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Epidemiologic Notes and Reports

Water Hemlock Poisoning — Maine, 1992

On October 5, 1992, a 23-year-old man and his 39-year-old brother were foraging for wild ginseng in the midcoastal Maine woods. The younger man collected several plants growing in a swampy area and took three bites from the root of one plant. His brother took one bite of the same root. Within 30 minutes, the younger man vomited and began to have convulsions; they walked out of the woods, and approximately 30 minutes after the younger man became ill, they were able to telephone for emergency rescue services.

Within 15 minutes of the call, emergency medical personnel arrived and found the younger man unresponsive and cyanotic with mild tachycardia, dilated pupils, and profuse salivation. Severe tonic-clonic seizures occurred and were followed by periods of apnea. He was intubated and transported to a local emergency department. Physicians performed gastric lavage and administered activated charcoal. His cardiac rhythm changed to ventricular fibrillation, and four resuscitative attempts were unsuccessful. He died approximately 3 hours after ingesting the root.

Although the older brother was asymptomatic when he arrived at the emergency department, he was treated prophylactically with gastric lavage and administered activated charcoal. He began to have seizures and exhibit delirium 2 hours after eating the root; he was stabilized and transferred to a tertiary-care center for observation. No additional adverse effects were reported.

The root ingested by the two brothers was identified as water hemlock (*Cicuta maculata*). In October 1993, postmortem samples of frozen liver tissue, blood, and gastric contents from the man were analyzed by high-pressure liquid chromatography for cicutoxin, a poisonous substance in water hemlock. Cicutoxin, a neurotoxin, was not detected; however, the toxin is labile and may have degraded during storage.

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Editorial Note: Based on mortality data files maintained by CDC's National Center for Health Statistics, from 1979 through 1988 (the most recent national data available) at

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least 58 persons in the United States died after ingesting a poisonous plant that was misidentified as an edible fruit or vegetable; inadvertent ingestion of water hemlock, as in the two cases in this report, caused at least five of these deaths. During 1989–1992, the American Association of Poison Control Centers recorded four deaths attributed to ingestion of poisonous plants (*1–4*). Water hemlock—also known as beaver poison, children's bane, death-of-man, poison parsnip, and false parsley—is in the same family as parsley, parsnips, celery, and carrots. It is similar in appearance to parsnips, smells like fresh turnips, and tastes sweet, but it is the most toxic indigenous plant in North America (*5*).

Although cicutoxin is present in all parts of the water hemlock plant, the root contains the highest concentration. Ingestion of a 2–3-cm portion of the root can be fatal in adults (*6*), and use of toy whistles made from the water hemlock stem has been associated with deaths in children (*7*). The plant is poisonous at all stages of development and is most toxic in the spring. Poisonings typically result from ingestions; however, cicutoxin also may be absorbed through the skin.

Mild toxicity from water hemlock produces nausea, abdominal pain, and epigastric distress within 15–90 minutes. The early gastrointestinal response of vomiting may be somewhat protective as many persons regurgitate the undigested root. Diaphoresis, flushing, and dizziness also have been reported. In severe intoxications, profuse salivation, perspiration, bronchial secretion, and respiratory distress leading to cyanosis develop soon after ingestion. In fatal poisonings, severe seizures occur after the initial symptoms, and death results usually from status epilepticus. The case-fatality rate for poisonings reported from 1900 through 1975 was 30% (*8*). The last fatality attributed to ingestion of water hemlock in Maine occurred in the early 1970s. No antidotes exist, and treatment is supportive. Complications associated with serious poisonings include rhabdomyolysis with renal failure (transient hematuria, glycosuria, and proteinuria), severe metabolic acidosis, bradycardia, and hypotension (*9*).

This report underscores the need for persons who forage for edible wild plants to be aware of and able to recognize poisonous plants in their area. Water hemlock causes most of the fatalities attributed to misidentification of poisonous plants because the plant is lethal in small quantities, resembles edible plants, and is found throughout North America. Health-care providers who know that their patients eat wild plants should caution them about the potential adverse health effects.

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Current Trends

Health-Risk Behaviors Among Persons Aged 12–21 Years — United States, 1992

Health-risk behaviors among youth may result in immediate health problems (e.g., injuries and sexually transmitted diseases) or extend into adulthood and increase risk for chronic diseases (e.g., heart disease and cancer) (*1*). This report uses national data from the Youth Risk Behavior Survey (YRBS), conducted as part of the 1992 National Health Interview Survey (NHIS), to examine the prevalence of selected self-reported health-risk behaviors among persons aged 12–21 years.

The YRBS is a component of CDC's Youth Risk Behavior Surveillance System, which periodically measures the prevalence of priority health-risk behaviors among adolescents (*1*). The 1992 NHIS was conducted among a representative sample of the civilian noninstitutionalized U.S. population using a multistage cluster-area probability design of approximately 120,000 persons representing 49,000 households. The YRBS was conducted as a follow-back survey to the NHIS among a representative sample of persons aged 12–21 years in the sampled households. Adolescents who did not attend school were oversampled. During April 1992–March 1993, respondents listened to a tape recording of the questionnaire and recorded their responses on a standardized answer sheet. Questionnaires were completed by 10,645 (77.2%) eligible respondents. Respondents were categorized into three age groups that generally corresponded to three schooling levels: middle/junior high school (12–13 years; n=2195), senior high school (14–17 years; n=4126), and postsecondary school (18–21 years; n=4324). SUDAAN was used to compute all standard errors for the estimates and for differences between the estimates (*2*). All estimates were based on weighted data.

Persons aged 12–13 years were significantly less likely than those aged 18–21 years to have reported "always" using safety belts when riding as a passenger in a car or truck (31.6% versus 36.1%) (Table 1). The percentage of persons who reported that, during the 30 days preceding the survey, they had ridden with a driver who had been drinking alcohol increased significantly with age group (12–13-year-olds, 11.3%; 14–17-year-olds, 21.7%; and 18–21-year-olds, 34.5%); in comparison, the percentage who reported physical fighting during the 12 months preceding the survey decreased significantly with age group (12–13-year-olds, 49.0%; 14–17-year-olds, 43.8%; and 18–21-year-olds, 29.4%). Adolescents aged 14–17 years were significantly more likely than those aged 12–13 years and aged 18–21 years to have reported carrying a weapon (e.g., gun, knife, or club) during the 30 days preceding the survey (17.1% versus 12.6% and 13.6%, respectively). Reported use of motorcycle helmets did not vary by age group.

