 300 mg, amoxicillin, and cephalixin. Ipecac syrup was given, producing repeated coffee-ground emesis without pill fragments. The boy was tremulous, with a pulse rate of 180 beats/min and blood pressure of 90/40 mm Hg. Intravenous fluids were begun. A theophylline level drawn an hour after arrival was 170 µg/mL. He was then lavaged and given a dose of charcoal with sorbitol. Three hours after presentation, he developed generalized tonic-clonic seizures that continued for about 2 hours despite repeated intravenous doses of diazepam (40 mg total) and phenytoin. He was also febrile to 38.9°C. Systolic blood pressure remained 70 to 90 mm Hg despite repeated intravenous crystalloid boluses. Excessive urine output (2 to 3 liters per 8 hours) was attributed to theophylline diuresis. He was intubated and mechanically ventilated. About 20 to 22 hours after the ingestion, the patient developed bradycardia and had a cardiac arrest. His arterial pH was 6.9 during the arrest. Sinus tachycardia resumed 20 minutes later following administration of multiple fluid boluses, atropine, sodium bicarbonate, epinephrine, and insulin along with a bolus of 50% glucose. Gross myoglobinuria was noted. Dobutamine and dopamine infusions maintained the systolic blood pressure at 80 to 90 mm Hg. Twenty-two to 24 hours after the ingestion, his blood pressure was 80/40 mm Hg, and his pulse rate was 156 beats/min. Lab results included sodium, 151 mEq/L; potassium, 5.7 mEq/L; calcium, 4.2 mg/dL (ionized calcium, 4.0 mg/dL), phosphorus, 6.8 mg/dL; magnesium, 3.3 mg/dL; BUN, 27 mg/dL; creatinine, 0.9 mg/dL; AST, 1,815 IU/L; and arterial pH, 7.6. His theophylline level was 121 µg/mL. Charcoal hemoperfusion was begun after admission, continued for 1 hour, and repeated twice for 90 minutes each cycle, during which time theophylline levels dropped from 120 µg/mL to 37.6 µg/mL. A rebound theophylline level 4 hours after hemoperfusion was 39.1 µg/mL, 40 hours after ingestion. Hemodynamic instability resolved 24 hours after admission, so all vasopressors were discontinued. Electroencephalogram was flat, and his pupils were fixed and dilated. Three days after admission, the patient remained comatose and areflexic. Four days after admission, brain death was documented by electroencephalogram findings and the absence of cerebral blood flow. After parental consent was obtained for organ donation, ventilatory support was discontinued.

Case 473. A 4-year-old boy ingested 6 to 10 tablets of sustained release verapamil, 240 mg, and 2 to 4 capsules of a cold preparation containing acetaminophen, chlorpheniramine, pseudoephedrine, and dextromethorphan. His mother called the poison center 4 to 5 hours after the ingestion, because her son was sleepy and had abdominal pain. Within 12 minutes of the call, the patient presented to the ED cyanotic and asystolic. Cardiopulmonary resuscitation was initiated immediately. He received a total of 15 mL of calcium chloride over a 40-minute period. An external pacemaker was inserted and the patient was transported to a pediatric hospital. Initial toxicologic analysis at the second hospital revealed an acetaminophen level of 8.7 µg/mL and a verapamil level of 71.4 ng/mL (which declined to 53.6 ng/mL, 13 to 14 hours after the exposure). The patient remained unresponsive with dilated pupils. His temperature fluctuated between 32°C and 37.9°C. The child had two successive silent electroencephalograms. Twenty-four hours after admission, he had a cardiac arrest and could not be resuscitated.

Case 488. A 12 kg, 22-month-old boy was brought to the ED by his family, because he had vomited dark material and had black diarrhea. According to his family, he had had a cold for 3 days and the only medication given to him was acetaminophen, the last dose given 5 hours prior to admission. On arrival, the patient was lethargic with mottled skin and cold extremities. His blood pressure was 109/46 mm Hg, pulse rate 160 beats/min, respirations 28 breaths/min, and rectal temperature 37.9°C. On physical examination, he had no bowel sounds and his stools and emesis were guaiac positive. Laboratory results included a serum iron of 4,674 µg/dL and a glucose of 230 mg/dL. Electrocardiogram showed a supraventricular

