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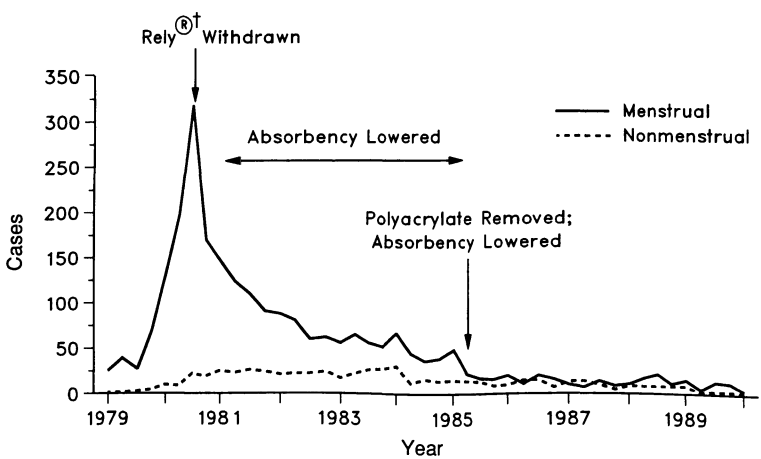
Historical Perspectives

Reduced Incidence of Menstrual Toxic-Shock Syndrome — United States, 1980–1990

In May 1980, investigators reported to CDC 55 cases of toxic-shock syndrome (TSS) (*1*), a newly recognized illness characterized by high fever, sunburn-like rash, desquamation, hypotension, and abnormalities in multiple organ systems (*2*). Fifty-two (95%) of the reported cases occurred in women; onset of illness occurred during menstruation in 38 (95%) of the 40 women from whom menstrual history was obtained. National and state-based studies were initiated to determine risk factors for this disease. In addition, CDC established national surveillance to assess the magnitude of illness and follow trends in disease occurrence; 3295 definite cases have been reported since surveillance was established (Figure 1).

FIGURE 1. Reported cases of toxic-shock syndrome,* by quarter — United States, January 1, 1979 – March 31, 1990



*Includes only cases meeting the CDC case definition.
†Use of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

Toxic-Shock Syndrome — Continued

In June 1980, a follow-up report described three studies which detected an association between TSS and the use of tampons (*3*). Case-control studies in Wisconsin and Utah and a national study by CDC indicated that women with TSS were more likely to have used tampons than were controls. The CDC study also found that continuous use of tampons was associated with a higher risk of TSS than was alternating use of tampons and other menstrual products. Subsequent studies established that risk of TSS was substantially greater in women who used Rely®* brand tampons than in users of other brands and that risk increased with increased tampon absorbency (*4–6*). In September 1980, Rely® tampons were voluntarily withdrawn from the market by the manufacturer.

In 1980, 890 cases of TSS were reported, 812 (91%) of which were associated with menstruation. In 1989, 61 cases of TSS were reported, 45 (74%) of which were menstrual. In 1980, 38 (5%) of 772 women with menstrual TSS died; in 1988 and 1989, there were no deaths among women with menstrual TSS.

Reported by: Meningitis and Special Pathogens Br, Div of Bacterial Diseases, Center for Infectious Diseases, CDC.

Editorial Note: The number of TSS cases reported annually to CDC has decreased substantially in the 10-year period since menstrual TSS was first recognized. Changes in public awareness and diminished attention to TSS in the medical literature might have resulted in reduced diagnosis and reporting. However, reporting of nonmenstrual TSS has remained constant during this time while menstrual TSS reporting has decreased.

A multistate active surveillance study in 1986–1987 confirmed the trends detected by national passive surveillance (*7*). Through active case-finding efforts in an aggregate population of 34 million persons, the rate for menstrual TSS was determined to be 1.0 per 100,000 women 15–44 years of age (*7*). This rate represented a substantial reduction from rates reported in similar studies in 1980 (6.2 per 100,000 women 12–49 years of age in Wisconsin [*8*], 9.0 per 100,000 women 12–45 years of age in Minnesota [*9*], and 12.3 per 100,000 women 12–49 years of age in Utah [*10*]). Active surveillance also confirmed that the proportion of TSS associated with menstruation had decreased considerably: in 1988, menstrual TSS accounted for 55% of cases detected both by active surveillance (*7*) and by the passive surveillance system.

A principle reason for the decreased incidence of menstrual TSS may be decreases in the absorbency of tampons. In 1980, when tampon absorbency (in vitro) ranged from 10.3–20.5 g (*4*), very high absorbency products (>15.4 g) were used by 42% of tampon users (*9*). After the association between TSS and absorbency was recognized, manufacturers lowered the absorbency of tampons. In 1982, the Food and Drug Administration (FDA) issued a regulation requiring that tampon package labels advise women to use the lowest absorbency tampons compatible with their needs. By 1983, tampon absorbency ranged from 6.3–17.2 g (*6*), and the proportion of tampon users using very high absorbency tampons had declined to 18%. By 1986, very high absorbency products were used by only 1% of women who used tampons. Effective March 1990, the FDA instituted standardized absorbency labeling of tampons, which currently range from 6–15 g.