TABLE 1. Percentage of persons aged 12–21 years who engaged in selected health-risk behaviors, by age group — United States, Youth Risk Behavior Survey, National Health Interview Survey, 1992

Behavior	Age group (yrs) 12–13	14–17	18–21	Total	SE* of the difference between age groups 12–13 and 14–17	SE of the difference between age groups 14–17 and 18–21	SE of the difference between age groups 12–13 and 18–21
Used safety belts[†]	31.6	33.5	36.1	**34.2**	1.4	1.3	1.6[§]
Used motorcycle helmets[¶]	48.4	41.6	44.7	**44.1**	3.3	2.4	3.3
Rode with a drinking driver[**]	11.3	21.7	34.5	**25.0**	1.0[§]	1.2[§]	1.2[§]
Participated in a physical fight[††]	49.0	43.8	29.4	**38.8**	1.5[§]	1.2[§]	1.4[§]
Carried a weapon[§§]	12.6	17.1	13.6	**14.8**	1.0[§]	0.9[§]	1.0
Lifetime cigarette use[¶¶]	29.9	58.0	76.9	**60.4**	1.4[§]	1.2[§]	1.4[§]
Current cigarette use[***]	7.7	25.4	37.6	**27.0**	1.0[§]	1.3[§]	1.1[§]
Current smokeless tobacco use[†††]	2.7	8.8	8.5	**7.5**	0.7[§]	0.8	0.6[§]
Lifetime alcohol use[§§§]	28.0	65.6	86.7	**67.3**	1.4[§]	1.0[§]	1.3[§]
Current episodic heavy drinking[¶¶¶]	4.3	21.0	39.7	**25.6**	0.8[§]	1.2[§]	1.1[§]
Lifetime marijuana use[****]	3.4	20.4	45.8	**27.5**	0.8[§]	1.1[§]	1.0[§]
Lifetime cocaine use[††††]	0.4	2.5	11.4	**5.8**	0.3[§]	0.7[§]	0.7[§]
Ever injected drugs[§§§§]	0.1	0.9	1.2	**0.9**	0.2[§]	0.3	0.2[§]
Ever had sexual intercourse	¶¶¶¶	43.4	81.7	**63.0**	¶¶¶¶	1.2[§]	¶¶¶¶
Sexual intercourse with ≥4 sex partners	¶¶¶¶	13.3	41.3	**27.6**	¶¶¶¶	1.2[§]	¶¶¶¶
Used condom during most recent sexual intercourse	¶¶¶¶	58.5*****	36.9*****	**43.5*****	¶¶¶¶	2.0[§]	¶¶¶¶
Used birth control pills during most recent sexual intercourse	¶¶¶¶	18.2*****	34.8*****	**29.7*****	¶¶¶¶	1.7[§]	¶¶¶¶
Ate fruits and vegetables[†††††]	17.0	13.4	10.9	**13.1**	1.3[§]	0.8[§]	1.2[§]
Ate foods typically high in fat[§§§§§]	32.9	34.2	27.7	**31.3**	1.3	1.2[§]	1.4[§]
Engaged in moderate physical activity[¶¶¶¶¶]	34.8	27.4	21.2	**26.3**	1.5[§]	1.1[§]	1.5[§]

*Standard error.
†Safety belts used “always" when riding in a car or truck as a passenger.
§$p<0.05$.
¶Helmets used “always” among respondents who rode motorcycles.
**Rode at least once during the 30 days preceding the survey in a car or other vehicle driven by someone who had been drinking alcohol.
††Fought at least once during the 12 months preceding the survey.
§§Carried a gun, knife, or club at least 1 day during the 30 days preceding the survey.
¶¶Ever tried cigarette smoking, even one or two puffs.
***Smoked cigarettes on 1 or more of the 30 days preceding the survey.
†††Used chewing tobacco or snuff on 1 or more of the 30 days preceding the survey.
§§§Ever drank alcohol.
¶¶¶Drank five or more drinks of alcohol on at least one occasion during the 30 days preceding the survey.
****Ever used marijuana.
††††Ever used cocaine.
§§§§Respondents were classified as injecting-drug users only if they 1) reported injecting-drug use not prescribed by a physician and 2) answered one or more to any of these questions: “During your life, how many times have you used any form of cocaine including powder, crack, or freebase?”; “During your life, how many times have you used any other type of illegal drug such as LSD, PCP, ecstacy, mushrooms, speed, ice, heroin, or pills without a doctor’s prescription?”; or “During your life, how many times have you taken steroid pills or shots without a doctor’s prescription?”
¶¶¶¶Respondents aged 12–13 years were not asked this question.
*****Among respondents who had had sexual intercourse during the 3 months preceding the survey.
†††††Ate five or more servings of fruits and vegetables (e.g., fruit, fruit juice, green salad, and cooked vegetables) the day preceding the survey.
§§§§§Ate no more than two servings of foods typically high in fat (e.g., hamburger, hot dogs, or sausage; french fries or potato chips; and cookies, doughnuts, pie, or cake) the day preceding the survey.
¶¶¶¶¶Walked or rode a bicycle at least 30 minutes at a time on 5 or more of the 7 days preceeding the survey.

Lifetime and current* cigarette use increased significantly with age group, and current* use of smokeless tobacco was significantly higher among the older age groups (Table 1). Compared with persons aged 12–13 years, those aged 18–21 years were three times more likely to have reported using alcohol during their lifetimes (28.0% versus 86.7%), nine times more likely to report current episodic heavy drinking† (4.3% versus 39.7%), 13 times more likely to have used marijuana during their lifetimes (3.4% versus 45.8%), and 28 times more likely to have used cocaine during their lifetimes (0.4% versus 11.4%). Reported injecting-drug use was significantly higher among persons aged 14–17 years (0.9%) and aged 18–21 years (1.2%) than among those aged 12–13 years (0.1%).

Persons aged 18–21 years were significantly more likely to report having had sexual intercourse (81.7%) and to have had four or more sex partners during their lifetimes (41.3%) than 14–17-year-olds (43.4% and 13.3%, respectively) (Table 1).§ Among adolescents who reported having had sexual intercourse during the 3 months preceding the survey, 14–17-year-olds were significantly more likely than 18–21-year-olds to have used a condom (58.5% versus 36.9%) and significantly less likely to have used birth control pills (18.2% versus 34.8%) during last sexual intercourse.

Reported consumption of five or more servings of fruits and vegetables during the day preceding the survey decreased significantly by age group (12–13-year-olds, 17.0%; 14–17-year-olds, 13.4%; and 18–21-year-olds, 10.9%) (Table 1). Consumption of two or more servings of foods typically high in fat during the day preceding the survey was significantly less common among 18–21-year-olds (27.7%) than among 12–13-year-olds (32.9%) or 14–17-year-olds (34.2%). Participation in moderate physical activity¶ decreased significantly by age group (12–13-year-olds, 34.8%; 14–17-year-olds, 27.4%; and 18–21-year-olds, 21.2%).

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Editorial Note: The findings in this report document age group comparisons of the most important health-risk behaviors among a nationally representative sample of 12–21-year-olds. These findings extend previous analyses, which documented how health-risk behaviors differ between young persons who were and were not enrolled in school (*3*).

Public health and education officials can use these findings to target interventions to the most appropriate age groups. For example, although reported sexual activity was higher among 18–21-year-olds than among 14–17-year-olds, condom use was lower and birth control pill use was higher among members of the older group. These findings suggest that although persons in the older group were better protected against unintended pregnancy, they were less protected against human immunodeficiency virus infection and other sexually transmitted diseases. The finding that levels of reported physical activity were inversely proportionate to age suggests the need for

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*On 1 or more of the 30 days preceding the survey.
†Drinking five or more drinks of alcohol on at least one occasion during the 30 days preceding the survey.
§Respondents aged 12–13 years were not asked the sexual behavior questions.
¶Walked or rode a bicycle at least 30 minutes at a time on 5 or more of the 7 days preceding the survey.

Health-Risk Behaviors — Continued

increased efforts to motivate adolescents to sustain at least moderate levels of physical activity throughout their lives.

Based on the survey, at least one fourth of all 12–13-year-olds engage in at least one health-risk behavior (e.g., failure to always wear safety belts, physical fighting, tobacco use, or alcohol use), underscoring the importance of initiating prevention measures early—ideally during elementary school (*4*). However, because the prevalence of health-risk behaviors generally increases with age, such measures must be reinforced in middle/junior high school and senior high school. For example, comprehensive school health education should be provided from kindergarten through 12th grade and should focus on assisting students to develop skills to avoid or reduce the most important health-risk behaviors (*4*). Additional interventions that focus on skills to promote healthy behavior should be made available to young persons in the workplace and in postsecondary institutions.