tachycardia at a rate of 165 beats/min. The patient was lavaged with return of a gray liquid. Spontaneous emesis produced one whole pill. Deferoxamine was initiated. On admission to the ICU, the patient's blood pressure could only be obtained by doppler. He had no palpable pulses. His heart rate was 179 beats/min, respirations, 38 breaths/min and rectal temperature, 37.3°C. He was given pancuronium for intubation and line placement. Plasmanate and sodium bicarbonate were given and the blood pressure increased to 86 mm Hg. Because of hypotension, deferoxamine which had been infusing at 29 mg/kg/h was decreased to 15 mg/kg/h. The stomach was lavaged with normal saline, and large quantities of pill fragments and gross blood were obtained. The patient then received both whole blood and fresh frozen plasma. A stool at this time was reddish colored, guaiac positive, with pill fragments evident. An abdominal roentgenogram revealed a large mass of pills in the jejunum. Despite aggressive lavage procedures, the mass could not be removed. After an exchange transfusion was completed, the patient's blood pressure dropped to 50/30 mm Hg and he was started on dopamine and dobutamine. Three hundred milliliters of blood were removed from the rectal tube. Seizures developed, lasting 2 to 4 minutes, and resolved without treatment. Blood glucose was 14 mg/dL and increased to 80 mg/dL after receiving a glucose bolus and infusion. Twelve hours after his arrival in the ED, the patient was stable enough to undergo gastrotomy with successful removal of a mass of pills. Postoperatively, bleeding from the NG and rectal tubes decreased. However, he was unresponsive to pain and had an unstable blood pressure. Naloxone was administered to determine if the anesthesia could account for the stage IV coma, but the patient did not respond. Boluses of sodium bicarbonate and 50% glucose were needed to maintain his pH and glucose levels. The patient was hypotensive with premature ventricular contractions and the electrocardiogram showed ST segment depression. Four hours postoperatively, his blood pressure could no longer be maintained and he was having frequent seizures. He died 21 hours after his initial ED presentation.

Case 490. A 15-month-old boy was found by his mother ingesting 10 or more tablets of ferrous sulfate, 325 mg. The asymptomatic child was referred to an ED. Admission serum iron level was 281 µg/dL and an abdominal roentgenogram showed numerous tablets in the gastrointestinal tract. Ipecac syrup was administered; vomiting ensued. A second serum iron level was 290 µg/dL. Deferoxamine 90 mg/kg was given intramuscularly followed by an intravenous infusion at 15 mg/kg/h. The child began to convulse approximately 10 hours after the ingestion. Serum sodium at this time was 187 mEq/L and pH was 7.70. A sodium bicarbonate solution had been administered intravenously and orally in accordance with the management of iron poisoning recommended in a commonly used pediatric handbook. An abdominal roentgenogram showed multiple remaining iron tablets in the stomach. Endoscopy was performed and 8 tablets were removed. A CT scan showed diffuse cerebral dehydration and scattered intracranial hemorrhages. Serum iron was 655 µg/dL and intravenous deferoxamine was continued. Intravenous fluids were given to reduce the serum sodium concentration. A second CT scan 48 hours after the ingestion showed diffuse cerebral swelling with no cerebral blood flow. The child died 56 hours after the ingestion.

Case 491. A 73-year-old man was inadvertently given a stannous fluoride solution to take his medication instead of distilled water by a pharmacy technician. Initial symptoms included vomiting and explosive diarrhea. On arrival in the ED, he had hemoptysis, cramping in the arms and legs, hand paresthesias, and bronchospasm. He had a cardiac arrest and developed ventricular fibrillation. His treatment included lidocaine, dopamine, and a temporary pacemaker. The patient was unresponsive with fixed and dilated pupils. Significant laboratory findings were hyperkalemia, which was treated with insulin and glucose, and hypocalcemia with a calcium of 4.0 mg/dL. Electrocardiogram showed an anterior wall infarction. Renal function deteriorated as evidenced by increasing serum creatinine. Urine output was initially maintained with furosemide, but he developed

rhabdomyolysis and acute tubular necrosis, and required hemodialysis 6 days after presentation. He developed seizures treated with phenytoin and phenobarbital. An electroencephalogram showed abnormal activity. Ten days after the ingestion, his PTT was 120 seconds (control 33 seconds) and he was bleeding from his tracheostomy site. He had a cardiopulmonary arrest and was resuscitated. A repeat electroencephalogram showed minimal brain stem function. Medications, hemodialysis, and tube feedings were discontinued, and he died on day 26. Postmortem examination showed changes consistent with hypoxic-ischemic encephalopathy and bilateral bronchopneumonia. Toxicologic analysis on antemortem blood samples from 8 days after the ingestion showed a plasma fluoride concentration of 0.26 mg/L (reference range, 0.02 to 0.08 mg/L).