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Toxic-Shock Syndrome — Continued

Tampon composition has also changed since 1980. Rely® tampons consisted of polyester foam and cross-linked carboxymethylcellulose, a combination that is no longer used in tampons. Polyacrylate-containing tampons were withdrawn from the market in 1985. Current tampons are manufactured from cotton and/or rayon. The unique composition of Rely® tampons may have been responsible for the increased risk associated with those products (*11*); however, the role of current tampon composition as an independent risk factor for TSS is unclear since composition may vary even for a particular brand and style of tampon marketed at a given time.

Other factors may have contributed to decreased reports of menstrual TSS. For example, public awareness of the syndrome may cause women to seek medical care earlier in their illness; milder disease may not meet the surveillance case definition of severe multisystem illness. Increased variety in menstrual products and concern related to TSS may have resulted in fewer women using tampons or fewer using tampons continuously.

Current public health efforts to prevent menstrual TSS include tampon package labels and package inserts which describe early signs and symptoms of TSS and warn the consumer about the risk associated with tampons. Tampon users are encouraged to select lower absorbency products to further decrease risk of TSS. Standardized absorbency labeling permits consumers to compare absorbency between brands.

The precise mechanism by which Rely® tampons increased the risk of TSS is unknown. The increased risk associated with high absorbency tampons is also poorly understood; high absorbency may be a surrogate for another effect. However, the withdrawal of Rely® tampons and the subsequent decrease in use of high absorbency tampons correlate with a marked decrease in incidence of menstrual TSS. The rapid demonstration of the risk of Rely® and high absorbency tampons resulted in prompt public health interventions and substantial reduction in menstrual TSS.

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Epidemiologic Notes and Reports

Elemental Mercury Poisoning in a Household – Ohio, 1989

On November 22, 1989, a 15-year-old male who had been hospitalized in Columbus, Ohio, was diagnosed with acrodynia, a form of mercury poisoning. This report describes the investigation by the Columbus Health Department (CHD) to determine the source of the patient's exposure to mercury.

In early November, following an acute illness, the patient was diagnosed with measles. He was subsequently referred for psychiatric evaluation because of his declining performance in school and nonspecific complaints (e.g., aches, irritability, and inability to think clearly) that were presumed to be psychosomatic. On November 17, he was admitted to the hospital after his blood pressure measured 142 mm Hg systolic and 106 mm Hg diastolic. Additional manifestations noted at that time included rash, sweating, cold intolerance, tremor, irritability, insomnia, and anorexia. When analysis of a 24-hour urine collection detected a mercury level of 840 μg/L (reference: <20 μg/L [*1*]), acrodynia was diagnosed. On December 1, the patient's 11-year-old sister was hospitalized with hypertension, mild acrodynia, irritability, and mild generalized muscle weakness. Her 24-hour urine mercury level was 1500 μg/L. Although both parents were asymptomatic, their 24-hour urine mercury levels were 820 μg/L and 1250 μg/L.

On November 29, the CHD investigated the apartment where the family had lived since August 26, 1989. Neighbors reported that the previous tenant had spilled a large jar of elemental mercury within the apartment. Although this tenant could not be located for confirmation, mercury vapor concentrations in seven rooms ranged from 50–400 μg/m^3 (the Agency for Toxic Substances and Disease Registry's acceptable residential indoor air mercury concentration is ≤0.5 μg/m^3 [*2*]). The apartment was sealed, pending decontamination efforts which are ongoing. In three other apartments in the same building, air mercury concentrations were less than the measuring instrument's detection limit of 10 μg/m^3. The CHD did not detect evidence of mercury cross-contamination in a mobile home where the patients' family had relocated in November 1989.

After both patients were diagnosed as having acrodynia with neuropsychiatric impairment, they were treated with oral 2,3-dimercaptosuccinic acid (DMSA). From December 1, 1989, to April 4, 1990, the male patient's 24-hour urine mercury values declined from 1540 μg/L to 101 μg/L. Except for a persistent mild tremor, acrodynia and other neurologic symptoms resolved following two 21-day courses of DMSA therapy. The female patient's course was complicated by a progressive sensorimotor peripheral neuropathy that caused profound upper and lower extremity weakness. During DMSA treatment, she gradually improved; within 3 months, she was able to walk short distances without assistance. By February 6, 1990, her 24-hour urine mercury excretion was 352 μg/L; DMSA therapy was continued.

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Mercury Poisoning — Continued

Editorial Note: Although nonoccupational elemental mercury poisoning occurs less frequently than occupational mercury poisoning (*3*), cases of elemental mercury exposure and toxicity in children have been reported (*3–9*). Because mercury vapors are dense and tend to settle, children playing near the floor may be exposed to mercury if it is present (*8*). Moreover, children may be physiologically more susceptible to the health hazards of mercury exposure than adults.

Elemental mercury (also termed metallic mercury or quicksilver) is volatile at room temperature, and its rate of vaporization is a function of both temperature and surface area (*10*). Mercury enters the bloodstream after it is inhaled; because of its lipid solubility, mercury crosses both the blood brain barrier and the placenta (*1,11,12*). Elemental mercury is excreted in the urine and has an elimination half-life of approximately 60 days (*11*).