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Epidemiologic Notes and Reports

Fatalities Associated with Harvesting of Sea Urchins — Maine, 1993

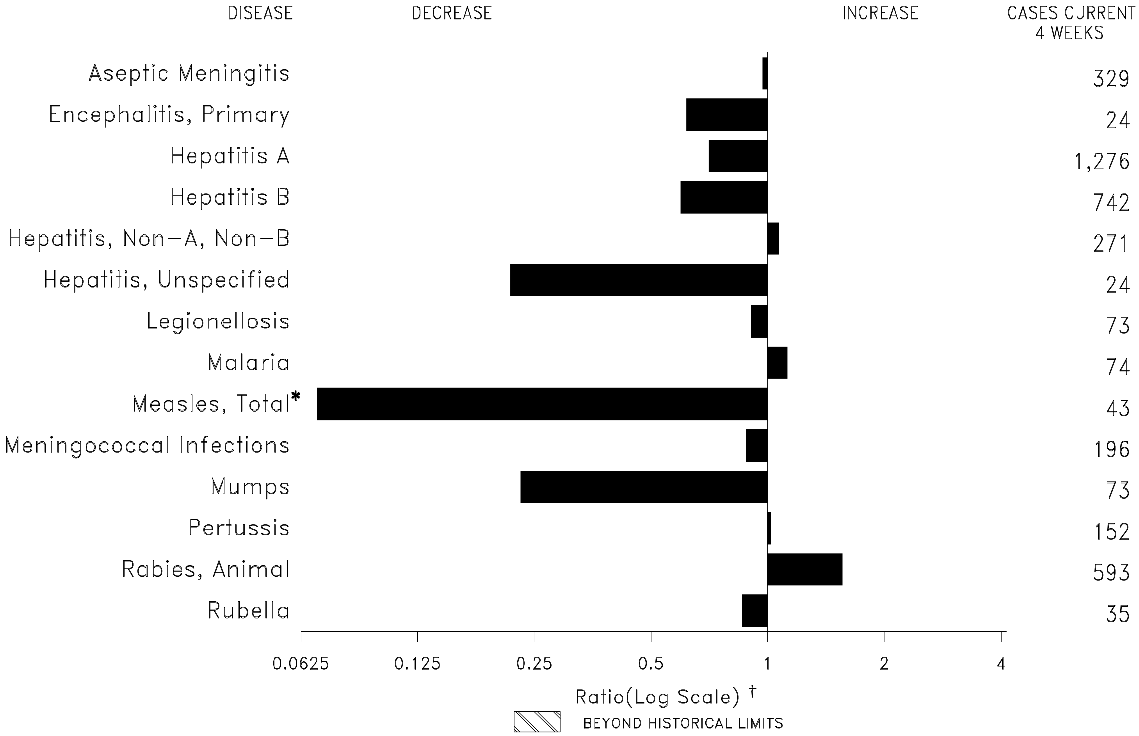
During 1992–1993, six persons died while diving for sea urchins in Maine waters—two during 1992 and four during August–November 1993. The four 1993 deaths were investigated by the Maine Department of Marine Resources, the U.S. Coast Guard, the Office of the Chief Medical Examiner in Maine, and the Occupational Safety and Health Administration (OSHA); each of the deaths was attributed to drowning. This report describes the results of the investigations of these cases.

Case 1. On August 19, an experienced 52-year-old diver was harvesting sea urchins from a vessel anchored in heavy fog. He exhausted his air supply after 1 hour and, while still in the water, requested another air tank from a support person (i.e., tender) in a small inflatable boat. The tender and another diver in a larger boat could not locate the diver in the reduced visibility. He was found submerged approximately 30 minutes later, and cardiopulmonary resuscitation (CPR) was unsuccessful.

Case 2. On August 31, an experienced 22-year-old diver was attempting on-board repairs to his urchin-harvesting vessel, which was moored in harbor during a rainstorm. During the repairs, his skiff broke loose from the harvesting vessel and began to drift in rough waters. He drowned while swimming to recover the skiff. His body was recovered 3 weeks later.

(Continued on page 241)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending April 2, 1994, with historical data — United States



* The large apparent decrease in reported cases of measles (total) reflects dramatic fluctuations in the historical baseline.

† Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending April 2, 1994 (13th Week)

	Cum. 1994		Cum. 1994
AIDS*	20,440	Measles: imported	9
Anthrax	-	indigenous	88
Botulism: Foodborne	10	Plague	-
Infant	16	Poliomyelitis, Paralytic§	-
Other	5	Psittacosis	6
Brucellosis	10	Rabies, human	-
Cholera	1	Syphilis, primary & secondary	4,849
Congenital rubella syndrome	3	Syphilis, congenital, age < 1 year	-
Diphtheria	-	Tetanus	7
Encephalitis, post-infectious	31	Toxic shock syndrome	60
Gonorrhea	85,879	Trichinosis	22
Haemophilus influenzae (invasive disease)†	284	Tuberculosis	3,864
Hansen Disease	23	Tularemia	2
Leptospirosis	8	Typhoid fever	66
Lyme Disease	631	Typhus fever, tickborne (RMSF)	24

*Updated monthly; last update March 29, 1994.
†Of 267 cases of known age, 80 (30%) were reported among children less than 5 years of age.
§No cases of suspected poliomyelitis have been reported in 1994; 3 cases of suspected poliomyelitis have been reported in 1993; 4 of the 5 suspected cases with onset in 1992 were confirmed; the confirmed cases were vaccine associated.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending April 2, 1994, and April 3, 1993 (13th Week)