Case 492. A 14-month-old girl took 13 tablets of diphenoxylate/atropine 11 hours before her parents found the empty bottle. By this time, the child was dyspneic. She was taken to the local ED, where she was successfully resuscitated. Arterial blood gases were pH, 7.05; Pco₂, 19 mm Hg; Po₂, 500 mm Hg; and bicarbonate, 5.2 mEq/L. Two doses of naloxone and sodium bicarbonate were administered. The child became alert and cried after the naloxone. An NG tube was placed and activated charcoal and magnesium citrate were administered. She was admitted to the ICU for observation and was administered either scheduled doses of naloxone or a continuous naloxone infusion. On day 2 of hospitalization, the patient was improving, until she became apneic and required intubation. Her pupils became fixed and dilated. She was taken for a CT scan that showed decreased gray/white matter differentiation, large lateral ventricles, prominent third ventricles, and absent cisterns compatible with cerebral infarct or cerebral edema. Mannitol was given, even though clinical brain death was evident. An intracranial pressure monitor was placed and an intracranial pressure of 57 cm H₂O was noted. Fluid was removed and the intracranial pressure decreased to less than 25 cm H₂O. The patient became hypotensive and was placed on dopamine and dobutamine. On the third day of hospitalization, she developed bradycardia which progressed to asystole, and she died.

Case 494. On a hospital patient care unit, an unknown number of sucralfate tablets were crushed and made into a slurry to be administered through a feeding tube. The sucralfate slurry was then administered through an intravenous line. The patient had a cardiopulmonary arrest shortly thereafter and could not be resuscitated.

Case 496. A 29-year-old man with a history of intravenous drug abuse was brought to the ED seizing and in cardiorespiratory arrest after injecting ½ bottle of NPH insulin in a suicide attempt. He was resuscitated and received an ampule of 50% glucose, phenytoin, and an infusion of 10% glucose. The glucose solution was discontinued when his blood glucose returned at 300 mg/dL. Seizures continued despite standard anticonvulsants, and it was felt the patient had suffered an anoxic episode before arrival in the ED. In the ICU, he became acidotic, bradycardic, then asystolic. Resuscitation attempts were unsuccessful. Toxicologic analysis was positive for cocaine.

Case 500. A 27-year-old man with advanced acquired immunodeficiency syndrome (AIDS), (T4 lymphocytes less than 20/mm³, moderate dementia, previous *Pneumocystis carinii* pneumonia, and anemia) presented to an ED with status epilepticus and respiratory arrest. Seizures had begun an hour prior to admission, which was 36 hours after the intravenous injection of an experimental drug, Compound Q (trichosanthin). The drug was obtained from an unknown source and is not licensed in the US. The patient was intubated, placed on a ventilator, and administered diazepam and dexamethasone. The seizures subsided, but the patient remained comatose for the next 7 days. Head CT scan demonstrated findings compatible with a brain stem infarction. The patient then began responding and appeared to improve. However, he then developed aspiration pneumonia and sustained recurrent respiratory arrests. The patient died 41 days after admission due to cardiopulmonary arrest secondary to aspiration pneumonia, brain stem infarction, hypoxia, and seizures

secondary to injection of Compound Q, complicated by advanced AIDS.

Case 503. A 56-year-old man ingested an unknown amount of alprazolam. At an unknown time after ingestion, he went to an ED where he underwent gastric lavage and received charcoal and a cathartic. He was then transported to another health-care facility. Upon arrival, he was unresponsive, hypotensive, bradycardic with occasional premature ventricular contractions, and was hypoventilating. Treatment included intubation and mechanical ventilation, dopamine to maintain blood pressure, and lidocaine for the premature ventricular contractions. An initial toxicologic analysis was positive for benzodiazepines. His hospital course was complicated by the development of aspiration pneumonitis and secondary cortical blindness. A CT scan was normal. Eight days after presentation, the patient responded to verbal stimuli and was oriented to his surroundings, but had no peripheral vision. He arrested 11 days after presentation. Postmortem examination showed deep vein thrombosis of both legs, massive (saddle) pulmonary embolus, anoxic encephalopathy, bilateral hippocampal necrosis, and bilateral necrosis of the visual cortex.