Because of mild symptomotology and the potential for misdiagnosis, cases of mercury poisoning may not be readily recognized. Individual susceptibility to mercury poisoning varies considerably, and not all persons exposed will develop symptoms (*5*). Manifestations of mercury poisoning include intention tremor, memory loss, insomnia, timidity, gingivitis, diarrhea, anorexia, weight loss, and, in severe cases, delirium. Acrodynia may be misdiagnosed as measles, other viral exanthems, or Kawasaki disease. Manifestations of acrodynia include a generalized rash; irritability; photophobia; profuse perspiration; and redness, swelling, and peeling of the skin on hands and feet (*11,12*). Although acrodynia is more common in infants and young children, it has been reported in adolescents and a 41-year-old male (*5*).

Mercury is used in some school laboratories; in such settings, its ambient concentrations (and the safeguarding of mercury supplies) should be carefully monitored. Additionally, mercury is added into many household products, such as latex paints, adhesives, joint compounds, acoustical plates, and cleaning solutions. Because not all products that contain mercury are labeled as such, adequate ventilation must be ensured when using potentially toxic household chemicals.

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Postsurgical Infections Associated with an Extrinsically Contaminated Intravenous Anesthetic Agent — California, Illinois, Maine, and Michigan, 1990

In May and June 1990, the Hospital Infections Program in CDC's Center for Infectious Diseases received reports of four clusters of postsurgical infections and/or hyperthermic reactions occurring in patients after a variety of clean or clean-contaminated surgical procedures. These infections/reactions have been reported from four states and have been associated with three different pathogens. This report summarizes the preliminary results of investigations conducted at four hospitals.

California. During an 8-day period, five patients at one hospital developed *Staphylococcus aureus* surgical wound infections (SWI) following clean surgical procedures. All patients developed fever and surgical wound infection within 12–72 hours of surgery. All *S. aureus* isolates had the same phage type. An epidemiologic investigation identified use of an intravenous anesthetic, propofol (Diprivan®*), delivered by an infusion pump and attendance by one anesthesiologist as risk factors. A throat culture of the implicated anesthesiologist grew *S. aureus*; the isolate had the same phage type as that recovered from the patients' wounds.

Illinois. During a 5-day period, four patients who underwent different surgical procedures at one hospital developed *Candida albicans* bloodstream infections and/or endophthalmitis. An epidemiologic investigation identified receipt of propofol by infusion pump and preparation of the infusion by one anesthesiologist as risk factors for infection. A review of anesthesia practices revealed numerous breaks in aseptic technique during preparation of the anesthetic. Cultures of unopened ampules of propofol from the same lots being used at the hospital were negative. Further studies to identify the source of *C. albicans* are ongoing.

Maine. During a 2-day period, two patients who each underwent different surgical procedures at one hospital developed fever (temperature ≥40.4 C [≥104.8 F]) and hypertension (systolic blood pressure [BP] ≥226 mm Hg, diastolic BP ≥108 mm Hg) within 2 hours following surgery. Both patients recovered after aggressive supportive therapy. An epidemiologic investigation identified receipt of propofol by infusion pump and preparation of the infusion pump by one nurse anesthetist as risk factors for the reactions. The same infusion pump, syringe, and propofol preparation were used in the two patients; cultures of the propofol solution infusing at the time of the second patient's reactions grew *Moraxella osloensis*, and endotoxin assays using the *Limulus* amebocyte lysate assay method detected 3900–5000 ng/mL of endotoxin. Cultures and endotoxin assays of unopened ampules of propofol from the same lot being used at the hospital were negative.

Michigan. During a 2-week period, 13 (23%) of 56 patients at one hospital in which clean or clean-contaminated procedures were performed developed postoperative *S. aureus* bacteremia and/or SWI; all patient isolates had the same phage type. Epidemiologic studies identified receipt of propofol by infusion pump and preparation of the infusion pump by one nurse anesthetist as risk factors for infection. The risk of infection was not increased when propofol was given as a single bolus injection without the infusion pump. Cultures of unopened ampules of propofol from the same lot being used at the hospital were negative. Cultures of the hands of the

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Postsurgical Infections — Continued

implicated nurse anesthetist grew *S. aureus*; phage typing is pending. A review of anesthesia procedures revealed that when propofol remained in the infusion pump at the completion of one surgery it was used during the next surgical procedure.