Reporting Area	AIDS*	Aseptic Menin-gitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionel-losis	Lyme Disease
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994
UNITED STATES	20,440	1,167	132	31	85,879	97,208	4,540	2,653	1,060	95	340	631
NEW ENGLAND	697	45	5	1	2,014	2,111	73	122	33	13	12	82
Maine	28	4	1	-	14	25	11	3	-	-	-	-
N.H.	22	1	-	1	-	17	2	6	5	-	-	3
Vt.	10	4	-	-	7	11	-	-	-	-	-	1
Mass.	337	16	3	-	764	760	34	110	21	13	9	44
R.I.	83	20	1	-	106	104	12	3	7	-	3	15
Conn.	217	-	-	-	1,123	1,194	14	-	-	-	-	19
MID. ATLANTIC	5,897	132	20	11	8,394	10,117	266	279	147	4	54	394
Upstate N.Y.	537	48	7	1	2,165	2,110	109	99	68	-	12	235
N.Y. City	3,661	3	1	-	1,980	3,355	21	12	-	-	-	-
N.J.	1,202	-	-	-	1,142	1,448	69	86	59	-	6	57
Pa.	497	81	12	10	3,107	3,204	67	82	20	4	36	102
E.N. CENTRAL	1,670	216	40	8	15,741	19,108	396	244	65	2	98	8
Ohio	296	61	15	-	6,077	5,950	138	53	2	-	55	7
Ind.	286	48	2	-	2,075	1,992	89	47	2	-	13	-
Ill.	767	25	8	2	2,992	5,773	74	21	1	1	4	-
Mich.	230	79	15	6	4,236	3,733	67	95	58	1	22	1
Wis.	91	3	-	-	361	1,660	28	28	2	-	4	-
W.N. CENTRAL	426	76	5	1	5,077	5,189	208	127	51	2	41	7
Minn.	106	5	1	-	860	723	42	12	2	-	-	4
Iowa	13	27	-	-	380	447	8	8	2	1	16	1
Mo.	163	19	-	-	2,790	2,830	115	93	44	1	18	-
N. Dak.	27	1	1	-	-	14	1	-	-	-	-	-
S. Dak.	4	-	1	-	42	45	9	-	-	-	-	-
Nebr.	29	2	1	1	-	170	21	3	1	-	6	-
Kans.	84	22	1	-	1,005	960	12	11	2	-	1	2
S. ATLANTIC	4,055	288	19	8	25,670	26,256	330	669	258	13	64	111
Del.	53	1	-	-	429	343	4	11	19	-	1	40
Md.	298	42	4	-	4,786	4,269	43	81	11	4	17	20
D.C.	303	6	-	-	2,019	1,477	8	13	-	-	-	-
Va.	249	42	9	4	3,318	1,925	34	27	13	1	2	11
W. Va.	7	5	-	-	185	166	3	7	8	-	1	3
N.C.	384	46	6	-	6,312	6,205	26	81	20	-	6	18
S.C.	325	6	-	-	3,132	2,337	7	12	1	-	1	-
Ga.	547	10	-	-	-	3,593	33	292	137	-	22	18
Fla.	1,889	130	-	4	5,489	5,941	172	145	49	8	14	1
E.S. CENTRAL	548	73	10	1	10,307	9,582	114	276	206	1	17	3
Ky.	105	30	4	1	1,109	1,171	55	12	4	-	1	1
Tenn.	154	20	5	-	2,918	2,275	32	246	200	1	10	1
Ala.	154	18	1	-	3,917	3,653	13	18	2	-	4	1
Miss.	135	5	-	-	2,363	2,483	14	-	-	-	2	-
W.S. CENTRAL	2,673	65	5	-	9,935	12,141	678	277	82	18	11	6
Ark.	65	6	-	-	1,751	2,305	12	6	1	-	4	-
La.	304	1	1	-	3,434	2,834	18	29	19	-	-	-
Okla.	57	-	-	-	494	727	56	90	48	-	7	5
Tex.	2,247	58	4	-	4,256	6,275	592	152	14	18	-	1
MOUNTAIN	609	25	2	-	1,837	2,969	781	118	87	5	21	4
Mont.	8	-	-	-	29	13	9	6	-	-	9	-
Idaho	15	1	-	-	17	31	86	22	32	1	-	1
Wyo.	5	-	-	-	25	19	5	5	21	-	1	-
Colo.	292	6	-	-	588	1,005	39	4	6	2	1	-
N. Mex.	43	6	-	-	259	275	262	50	11	2	1	3
Ariz.	124	6	-	-	351	1,058	226	14	4	-	1	-
Utah	33	2	-	-	85	72	111	7	9	-	-	-
Nev.	89	4	2	-	483	496	43	10	4	-	8	-
PACIFIC	3,865	247	26	1	6,904	9,735	1,694	541	131	37	22	16
Wash.	209	-	-	-	804	987	92	22	19	-	5	-
Oreg.	103	-	-	-	289	377	85	13	2	1	-	-
Calif.	3,477	203	25	-	5,402	8,140	1,445	485	106	34	16	16
Alaska	10	4	1	-	213	128	60	4	-	-	-	-
Hawaii	66	40	-	1	196	103	12	17	4	2	1	-
Guam	-	-	-	-	31	25	1	-	-	4	-	-
P.R.	608	4	-	-	117	110	8	56	13	2	-	-
V.I.	24	-	-	-	8	21	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	7	7	2	-	-	-	-	-
C.N.M.I.	1	-	-	-	15	17	1	-	-	-	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly; last update March 29, 1994.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending April 2, 1994, and April 3, 1993 (13th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1994	1994	Cum. 1994	1994	Cum. 1994	Cum. 1993	Cum. 1994	1994	Cum. 1994	1994	Cum. 1994	Cum. 1993	1994	Cum. 1994	Cum. 1993
UNITED STATES	236	4	88	1	9	82	839	19	300	34	761	793	5	87	46
NEW ENGLAND	24	2	7	-	-	43	48	-	8	8	67	209	3	60	1
Maine	1	-	-	-	-	-	6	-	3	-	2	5	-	-	1
N.H.	3	-	-	-	-	-	1	-	2	-	19	89	-	-	-
Vt.	1	-	-	-	-	24	1	-	-	-	7	33	-	-	-
Mass.	7	-	2	-	-	10	20	-	-	8	33	73	3	60	-
R.I.	4	-	3	-	-	1	-	-	1	-	2	2	-	-	-
Conn.	8	2	2	-	-	8	20	-	2	-	4	7	-	-	-
MID. ATLANTIC	30	-	21	-	2	8	86	1	26	12	187	121	-	4	13
Upstate N.Y.	8	-	2	-	-	1	29	-	3	12	76	42	-	4	1
N.Y. City	2	-	1	-	-	2	3	-	-	-	34	5	-	-	7
N.J.	13	-	18	-	1	5	19	-	-	-	-	26	-	-	4
Pa.	7	-	-	-	1	-	35	1	23	-	77	48	-	-	1
E.N. CENTRAL	21	-	3	1	2	-	124	2	53	2	115	176	1	6	1
Ohio	3	-	-	-	-	-	30	-	8	2	56	69	-	-	-
Ind.	6	-	1	-	-	-	27	1	3	-	16	9	-	-	-
Ill.	3	-	-	-	-	-	40	-	25	-	11	27	-	2	-
Mich.	8	-	-	1	1	-	14	1	17	-	21	10	1	4	-
Wis.	1	-	2	-	1	-	13	-	-	-	11	61	-	-	1
W.N. CENTRAL	10	-	-	-	1	-	62	1	12	-	22	28	-	-	1
Minn.	4	-	-	-	-	-	5	-	-	-	8	-	-	-	-
Iowa	3	-	-	-	-	-	5	-	3	-	1	-	-	-	-
Mo.	2	-	-	-	-	-	34	-	7	-	6	13	-	-	1
N. Dak.	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-
S. Dak.	-	-	-	-	-	-	4	-	-	-	-	1	-	-	-
Nebr.	-	-	-	-	1	-	3	1	1	-	1	4	-	-	-
Kans.	1	-	-	-	-	-	11	-	-	-	6	9	-	-	-
S. ATLANTIC	65	2	9	-	-	14	144	7	59	6	116	51	-	5	3
Del.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Md.	29	-	-	-	-	1	12	1	11	-	35	21	-	-	1
D.C.	7	-	-	-	-	-	1	-	-	-	3	-	-	-	-
Va.	8	-	1	-	-	1	20	3	14	-	13	5	-	-	-
W. Va.	-	-	-	-	-	-	6	-	2	1	2	1	-	-	-
N.C.	2	-	-	-	-	-	28	3	20	3	34	9	-	-	-
S.C.	1	-	-	-	-	-	5	-	5	-	8	2	-	-	-
Ga.	7	-	-	-	-	-	22	-	2	-	6	8	-	-	-
Fla.	9	2	8	-	-	12	50	-	5	2	15	5	-	5	1
E.S. CENTRAL	7	-	24	-	-	-	59	-	4	-	23	35	-	-	-
Ky.	2	-	-	-	-	-	14	-	-	-	3	8	-	-	-
Tenn.	3	-	24	-	-	-	13	-	-	-	13	18	-	-	-
Ala.	1	-	-	-	-	-	26	-	-	-	7	7	-	-	-
Miss.	1	-	-	-	-	-	6	-	4	-	-	2	-	-	-
W.S. CENTRAL	6	-	5	-	1	1	105	6	76	-	25	15	-	4	8
Ark.	-	-	-	-	-	-	11	-	-	-	-	1	-	-	-
La.	-	-	-	-	-	1	18	2	6	-	2	4	-	-	-
Okla.	1	-	-	-	-	-	8	-	20	-	20	10	-	4	1
Tex.	5	-	5	-	1	-	68	4	50	-	3	-	-	-	7
MOUNTAIN	5	-	11	-	-	2	53	1	8	3	43	51	-	-	4
Mont.	-	-	-	-	-	-	2	-	-	-	2	-	-	-	-
Idaho	2	-	1	-	-	-	10	-	3	-	20	9	-	-	1
Wyo.	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-
Colo.	1	-	-	-	-	2	4	-	-	1	7	21	-	-	-
N. Mex.	1	-	-	-	-	-	5	N	N	2	5	13	-	-	-
Ariz.	-	-	-	-	-	-	17	-	-	-	6	3	-	-	-
Utah	1	-	10	-	-	-	9	1	2	-	3	4	-	-	2
Nev.	-	-	-	-	-	-	4	-	3	-	-	-	-	-	1
PACIFIC	68	-	8	-	3	14	158	1	54	3	163	107	1	8	15
Wash.	1	-	-	-	-	-	14	-	2	-	11	7	-	-	-
Oreg.	3	-	-	-	-	-	18	N	N	1	17	-	-	-	1
Calif.	55	-	8	-	3	3	121	1	47	2	129	95	-	7	9
Alaska	-	-	-	-	-	-	1	-	2	-	-	1	-	-	1
Hawaii	9	-	-	-	-	11	4	-	3	-	6	4	1	1	4
Guam	-	U	1	U	-	-	-	U	2	U	-	-	U	-	-
P.R.	-	-	5	-	-	107	2	-	2	-	-	-	-	-	-
V.I.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	U	-	U	-	1	-	U	1	U	1	2	U	-	-
C.N.M.I.	1	U	24	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases include both out-of-state and international importations.
N: Not notifiable U: Unavailable † International § Out-of-state