Case 524. A 36-year-old man with a history of drug use self-infused 35 mL of a pentobarbital euthanasia solution (3.125 g pentobarbital). His concerned girlfriend dispatched the paramedics to his work location. When the paramedics arrived, he was cyanotic and in respiratory arrest. The initial level drawn on the patient's arrival in the ED was 42 µg/mL. The patient remained comatose, on a ventilator, and had possible seizure activity for which he received phenytoin. His pentobarbital level dropped to 12.6 µg/mL (2 days after exposure), to 1 µg/mL (3 days after), and to 0 µg/mL (5 days after the exposure). Five days after the exposure a flat electroencephalogram was obtained and the patient was removed from the ventilator.

Case 540. A 27-year-old man arrived in the ED 15 minutes after a rattlesnake bite to two fingertips on his right hand. The snake was a 2-foot-long prairie rattlesnake, *Crotalus viridis viridis*, which had been kept by the patient's roommate as a pet. The patient was awake, alert, and oriented. There was slight bleeding at the site, and the two fingers were swollen. A tourniquet had been applied, but was removed upon arrival at the ED. Serial measurements of the extremity were obtained and the swelling rapidly progressed beyond the forearm to the upper arm over the next 2.5 hours. All of the patient's fingers were tight with impressive swelling of the dorsum of the hand. The patient was skin tested with reconstituted antivenin. Within 15 minutes, the patient developed a 2.5 centimeter area of induration and 4 centimeters of erythema at the skin test site. The patient had no history of allergies. The bite-site swelling continued to rapidly progress and the patient was pretreated with 50 mg intravenous diphenhydramine, 125 mg intravenous methylprednisolone, and 0.3 mL of 1:1,000 subcutaneous epinephrine. An intravenous infusion of 5 vials of crotalid antivenin in 250 mL of D₅W was started. Approximately 20 minutes later, after about 60% of the antivenin had been given, the patient began having difficulty breathing. He subsequently experienced severe respiratory distress and had an anaphylactic reaction. Intravenous epinephrine was administered. A cricothyroidotomy was performed as the patient could not be intubated secondary to laryngospasm. He sustained an asystolic cardiac arrest. Gross findings on postmortem examination were consistent with severe bronchospasm. There was no swelling of the upper airway noted. The manufacturer of the antivenin stated this is the first reported death from the administration of this polyvalent antivenin.

Case 551. A 28-year-old male crack cocaine dealer was brought to the ED in cardiac arrest after collapsing at a party. Two days earlier, he had allegedly swallowed 3 to 12 bags of crack because he feared arrest. The patient was resuscitated in the ED and transferred to the ICU. Several hours after admission, he was hypothermic to 34.5°C, had multiple cardiac arrhythmias, developed a coagulopathy, and had no urine output. There was sloughing of bowel tissue. The se-

rum toxicologic analysis was reported as negative. Several hours after admission, his CPK level was 17,000 IU/L and his potassium level was 7 mEq/L. Supportive treatment included norepinephrine and dopamine infusions, ventilator support, fresh frozen plasma, 200 mg of calcium chloride, glucose, insulin, furosemide, and sodium polystyrene. Due to the patient's unstable condition, no attempts were made at surgical or other gut decontamination. Ten hours after admission to the intensive care unit, he became asystolic and could not be resuscitated. Postmortem examination showed cardiomegaly, subendocardial hemorrhage of the interventricular septum, marked pulmonary edema, esophageal varices and ecchymosis, peritoneal effusion, focal renal cortical infarction with acute tubular necrosis, and mild cerebral edema. Postmortem cocaine levels were blood, less than 0.010 µg/mL; bile, 8.12 µg/mL; and gastric, 0.10 µg/g. Cocaine metabolites were also found in the blood and bile.