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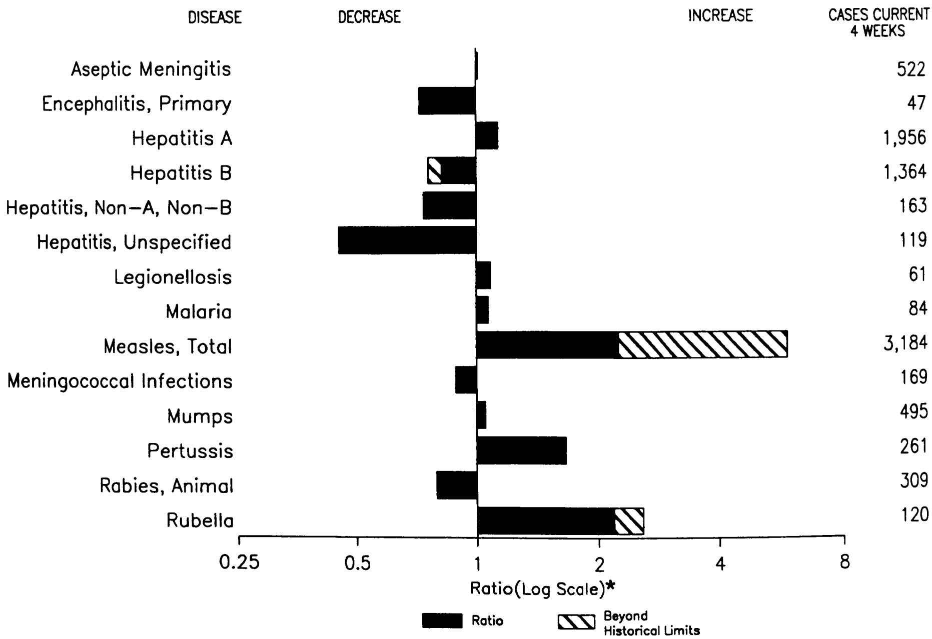
Editorial Note: The simultaneous and sudden onset of clusters of postoperative infections following clean or clean-contaminated surgical procedures in multiple states is unusual. All cases at all four hospitals were associated with the use of propofol, a newly introduced intravenous hypnotic anesthetic agent that received Food and Drug Administration (FDA) approval in October 1989. Propofol is a sterile, nonpyrogenic, white, soybean oil-in-water emulsion to be used by intravenous delivery for induction (by bolus administration) and/or maintenance (by drip infusion) anesthesia. The product has no preservative and refrigeration is not recommended by the manufacturer.

For at least four reasons, the preliminary results of these investigations suggest that contamination of propofol was extrinsic (i.e., contaminated during manipulation after receipt from the manufacturer) and not intrinsic (i.e., contaminated at the time of manufacture). First, at each of the hospitals investigated, different lots of propofol were used, and cultures of previously unopened ampules from each hospital were sterile. Second, at each hospital, cases were associated only with propofol that was administered by infusion, using a 60 cc syringe in a pump, and prepared by a specific anesthetist/anesthesiologist. Third, aseptic technique was not observed during preparation of the propofol for use during infusion; syringes used for bolus administration of propofol were used only on single patients, whereas those used in the infusion pump were usually used on multiple patients. Fourth, since infusions are delivered over a longer period of time, extrinsically contaminating microorganisms could proliferate during the infusion interval and between use in different patients. Growth studies performed at CDC show that when propofol is inoculated with low numbers (10^1–10^2 cfu/mL) of *S. aureus*, the organisms rapidly proliferate to high numbers (10^5–10^6 cfu/mL) within 24 hours at 33 C (91.4 F).

Two recent surveys of anesthesia personnel show that aseptic technique and infection control practices are frequently not implemented during administration of anesthesia (*1,2*). In these surveys, from 48% to 90% of respondents reused syringes to administer drugs to multiple patients. The investigation of the current clusters suggests that severe, life-threatening complications may occur in patients as a consequence of breaks in health-care workers' aseptic technique in combination with the use of a drug that is capable of supporting the rapid growth of microorganisms. These outbreaks underscore the importance of aseptic technique and infection control in anesthesia practice. The manufacturer of propofol, in conjunction with the FDA, is revising the label and package inserts and notifying all anesthesiologists and nurse anesthetists in the United States to emphasize the importance of using aseptic technique in the preparation and administration of propofol.

(Continued on page 433)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending May 26, 1990, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from comparable, previous, and subsequent 4-week periods for past 5 years).

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending June 23, 1990 (25th Week)

	Cum. 1990		Cum. 1990
AIDS	21,395	Plague	-
Anthrax	-	Poliomyelitis, Paralytic*	-
Botulism: Foodborne	1	Psittacosis	68
Infant	24	Rabies, human	1
Other	2	Syphilis: civilian	22,848
Brucellosis	31	military	127
Cholera	1	Syphilis, congenital, age < 1 year	-
Congenital rubella syndrome	1	Tetanus	24
Diphtheria	1	Toxic shock syndrome	162
Encephalitis, post-infectious	50	Trichinosis	15
Gonorrhea: civilian	311,255	Tuberculosis	9,707
military	4,373	Tularemia	37
Leprosy	92	Typhoid fever	168
Leptospirosis	19	Typhus fever, tickborne (RMSF)	124
Measles: imported	658		
indigenous	12,152		

*Three cases of suspected poliomyelitis have been reported in 1990; five of 13 suspected cases in 1989 were confirmed and all were vaccine-associated.

TABLE II. Cases of specified notifiable diseases, United States, weeks ending June 23, 1990, and June 24, 1989 (25th Week)