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending April 2, 1994, and April 3, 1993 (13th Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-Shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994
UNITED STATES	4,849	7,083	60	3,864	4,068	2	66	24	1,394
NEW ENGLAND	49	116	1	80	67	-	9	2	444
Maine	1	2	-	-	7	-	-	-	-
N.H.	-	13	-	2	5	-	-	-	57
Vt.	-	-	-	-	-	-	-	-	44
Mass.	14	55	1	38	18	-	5	2	173
R.I.	5	2	-	8	16	-	1	-	5
Conn.	29	44	-	32	21	-	3	-	165
MID. ATLANTIC	288	605	12	579	890	-	15	-	158
Upstate N.Y.	29	71	6	50	136	-	2	-	-
N.Y. City	153	368	-	345	540	-	7	-	-
N.J.	39	111	-	121	100	-	6	-	78
Pa.	67	55	6	63	114	-	-	-	80
E.N. CENTRAL	576	1,106	17	434	479	-	10	2	5
Ohio	254	295	6	60	66	-	1	1	-
Ind.	73	92	1	32	47	-	1	-	-
Ill.	131	401	4	237	276	-	5	-	1
Mich.	91	190	6	95	73	-	3	1	2
Wis.	27	128	-	10	17	-	-	-	2
W.N. CENTRAL	317	467	7	85	77	2	-	1	35
Minn.	13	28	-	25	-	-	-	-	1
Iowa	13	26	5	7	5	-	-	1	14
Mo.	266	361	1	40	43	2	-	-	4
N. Dak.	-	-	-	1	4	-	-	-	-
S. Dak.	-	-	-	6	6	-	-	-	1
Nebr.	-	7	1	-	5	-	-	-	-
Kans.	25	45	-	6	14	-	-	-	15
S. ATLANTIC	1,468	1,875	2	607	626	-	13	15	457
Del.	6	32	-	-	9	-	-	-	4
Md.	67	105	-	72	92	-	2	-	157
D.C.	65	93	-	29	27	-	1	-	1
Va.	179	156	-	71	127	-	-	1	92
W. Va.	6	1	-	22	22	-	-	-	16
N.C.	473	512	-	75	86	-	-	7	43
S.C.	181	316	-	99	89	-	-	-	43
Ga.	243	332	-	217	174	-	-	7	93
Fla.	248	328	2	22	-	-	10	-	8
E.S. CENTRAL	953	775	1	213	274	-	-	1	36
Ky.	65	70	-	80	71	-	-	-	2
Tenn.	232	164	1	1	52	-	-	-	9
Ala.	176	213	-	100	104	-	-	-	25
Miss.	480	328	-	32	47	-	-	1	-
W.S. CENTRAL	1,000	1,660	-	403	331	-	2	2	183
Ark.	128	328	-	55	27	-	-	1	8
La.	512	612	-	-	-	-	1	-	30
Okla.	15	90	-	29	28	-	-	1	15
Tex.	345	630	-	319	276	-	1	-	130
MOUNTAIN	61	62	2	99	129	-	5	-	19
Mont.	-	-	-	-	-	-	-	-	-
Idaho	1	-	1	5	2	-	-	-	-
Wyo.	-	1	-	3	1	-	-	-	5
Colo.	40	20	1	1	19	-	2	-	-
N. Mex.	5	12	-	15	10	-	-	-	-
Ariz.	10	27	-	53	61	-	-	-	14
Utah	5	1	-	-	9	-	1	-	-
Nev.	-	1	-	22	27	-	2	-	-
PACIFIC	137	417	18	1,364	1,195	-	12	1	57
Wash.	8	11	-	49	60	-	1	-	-
Oreg.	2	25	-	34	16	-	-	-	-
Calif.	125	378	15	1,209	1,038	-	10	1	40
Alaska	1	1	-	14	10	-	-	-	17
Hawaii	1	2	3	58	71	-	1	-	-
Guam	1	-	-	7	16	-	-	-	-
P.R.	73	147	-	-	44	-	-	-	17
V.I.	6	15	-	-	2	-	-	-	-
Amer. Samoa	-	-	-	-	1	-	1	-	-
C.N.M.I.	1	-	-	14	6	-	-	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending April 2, 1994 (13th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	538	376	85	52	15	10	31
Boston, Mass.	152	85	29	24	8	6	9
Bridgeport, Conn.	42	32	5	5	-	-	3
Cambridge, Mass.	24	17	6	1	-	-	-
Fall River, Mass.	25	22	3	-	-	-	-
Hartford, Conn.	U	U	U	U	U	U	U
Lowell, Mass.	21	19	1	1	-	-	1
Lynn, Mass.	16	11	4	1	-	-	1
New Bedford, Mass.	25	22	2	1	-	-	-
New Haven, Conn.	49	35	5	5	3	1	-
Providence, R.I.	49	29	13	4	3	-	3
Somerville, Mass.	9	6	3	-	-	-	-
Springfield, Mass.	34	25	3	4	-	2	1
Waterbury, Conn.	39	30	4	4	1	-	5
Worcester, Mass.	53	43	7	2	-	1	8
MID. ATLANTIC	2,604	1,695	509	299	51	50	133
Albany, N.Y.	60	44	6	5	2	3	7
Allentown, Pa.	26	21	5	-	-	-	-
Buffalo, N.Y.	99	70	19	5	4	1	1
Camden, N.J.	37	25	10	1	1	-	3
Elizabeth, N.J.	15	12	1	2	-	-	-
Erie, Pa.§	43	34	7	1	-	1	1
Jersey City, N.J.	38	24	7	5	1	1	-
New York City, N.Y.	1,347	834	262	195	27	29	50
Newark, N.J.	61	25	22	10	1	3	7
Paterson, N.J.	21	9	9	1	1	1	-
Philadelphia, Pa.	486	320	101	48	12	5	40
Pittsburgh, Pa.§	40	28	7	3	1	1	1
Reading, Pa.	15	13	1	1	-	-	2
Rochester, N.Y.	115	87	19	6	-	3	11
Schenectady, N.Y.	17	14	1	2	-	-	1
Scranton, Pa.§	33	31	1	1	-	-	1
Syracuse, N.Y.	71	50	15	6	-	-	5
Trenton, N.J.	27	15	5	4	1	2	-
Utica, N.Y.	36	26	9	1	-	-	3
Yonkers, N.Y.	17	13	2	2	-	-	-
E.N. CENTRAL	2,249	1,370	453	224	141	61	165
Akron, Ohio	51	34	5	7	2	3	-
Canton, Ohio	47	34	10	2	-	1	2
Chicago, Ill.	589	240	133	110	87	19	52
Cincinnati, Ohio	134	94	20	9	6	5	17
Cleveland, Ohio	151	91	34	16	6	4	4
Columbus, Ohio	177	123	34	8	5	7	13
Dayton, Ohio	106	78	14	5	6	3	12
Detroit, Mich.	210	124	47	22	10	7	10
Evansville, Ind.	42	31	9	1	1	-	-
Fort Wayne, Ind.	48	36	8	3	1	-	2
Gary, Ind.	16	5	7	3	1	-	-
Grand Rapids, Mich.	64	45	11	4	1	3	9
Indianapolis, Ind.	156	93	41	13	5	4	9
Madison, Wis.	42	33	6	1	2	-	2
Milwaukee, Wis.	119	89	21	7	1	1	10
Peoria, Ill.	43	31	6	4	1	1	2
Rockford, Ill.	45	30	12	3	-	-	6
South Bend, Ind.	52	41	9	-	1	1	6
Toledo, Ohio	79	61	14	2	2	-	7
Youngstown, Ohio	78	57	12	4	3	2	2
W.N. CENTRAL	823	595	120	59	20	27	43
Des Moines, Iowa	59	42	9	3	-	5	3
Duluth, Minn.	21	20	-	-	-	1	1
Kansas City, Kans.	44	32	7	3	-	1	3
Kansas City, Mo.	109	74	18	10	4	3	4
Lincoln, Nebr.	51	48	2	-	-	1	5
Minneapolis, Minn.	193	146	30	13	2	2	8
Omaha, Nebr.	84	56	13	4	3	8	2
St. Louis, Mo.	122	81	18	16	5	2	4
St. Paul, Minn.	84	64	9	7	2	2	11
Wichita, Kans.	56	32	14	3	4	2	2