Case 553. A 32-year-old woman was exposed to cocaine, form unknown, by unknown route. On presentation to the ED 2 to 3 hours after the drug exposure, she was coherent with a systolic blood pressure of 100 mm Hg, pulse rate of 120 to 140 beats/min, and temperature of 41.1°C. Rapid cooling in an ice bath was advised. However, on follow-up an hour later, it was determined that no cooling procedures had been initiated. Laboratory results included CPK, 6,000 IU/L; PT, 27 seconds; PTT, 120 seconds. Urinalysis showed many WBCs per high power field. The patient was admitted to the ICU with a rectal temperature of 41.1°C. Shortly after the ICU admission, the patient had a grand mal seizure and could not be intubated. She developed asystole and died.

Case 568. A 26-year-old man, with a history of ethanol abuse for the previous week, became violent then unresponsive after snorting a 3-inch line of cocaine. In the ED, he was comatose and started to seize. He was bleeding profusely from his nose. On 100% oxygen, his arterial blood gases were pH, 7.1; P_{O_2} , 144 mm Hg; and bicarbonate, 11 mEq/L. A phenytoin infusion was started, and he became hypotensive and had a cardiopulmonary arrest. After resuscitation, norepinephrine was given, with a resulting systolic blood pressure of 130 mm Hg. He then became febrile to 40.5°C. The patient was paralyzed with pancuronium. Although phenylephrine, norepinephrine, and fluids were given, it was difficult to maintain his blood pressure. He developed adult respiratory distress syndrome and disseminated intravascular coagulation. Large doses of bicarbonate were needed. His CPK level increased to 4,000 IU/L. Renal function tests showed a creatinine level of 3.6 mg/dL and a BUN level of 23 mg/dL. Urine toxicologic analysis was positive for cocaine. Twenty-four hours after admission, the patient had a cardiopulmonary arrest and could not be resuscitated. Postmortem examination showed se-

vere fatty infiltration of the liver, rhabdomyolysis with renal pigment casts, early bronchopneumonia, cardiomegaly with left ventricular hypertrophy, and cerebral edema.

Case 574. A 20-year-old man had been drinking and was pulled over by the police. He then swallowed a packet of something, witnessed by the police during the arrest. He was taken to the hospital and he told the physician that the ingested packet contained marijuana. The patient was evaluated in the ED, released, and sent to jail. Approximately one hour later, the patient had a seizure and was brought back to the hospital pulseless and apneic. The patient was resuscitated with fluids, epinephrine, and sodium bicarbonate. A blood pH noted on admission was 6.8. Approximately one hour following readmission to the hospital, the patient developed a wide rhythm unresponsive to therapy and he died. Toxicologic analyses showed cocaine, tetrahydrocannabinol and ethanol.

Case 583. An adult man was brought into the ED after having seizures. His brother had noted "bizarre" behavior and "strange movements" the previous day. On admission, the patient was seizing, febrile to 42.8°C, and had fixed, dilated pupils. The patient developed rhabdomyolysis and renal failure, never regained consciousness, and died 2 days after admission. Postmortem toxicology analysis revealed methamphetamine (1.6 mg/dl) and lidocaine.

Case 589. A 70-year-old woman accidentally mistook oil of wintergreen for cough syrup. Within one hour of the ingestion, she presented to the ED asymptomatic. Her salicylate level was 68 mg/dL. Arterial blood gases were pH, 7.40; P_{CO_2} , 33 mm Hg; and P_{O_2} , 84 mm Hg. Over the next 14 hours she became tachypneic, comatose, and developed abdominal distention with decreased bowel sounds. She had an increasing anion gap acidosis. Her repeat salicylate level 24 hours after admission was 50 mg/dL, dropping to 13 mg/dL after 4 hours of hemodialysis. A minilaparotomy, performed because of persistent abdominal distention, demonstrated ischemic bowel. She died approximately one hour after the laparotomy.

Case 590. A 75-year-old man ingested 60 to 90 mL of oil of wintergreen. In the ED, he was agitated but awake, tachycardic, and tachypneic. He was lavaged, and the lavage fluid had a pronounced odor of oil of wintergreen. He rapidly became lethargic, had a respiratory arrest, and then developed asystole. He was resuscitated, but then became bradycardic again. He was placed on isoproterenol, developed ventricular fibrillation, then asystole, and died approximately 2 hours after presenting to the ED. A salicylate level drawn 45 minutes after arrival to the ED was 80.6 mg/dL. Postmortem examination showed fluids in the stomach and small intestine with a strong odor of methyl salicylate. Postmortem blood salicylate level was 56 mg/dL.