Reporting Area	AIDS	Aseptic Menin-gitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel-losis	Leprosy
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	21,395	2,452	300	50	311,255	319,396	14,075	9,707	967	832	506	92
NEW ENGLAND	786	96	9	-	8,650	9,143	284	497	30	36	23	5
Maine	36	2	1	-	100	132	5	24	4	1	1	-
N.H.	40	10	-	-	100	78	5	23	3	2	3	-
Vt.	7	11	2	-	30	35	3	28	3	-	4	-
Mass.	439	32	2	-	3,434	3,500	211	306	12	32	10	4
R.I.	41	28	-	-	521	621	27	26	-	1	5	1
Conn.	223	13	4	-	4,465	4,777	33	90	8	-	-	-
MID. ATLANTIC	6,827	276	22	4	43,129	50,732	2,059	1,476	111	64	146	17
Upstate N.Y.	984	120	19	1	6,592	7,411	471	339	22	18	63	1
N.Y. City	3,984	64	2	1	18,244	21,347	249	439	17	31	25	12
N.J.	1,244	-	1	-	6,417	6,867	216	331	28	-	20	3
Pa.	615	92	-	2	11,876	15,107	1,123	367	44	15	38	1
E.N. CENTRAL	1,377	372	68	8	59,582	56,279	1,028	1,223	62	54	118	-
Ohio	346	84	17	3	18,152	14,367	111	219	17	8	45	-
Ind.	118	67	2	3	5,191	4,448	66	245	3	14	19	-
Ill.	574	68	23	2	18,671	17,740	490	217	20	16	8	-
Mich.	219	133	24	-	14,238	14,947	192	338	19	16	32	-
Wis.	120	20	2	-	3,330	4,777	169	204	3	-	14	-
W.N. CENTRAL	517	100	25	1	16,601	14,438	798	443	61	16	28	-
Minn.	89	9	9	1	2,109	1,474	125	56	17	-	-	-
Iowa	20	11	2	-	1,206	1,046	166	34	5	2	2	-
Mo.	305	43	2	-	9,760	8,611	267	266	20	10	17	-
N. Dak.	-	7	-	-	47	67	7	4	2	1	-	-
S. Dak.	1	4	2	-	104	128	61	4	2	-	-	-
Nebr.	26	11	4	-	870	784	47	19	3	-	4	-
Kans.	76	15	6	-	2,505	2,328	125	60	12	3	5	-
S. ATLANTIC	4,487	571	71	14	90,022	86,925	1,717	1,827	153	116	70	3
Del.	50	20	3	-	1,456	1,392	69	49	5	2	4	-
Md.	486	68	8	1	9,580	9,572	652	243	18	6	20	1
D.C.	313	2	-	-	6,137	5,755	12	28	4	-	-	-
Va.	338	83	24	2	8,234	7,150	145	111	24	82	7	-
W. Va.	34	12	6	-	636	658	11	47	3	1	1	-
N.C.	307	53	21	-	14,516	13,112	349	521	63	-	12	1
S.C.	160	8	1	-	7,255	7,951	22	308	11	7	10	-
Ga.	648	85	3	1	19,916	16,586	173	214	3	6	12	-
Fla.	2,151	240	5	10	22,292	24,749	284	306	22	12	4	1
E.S. CENTRAL	454	232	25	1	24,993	25,431	189	728	60	5	40	-
Ky.	96	52	7	-	2,802	2,382	48	257	20	4	17	-
Tenn.	146	41	13	1	7,646	8,172	89	374	26	-	12	-
Ala.	100	101	5	-	8,166	8,293	51	93	12	-	11	-
Miss.	112	38	-	-	6,379	6,584	1	4	2	1	-	-
W.S. CENTRAL	2,284	227	12	6	31,530	33,832	1,421	863	70	132	31	23
Ark.	167	5	1	-	4,028	3,651	244	41	5	11	7	-
La.	354	27	3	-	6,452	6,977	80	143	1	4	10	-
Okla.	96	20	1	5	2,903	2,832	287	71	14	13	10	-
Tex.	1,667	175	7	1	18,147	20,372	810	608	50	104	4	23
MOUNTAIN	561	106	11	-	5,610	6,739	2,241	733	73	68	25	-
Mont.	7	2	-	-	88	96	59	38	2	4	1	-
Idaho	14	-	-	-	58	97	42	44	8	-	3	-
Wyo.	2	1	1	-	85	50	22	9	5	1	-	-
Colo.	160	23	3	-	1,274	1,485	132	81	21	24	3	-
N. Mex.	51	4	-	-	583	667	356	81	4	2	3	-
Ariz.	191	49	4	-	2,588	2,476	1,271	257	19	27	8	-
Utah	51	17	-	-	188	205	176	47	10	3	2	-
Nev.	85	10	3	-	746	1,663	183	176	4	7	5	-
PACIFIC	4,102	472	57	16	31,138	35,877	4,338	1,917	347	341	25	44
Wash.	273	-	3	1	2,733	3,000	751	306	66	13	8	3
Oreg.	157	-	-	-	1,216	1,443	453	214	19	6	-	-
Calif.	3,577	428	49	14	26,445	30,755	2,988	1,330	255	318	16	33
Alaska	20	12	4	-	510	436	94	34	3	-	-	-
Hawaii	75	32	1	1	234	243	52	33	4	4	1	8
Guam	1	-	-	-	91	73	5	1	-	6	-	-
P.R.	797	36	5	-	432	564	87	156	2	21	-	-
V.I.	5	-	-	-	199	330	1	7	-	-	-	-
Amer. Samoa	-	1	-	-	28	12	13	-	-	-	-	7
C.N.M.I.	-	-	-	-	70	48	4	2	-	-	-	1