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,476	882	292	194	56	51	76
Atlanta, Ga.	185	96	42	29	9	9	3
Baltimore, Md.	272	170	54	33	9	6	24
Charlotte, N.C.	116	67	26	7	7	9	4
Jacksonville, Fla.	105	77	13	10	4	1	7
Miami, Fla.	136	76	28	25	5	2	2
Norfolk, Va.	53	39	5	2	4	2	3
Richmond, Va.	U	U	U	U	U	U	U
Savannah, Ga.	80	55	13	9	2	1	7
St. Petersburg, Fla.	67	51	11	3	2	-	6
Tampa, Fla.	176	118	29	20	3	6	13
Washington, D.C.	257	111	66	54	11	15	7
Wilmington, Del.	29	22	5	2	-	-	-
E.S. CENTRAL	795	530	154	69	24	18	68
Birmingham, Ala.	117	64	31	11	6	5	1
Chattanooga, Tenn.	62	43	12	4	3	-	5
Knoxville, Tenn.	82	54	16	9	2	1	9
Lexington, Ky.	48	36	7	4	1	-	8
Memphis, Tenn.	193	134	32	15	5	7	23
Mobile, Ala.	97	66	15	9	4	3	7
Montgomery, Ala.	36	30	4	2	-	-	-
Nashville, Tenn.	160	103	37	15	3	2	15
W.S. CENTRAL	1,443	905	290	154	47	45	101
Austin, Tex.	86	52	17	11	3	3	5
Baton Rouge, La.	39	30	4	2	1	2	1
Corpus Christi, Tex.	40	33	5	2	-	-	2
Dallas, Tex.	212	118	48	32	2	12	6
El Paso, Tex.	88	63	11	8	3	3	6
Ft. Worth, Tex.	112	74	21	10	6	1	6
Houston, Tex.	424	237	108	51	15	13	48
Little Rock, Ark.	55	36	10	7	1	1	3
New Orleans, La.	77	44	9	10	8	4	-
San Antonio, Tex.	193	142	31	12	4	4	17
Shreveport, La.	47	37	4	4	2	-	5
Tulsa, Okla.	70	39	22	5	2	2	2
MOUNTAIN	943	623	166	103	28	23	70
Albuquerque, N.M.	80	53	13	7	4	3	3
Colo. Springs, Colo.	55	39	11	2	-	3	8
Denver, Colo.	96	59	20	14	-	3	7
Las Vegas, Nev.	197	136	35	22	4	-	15
Ogden, Utah	25	18	4	1	-	2	2
Phoenix, Ariz.	187	117	30	26	8	6	16
Pueblo, Colo.	28	21	-	7	-	-	2
Salt Lake City, Utah	98	64	17	11	3	3	7
Tucson, Ariz.	177	116	36	13	9	3	10
PACIFIC	1,882	1,285	315	186	55	33	136
Berkeley, Calif.	14	12	2	-	-	-	2
Fresno, Calif.	110	75	18	7	7	3	9
Glendale, Calif.	28	17	11	-	-	-	2
Honolulu, Hawaii	84	53	17	8	5	1	6
Long Beach, Calif.	83	49	20	10	4	-	9
Los Angeles, Calif.	529	356	73	70	14	9	27
Pasadena, Calif.	20	17	1	1	-	1	4
Portland, Oreg.	152	99	33	12	4	4	5
Sacramento, Calif.	170	121	29	14	3	3	11
San Diego, Calif.	154	99	25	19	8	3	16
San Francisco, Calif.	U	U	U	U	U	U	U
San Jose, Calif.	200	148	29	16	1	5	19
Santa Cruz, Calif.	39	30	6	3	-	-	1
Seattle, Wash.	145	90	27	21	5	2	5
Spokane, Wash.	56	45	9	2	-	-	6
Tacoma, Wash.	98	74	15	3	4	2	14
TOTAL	12,753¶	8,261	2,384	1,340	437	318	823

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.
†Pneumonia and influenza.
§Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.
¶Total includes unknown ages.
U: Unavailable.

Sea Urchins — Continued

Case 3. On September 7, a 24-year-old college student, who had recently completed a basic scuba diving certification course, was attempting his first saltwater dive in fair sea and weather conditions. He was harvesting sea urchins in 30 feet of water when the tender lost sight of his bubbles within minutes of starting the dive. A diver onboard the boat and another diver in the water were not in visual contact with the distressed diver. He was found submerged approximately 20 minutes later, and CPR was unsuccessful. OSHA subsequently cited the boat owner for violations of commercial diving standards.

Case 4. On November 3, a 25-year-old man with less than 2 weeks of diving experience was harvesting sea urchins in open seas with powerful surf. The diver surfaced and was attempting to untangle his catch-bag recovery line when he became caught in breaking surf along a nearby rock formation. The person in the tending vessel was unable to assist him because the vessel was too large to maneuver in shallow waters. Another diver in the water was unaware of the situation. The man was found submerged approximately 20 minutes later, and CPR was not attempted. OSHA subsequently cited the boat owner for violations of commercial diving standards.

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Editorial Note: The commercial fishing industry has one of the highest occupational fatality rates in the United States (*1*). In Alaska, during 1991 and 1992, the average annual occupational fatality rate for the fishing industry was 200 per 100,000 workers, and the fatality rate for the shellfish fishery was 530 per 100,000 (*1*). In comparison, during 1993 in Maine, the fatality rate for the sea urchin-harvesting industry was 278 per 100,000 workers. During 1980–1989, the average annual rate of traumatic occupational fatalities in Maine was 7.6 per 100,000 (*2*). Although sea urchin-harvesting vessels constitute approximately 10% of commercial fishing vessels, they account for 25% of all commercial fishing vessels lost in northern New England (U.S. Coast Guard Marine Safety Office, Portland, Maine, unpublished data, 1994).

Commercial harvesting of sea urchins in Maine began in 1987, and the harvest doubled during 1992–1993, primarily because of increased demand for yellow roe. In 1993, 1439 divers were licensed to harvest sea urchins in Maine waters, and approximately 30–40 million pounds of roe were harvested.

In general, sea urchins are harvested by hand by divers using scuba equipment. The most marketable sea urchins are present in the subtidal zone along rock ledges in less than 30 feet of water. The highest quality roe is harvested during the winter. Shallow water over ledges and the often adverse Maine weather require divers and vessels to operate in waters with strong currents and powerful surf. These conditions pose substantial hazards for the sea urchin industry in Maine—especially for inexperienced divers and persons unfamiliar with operating vessels in adverse sea and weather conditions (U.S. Coast Guard Marine Safety Office, Portland, Maine, unpublished data, 1994).

In addition to the four deaths reported in 1993, the U.S. Coast Guard reported an estimated five incidents in which deaths were averted only after extensive search-and-rescue efforts by state and federal agencies. For example, in one incident, aircraft

Sea Urchins — Continued

were used to locate a sea urchin diver who became separated from the harvesting operation. Many divers work alone, and one harvest vessel may support several divers in multiple locations along a productive ledge. Thus, divers may be unable to summon assistance from the supporting vessel or from other divers.

Basic recreational scuba diving certification may not adequately train new divers for commercial activities such as sea urchin harvesting. Legislation has been introduced in Maine that would impose stricter training and certification requirements for sea urchin divers. The proposal would require persons to obtain a certificate of commercial diving competency before being issued a license to hand-harvest sea urchins. OSHA regulations require that each boat that tends sea urchin divers must have a diver stand by to provide assistance when another diver is in the water, and support personnel must be trained in CPR. In addition, each diver must be line-tended from the surface or in visual contact with another diver. Two of the cases described in this report (cases 3 and 4) prompted OSHA to apply work-safety standards for commercial diving to the sea urchin fishery for the first time by issuing citations to the owners of both boats.

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Emerging Infectious Diseases

Human Plague — United States, 1993–1994

From 1944 through 1993, 362 cases of human plague were reported in the United States; approximately 90% of these occurred in four western states with endemic disease (Arizona, California, Colorado, and New Mexico) (*1*). During each successive decade of this period, the number of states reporting cases increased from three during 1944–1953 to 13 during 1984–1993 (Figure 1), indicating the spread of human plague infection eastward to areas where cases previously had not been reported. In 1993, health departments in four states reported 10 confirmed cases* of human plague to CDC; one case has been confirmed during 1994†. This report summarizes information about the 11 cases of human plague reported during 1993–1994 and describes epidemiologic and epizootic trends of plague in the United States.

In 1993, the 10 confirmed cases of human plague were reported from New Mexico (six cases), Colorado (two), Texas (one), and Utah (one) (Table 1). Persons with plague infection were aged 22–96 years (median: 55.5 years); five were aged ≥67 years. Six cases occurred among men. Five cases occurred during June–August, three during March–May, and two during September–November. Seven persons were exposed at their homesites, and one (a veterinarian) was exposed at work; exposure sites could not be determined for two cases. Seven cases were bubonic plague; two, primary

*A case of human plague is considered to be confirmed when 1) a bacterial culture is identified as *Yersinia pestis* by biochemical testing and bacteriophage typing or 2) there is a fourfold rise in antibody titers to the F-1 antigen of *Y. pestis*.

†Provisional data.

septicemic; and one, primary pneumonic. Nine of the 10 patients recovered with antibiotic therapy; one patient died (Table 1).

For three patients, the probable mode of transmission was flea bite (based on the presence of an inguinal bubo or a recollection of flea bites). Two patients (including the veterinarian) were infected by domestic cats with visible signs of plague infection (i.e., oral lesions and a swollen tongue). For five cases (including the fatal case), the probable mode of transmission could not be determined; however, evidence of plague infection in local animal populations was detected in association with three of these cases (Table 1).

In 1994, plague infection has been confirmed in a 56-year-old resident of Inyo County, California, who had onset of illness on January 1 (the first report in California of a human plague case during winter since 1928) (Table 1). The patient lived in a county where plague was known to be endemic. In addition, he had recently worked in a subterranean gold mine and slept in a cabin at the minesite; signs of rodent activity were found in the mine shaft and the cabin outbuildings.

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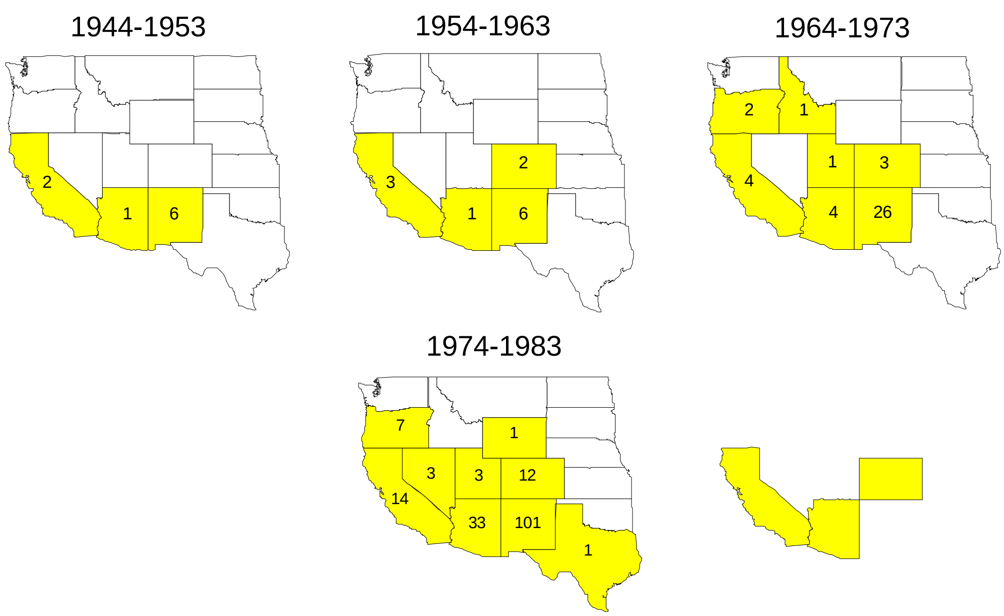