C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 23, 1990, and June 24, 1989 (25th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1990	1990	Cum. 1990	1990	Cum. 1990	Cum. 1989	Cum. 1990	1990	Cum. 1990	1990	Cum. 1990	Cum. 1989	1990	Cum. 1990	Cum. 1989
UNITED STATES	484	1101	12152	12	658	7,995	1,381	93	3,055	85	1,414	1,135	3	548	201
NEW ENGLAND	44	-	174	2	18	286	95	1	31	31	189	215	-	5	5
Maine	1	-	27	2†	2	-	10	-	-	1	6	4	-	-	-
N.H.	4	-	-	-	8	8	3	-	7	2	12	5	-	1	3
Vt.	4	-	-	-	1	2	6	-	1	-	6	6	-	-	1
Mass.	26	-	15	-	2	41	50	1	8	28	155	189	-	-	1
R.I.	3	-	27	-	3	37	6	-	5	-	-	2	-	1	-
Conn.	6	-	105	-	2	198	20	-	10	-	10	9	-	3	-
MID. ATLANTIC	104	40	726	-	136	735	206	4	189	7	303	69	-	2	13
Upstate N.Y.	20	30	189	-	102	133	81	2	81	5	243	33	-	1	3
N.Y. City	36	4	110	-	18	60	25	-	-	-	-	2	-	-	8
N.J.	33	-	105	-	9	396	46	-	40	-	13	21	-	-	2
Pa.	15	6	322	-	7	146	54	2	68	2	47	13	-	1	-
E.N. CENTRAL	27	264	2,675	-	141	1,989	187	14	338	20	285	129	1	31	22
Ohio	5	239	452	-	2	661	61	9	75	13	86	1	1	1	3
Ind.	1	18	293	-	1	33	19	-	13	6	53	8	-	-	-
Ill.	11	-	931	-	10	1,153	45	-	105	-	78	59	-	19	17
Mich.	7	7	318	-	125	10	42	5	111	1	36	20	-	9	1
Wis.	3	-	681	-	3	132	20	-	34	-	32	41	-	2	1
W.N. CENTRAL	7	76	641	-	13	502	47	1	85	1	44	40	-	6	4
Minn.	1	76	239	-	3	5	10	-	-	-	6	7	-	1	-
Iowa	1	-	23	-	1	5	1	-	13	-	6	10	-	4	-
Mo.	4	-	61	-	-	303	17	-	40	1	26	21	-	-	3
N. Dak.	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-
S. Dak.	-	-	15	-	8	-	2	-	-	-	1	1	-	-	-
Nebr.	-	-	97	-	1	110	5	1	3	-	1	-	-	-	-
Kans.	1	-	206	-	-	79	12	-	29	-	3	1	-	-	1
S. ATLANTIC	110	96	680	4	98	382	253	49	1,249	1	129	86	1	13	7
Del.	2	-	8	-	3	37	1	-	3	-	2	1	-	-	-
Md.	28	47	157	4§	16	50	26	33	729	-	35	9	-	1	2
D.C.	10	1	10	-	7	11	11	3	23	-	14	-	-	1	-
Va.	31	1	66	-	2	20	30	2	77	1	13	6	1	1	-
W. Va.	1	-	6	-	-	28	12	-	41	-	9	11	-	-	-
N.C.	7	-	3	-	10	167	37	5	158	-	29	18	-	-	1
S.C.	-	-	4	-	-	-	19	-	21	-	5	-	-	-	-
Ga.	9	40	54	-	16	-	49	-	56	-	14	10	-	-	-
Fla.	22	7	372	-	44	69	68	6	141	-	8	31	-	10	4
E.S. CENTRAL	11	1	93	-	2	100	81	1	62	4	73	46	-	1	2
Ky.	2	-	15	-	-	2	24	-	-	-	-	1	-	-	-
Tenn.	6	-	34	-	-	55	31	-	30	-	28	15	-	1	2
Ala.	3	1	15	-	2	43	24	-	9	4	40	25	-	-	-
Miss.	-	-	29	-	-	-	2	N	N	-	5	5	-	-	-
W.S. CENTRAL	21	596	2,924	5	80	2,686	93	11	508	3	33	58	1	2	11
Ark.	1	-	10	1§	29	2	11	1	121	-	2	11	-	1	-
La.	-	-	10	-	-	6	26	1	83	3	10	4	-	-	5
Okla.	5	-	144	-	-	84	11	1	99	-	21	13	1	1	1
Tex.	15	596	2,760	4†	51	2,594	45	8	205	-	-	30	-	-	5
MOUNTAIN	13	28	539	1	71	190	44	8	238	1	142	354	-	85	32
Mont.	1	-	-	-	1	13	9	-	-	-	23	10	-	13	1
Idaho	3	-	15	-	6	2	5	-	113	1	26	41	-	45	30
Wyo.	-	-	-	-	11	-	-	-	2	-	-	-	-	-	-
Colo.	1	7	55	1§	34	59	13	-	18	-	50	22	-	3	-
N. Mex.	2	-	80	-	4	31	6	N	N	-	7	6	-	-	-
Ariz.	6	-	173	-	12	47	3	3	84	-	26	268	-	22	-
Utah	-	3	47	-	-	36	4	3	7	-	6	6	-	1	-
Nev.	-	18	169	-	3	2	4	2	14	-	4	1	-	1	1
PACIFIC	147	-	3,700	-	99	1,125	375	4	355	17	216	138	-	403	105
Wash.	14	-	176	-	68	33	48	2	38	1	56	31	-	-	-
Oreg.	9	-	-	-	-	13	41	N	N	-	3	5	-	-	2
Calif.	120	-	3,440	-	28	1,056	276	-	309	16	138	98	-	395	83
Alaska	2	-	78	-	2	-	6	-	-	-	-	-	-	-	-
Hawaii	2	-	6	-	1	23	4	2	8	-	19	4	-	8	20
Guam	1	U	-	U	1	1	-	U	1	U	-	1	U	-	-
P.R.	2	U	808	U	-	433	9	U	7	U	5	3	U	-	6
V.I.	-	U	-	U	-	4	-	U	5	U	-	-	U	-	-
Amer. Samoa	-	U	14	U	-	-	-	U	4	U	-	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	5	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 23, 1990, and June 24, 1989 (25th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	22,848	20,050	162	9,707	9,751	37	168	124	1,915
NEW ENGLAND	891	802	11	244	244	1	11	3	3
Maine	5	5	3	-	3	-	-	-	-
N.H.	39	5	1	3	15	-	-	-	2
Vt.	1	-	-	7	4	-	-	-	-
Mass.	339	243	6	130	125	1	10	2	-
R.I.	7	14	-	35	30	-	-	-	-
Conn.	500	535	1	69	67	-	1	1	1
MID. ATLANTIC	4,984	4,100	15	2,503	1,893	1	48	5	423
Upstate N.Y.	393	383	5	230	161	-	8	1	20
N.Y. City	2,101	1,762	4	1,468	1,091	-	26	-	-
N.J.	772	632	-	433	293	1	12	4	123
Pa.	1,718	1,323	6	372	348	-	2	-	280
E.N. CENTRAL	1,471	761	40	983	1,060	-	21	13	58
Ohio	246	54	15	154	204	-	4	9	3
Ind.	23	33	2	79	92	-	1	-	-
Ill.	563	358	5	488	478	-	12	-	17
Mich.	467	269	18	219	227	-	3	4	8
Wis.	172	47	-	43	59	-	1	-	30
W.N. CENTRAL	202	158	23	266	258	13	-	12	300
Minn.	48	13	1	48	53	-	-	-	117
Iowa	29	17	4	31	28	-	-	-	10
Mo.	101	82	11	128	111	11	-	9	10
N. Dak.	1	1	-	10	9	-	-	-	41
S. Dak.	1	-	-	9	13	1	-	-	90
Nebr.	6	17	3	13	10	1	-	-	4
Kans.	16	28	4	27	34	-	-	3	28
S. ATLANTIC	7,353	7,275	13	1,933	2,011	3	19	43	549
Del.	95	79	1	20	22	-	-	1	7
Md.	568	355	-	152	178	-	8	2	203
D.C.	458	431	1	73	82	-	-	-	-
Va.	392	267	-	159	170	1	2	2	95
W. Va.	7	9	-	35	38	-	-	-	18
N.C.	863	447	9	256	248	1	-	22	4
S.C.	449	387	1	248	232	1	-	14	70
Ga.	1,889	1,638	-	295	286	-	1	2	106
Fla.	2,632	3,662	1	695	755	-	8	-	46
E.S. CENTRAL	1,909	1,314	6	773	821	3	1	14	98
Ky.	31	29	1	201	187	1	1	1	25
Tenn.	721	588	3	203	228	2	-	9	27
Ala.	614	415	2	248	236	-	-	4	46
Miss.	543	282	-	121	170	-	-	-	-
W.S. CENTRAL	3,618	2,636	7	1,228	1,159	12	4	29	244
Ark.	249	168	-	131	125	7	-	4	22
La.	1,059	604	1	135	137	-	-	1	-
Okla.	107	42	6	92	103	5	1	22	70
Tex.	2,203	1,822	-	870	794	-	3	2	152
MOUNTAIN	448	340	19	215	230	3	9	3	93
Mont.	-	1	-	10	7	-	-	2	28
Idaho	6	1	1	6	8	-	-	-	-
Wyo.	-	3	2	3	-	1	-	-	30
Colo.	20	51	6	6	18	-	-	-	2
N. Mex.	20	12	3	47	40	2	-	1	6
Ariz.	309	98	5	105	112	-	7	-	24
Utah	4	11	2	12	21	-	-	-	1
Nev.	89	163	-	26	24	-	2	-	2
PACIFIC	1,972	2,664	28	1,562	2,075	1	55	2	147
Wash.	191	208	4	130	109	1	1	-	-
Oreg.	70	131	-	57	69	-	2	-	-
Calif.	1,697	2,317	23	1,279	1,785	-	49	2	125
Alaska	6	2	-	19	33	-	-	-	22
Hawaii	8	6	1	77	79	-	3	-	-
Guam	1	4	-	14	40	-	-	-	-
P.R.	187	264	-	51	151	-	-	-	26
V.I.	1	2	-	4	4	-	-	-	-
Amer. Samoa	-	-	-	6	2	-	-	-	-
C.N.M.I.	1	7	-	14	8	-	4	-	-