Human Plague — Continued

TABLE 1. Confirmed human plague cases — United States, 1993–1994*

State/County of residence	Date of onset	Age (yrs)/ Sex	Clinical form (Bubo location)/ Recovery status	Exposure site	Probable mode of transmission or source	Epidemiologic/ epizootic findings
New Mexico/ Sandoval	Mar. 13, 1993	44/M	Bubonic (axillary)/ Recovered	Home	Scratch of infected cat	Infected woodrats and woodrat fleas recovered at exposure site; probable rock squirrel die-off a few months before patient became ill.
Texas/Kent	Apr. 24, 1993	96/F	Bubonic (cervical)/ Recovered	Home	Undetermined	Infected fleas recovered from rabbit captured near house; probable woodrat die-off; persons visiting patient's house bitten by fleas; patient had trapped rodents in house.
Colorado/ Boulder	May 19, 1993	31/F	Primary pneumonic/ Recovered	Work/ Veterinary office	Inhaled infectious aerosol while examining infected cat	None.
New Mexico/ Rio Arriba	June 28, 1993	71/F	Bubonic (axillary)/ Recovered	Home	Undetermined	Infected flea pool recovered from deer mouse trapped near patient's home; patient's cat disappeared a few days before patient became ill.
New Mexico/ Bernalillo	July 4, 1993	68/M	Septicemic/ Died	Home	Undetermined	Rock squirrel epizootic near patient's home; patient's dog was seropositive.
New Mexico/ San Juan	July 24, 1993	22/F	Bubonic (axillary)/ Recovered	Undeter- mined	Undetermined	None.
New Mexico/ Rio Arriba	Aug. 8, 1993	35/M	Bubonic (inguinal)/ Recovered	Home	Flea bite	None.
Colorado/ La Plata	Aug. 17, 1993	40/M	Bubonic (inguinal)/ Recovered	Home	Flea bite	Rock squirrel epizootic near home; 2 family dogs were seropositive.
Utah/Salt Lake	Oct. 2, 1993	67/M	Bubonic (axillary)/ Recovered	Undeter- mined	Undetermined	None.
New Mexico/ Santa Fe	Oct. 3, 1993	73/F	Septicemic/ Recovered	Home	Flea bite	Rock squirrel epizootic near home: plague-infected rabbit found dead near home; rabbit infected with plague-infected rock squirrel fleas.
California/ Inyo	Jan. 1, 1994	56/M	Septicemic/ Recovered†	Undeter- mined	Undetermined	12 dogs and 3 cats living at or near the patient's home were seronegative; evidence of rodent activity found at or near patient's home.

* Data for 1994 are provisional.
† Four weeks following recovery and discharge from the hospital, the patient died from an acute myocardial infarction; he had a history of heart disease.

Human Plague — Continued

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Editorial Note: The findings in this report emphasize the increasing importance of two related trends in the epidemiology of human plague in the United States: 1) increased peridomestic transmission and 2) the role of domestic cats as sources of human infection. Peridomestic transmission is especially important in the most highly plague-endemic states of Arizona, Colorado, and New Mexico, where rapid suburbanization has resulted in increasing numbers of persons living in or near active plague foci. Domestic cats that are permitted to roam freely in areas where plague occurs in rodents are at increased risk for infection and, therefore, increase the risk for peridomestic transmission to humans. Before 1977, domestic cats were not reported as sources of human plague infection; however, since 1977, cats have been identified as the source of infection for 15 human plague cases. In addition, the proportion of human plague cases with primary pneumonic plague has been substantially higher among cat-associated cases (four of 15 cases) than among cases for which cats were not sources of infection (one of 236 cases). Persons working in veterinary practices should be warned of the risks associated with handling plague-infected cats. Four of the 15 cat-associated cases occurred in veterinarians or their assistants. In addition, CDC recommends that veterinary personnel wear gloves and eye protection and take appropriate respiratory precautions (*2*) when examining sick cats in or from plague-endemic areas, especially cats with lymphadenopathy, oral lesions, or pneumonia.

Surveillance for plague in rodent and rodent-consuming carnivore populations during the 1990s indicates that plague has spread eastward to counties in areas (e.g., eastern Montana, western Nebraska, western North Dakota, and eastern Texas) believed to be free of this disease since widespread animal surveillance began in the 1930s (*3–5*). For example, the potential for human plague cases in eastern Texas was demonstrated in 1993 when an infected roof rat (*Rattus rattus*) and two infected fox squirrels (*Sciurus niger*) were identified in Dallas. Animal surveillance was initiated in the Dallas metropolitan area to monitor plague in local rodent and carnivore populations as a sentinel of increased risk for plague among humans. The continued expansion of human plague in the United States (Figure 1) underscores the need to enhance plague surveillance and to increase efforts to prevent, detect, and control human plague.

Epizootic plague activity usually peaks during or immediately after years with cooler temperatures and more rain than usual. Such conditions occurred during 1991–1993 in the highly plague-endemic areas of Arizona, Colorado, and New Mexico, as well as in the western Great Plains region,[§] and resulted in large populations of many plague-susceptible rodent species—including deer mice, the principal reservoir of hantavirus in the western United States (*6*).

Nearly all fatal plague cases in the United States result from delays in seeking treatment and in making the proper diagnosis. The person with fatal plague in 1993 received medical care 6 days after onset of illness and died within 4–6 hours of seeking care at a hospital. Because of similarities in clinical features of plague and the recently discovered hantavirus pulmonary syndrome (HPS) (*7*), diagnosis of plague

[§]West North Central, West South Central, and Mountain regions.

Human Plague — Continued

may be further complicated. In 1993, HPS was suspected in a person with secondary pneumonic plague; as a result, the patient was transported to a regional medical center in another state for specialized care. At this facility, plague was diagnosed, and the patient recovered with antibiotic treatment. Increasing public and physician awareness about plague can assist in prompt diagnosis and treatment.

Efforts to prevent plague should include public education about risk factors for exposure, methods to prevent plague, and the signs and symptoms of infection; surveillance of rodent populations; and use of insecticides, and occasionally rodenticides, to control populations of fleas and rodents, respectively. Control measures should be undertaken when surveillance indicates epizootic activity among rodent populations.

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Current Trends

Adult Blood Lead Epidemiology and Surveillance — United States, Fourth Quarter, 1993

CDC's National Institute for Occupational Safety and Health (NIOSH) Adult Blood Lead Epidemiology and Surveillance (ABLES) program monitors elevated blood lead levels (BLLs) in adults. Blood lead data from laboratory reports are transmitted to state-based lead surveillance programs and are compiled by NIOSH for quarterly reporting (*1*). Data for 1993 from the 20 states currently reporting results to NIOSH are complete (Table 1). Efforts to expand the number of states participating in the surveillance system continue as states increase their capacity to monitor BLLs in both adults and children.

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TABLE 1. Reports of elevated blood lead levels (BLLs) in adults — 20 states,* fourth quarter, 1993

Reported BLL (µg/dL)	Fourth quarter, 1993		Cumulative reports, 1993§	Cumulative reports, 1992¶
	No. reports	No. persons†		
25–39	5,784	2,952	17,045	15,279
40–49	2,026	904	5,189	4,288
50–59	420	230	1,208	1,089
≥60	172	95	583	585
Total	**8,402**	**4,181**	**24,025**	**21,241**

* Alabama, Arizona, California, Connecticut, Illinois, Iowa, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, South Carolina, Texas, Utah, Vermont, Washington, and Wisconsin.

† Individual reports are based on the highest reported BLL for the person during the given quarter.

§ Data for first quarter 1993 reported from 17 states (Alabama, Connecticut, Illinois, Iowa, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, South Carolina, Texas, Utah, Vermont, and Wisconsin).

¶ Cumulative totals for 1992 reflect annual data from 18 states (Alabama, California, Colorado, Connecticut, Illinois, Iowa, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, South Carolina, Texas, Utah, and Wisconsin).

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