TABLE III. Deaths in 121 U.S. cities,* week ending June 23, 1990 (25th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	584	392	114	52	11	15	51
Boston, Mass.	171	100	37	22	7	5	17
Bridgeport, Conn.	38	25	6	6	-	1	3
Cambridge, Mass.	29	22	6	-	-	1	3
Fall River, Mass.	27	20	6	-	1	-	-
Hartford, Conn.	45	28	8	5	-	4	2
Lowell, Mass.	22	14	6	1	1	-	1
Lynn, Mass.	14	8	3	2	1	-	-
New Bedford, Mass.	28	23	4	1	-	-	2
New Haven, Conn.	20	15	3	1	-	1	1
Providence, R.I.	42	26	8	5	-	3	2
Somerville, Mass.	7	5	2	-	-	-	1
Springfield, Mass.	39	31	5	2	1	-	6
Waterbury, Conn.	30	20	6	4	-	-	7
Worcester, Mass.	72	55	14	3	-	-	6
MID. ATLANTIC	2,657	1,676	534	304	69	73	152
Albany, N.Y.	49	36	8	3	1	1	3
Allentown, Pa.	18	12	3	3	-	-	1
Buffalo, N.Y.	150	97	33	15	1	3	8
Camden, N.J.	36	20	9	2	2	3	-
Elizabeth, N.J.	21	16	4	1	-	-	4
Erie, Pa.†	34	27	4	1	1	1	5
Jersey City, N.J.	93	51	21	14	2	5	2
N.Y. City, N.Y.	1,295	800	262	178	36	19	50
Newark, N.J.	78	33	16	24	2	3	8
Paterson, N.J.	27	19	4	1	2	1	-
Philadelphia, Pa.	391	238	75	36	15	27	26
Pittsburgh, Pa.†	72	45	20	4	-	3	3
Reading, Pa.	34	29	4	1	-	-	6
Rochester, N.Y.	114	79	24	6	3	2	12
Schenectady, N.Y.	31	26	4	1	-	-	-
Scranton, Pa.†	26	18	8	-	-	-	4
Syracuse, N.Y.	110	78	17	9	2	4	11
Trenton, N.J.	31	21	5	3	1	1	3
Utica, N.Y.	19	12	4	2	1	-	2
Yonkers, N.Y.	28	19	9	-	-	-	4
E.N. CENTRAL	2,260	1,494	468	161	67	70	89
Akron, Ohio	74	53	16	4	1	-	-
Canton, Ohio	46	31	10	3	1	1	4
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	159	93	49	5	5	7	11
Cleveland, Ohio	155	94	30	17	8	6	3
Columbus, Ohio	107	58	34	8	7	-	-
Dayton, Ohio	118	75	29	7	4	3	5
Detroit, Mich.	236	128	59	27	11	11	5
Evansville, Ind.	46	35	9	1	1	-	1
Fort Wayne, Ind.	47	38	5	3	-	1	2
Gary, Ind.	14	4	4	5	1	-	-
Grand Rapids, Mich.	59	45	9	1	2	2	5
Indianapolis, Ind.	160	123	19	8	2	8	5
Madison, Wis.	39	26	6	4	1	2	3
Milwaukee, Wis.	142	112	21	4	3	2	9
Peoria, Ill.	21	16	4	-	-	1	3
Rockford, Ill.	52	36	11	2	3	-	5
South Bend, Ind.	64	45	11	3	4	1	1
Toledo, Ohio	105	83	10	7	3	2	9
Youngstown, Ohio	52	37	7	7	-	1	2
W.N. CENTRAL	733	508	133	55	18	19	56
Des Moines, Iowa	65	43	14	6	2	-	5
Duluth, Minn.	35	26	7	1	-	1	1
Kansas City, Kans.	40	29	2	6	3	-	2
Kansas City, Mo.	103	77	20	1	-	5	9
Lincoln, Nebr.	34	28	2	2	1	1	5
Minneapolis, Minn.	162	101	41	12	3	5	14
Omaha, Nebr.	65	46	9	4	3	3	4
St. Louis, Mo.	133	90	21	13	5	4	11
St. Paul, Minn.	49	40	6	3	-	-	5
Wichita, Kans.	47	28	11	7	1	-	-
S. ATLANTIC	1,211	729	248	143	47	44	55
Atlanta, Ga.	154	85	37	24	7	1	5
Baltimore, Md.	132	82	27	17	3	3	9
Charlotte, N.C.	75	48	12	10	2	3	4
Jacksonville, Fla.	123	61	32	24	4	2	5
Miami, Fla.	110	65	24	11	5	5	-
Norfolk, Va.	62	35	15	1	2	9	3
Richmond, Va.	82	51	13	9	5	4	9
Savannah, Ga.	39	23	8	6	2	-	1
St. Petersburg, Fla.	86	68	10	1	5	2	11
Tampa, Fla.	67	47	7	7	2	4	2
Washington, D.C.§	248	138	59	32	10	9	6
Wilmington, Del.	33	26	4	1	-	2	-
E.S. CENTRAL	742	461	160	76	21	24	47
Birmingham, Ala.	118	72	24	12	4	6	4
Chattanooga, Tenn.	68	50	10	6	-	2	6
Knoxville, Tenn.	59	42	9	6	2	-	5
Louisville, Ky.	33	20	10	2	1	-	1
Memphis, Tenn.	219	124	56	22	9	8	15
Mobile, Ala.	48	29	9	9	-	1	2
Montgomery, Ala.	60	37	15	7	-	1	4
Nashville, Tenn.	137	87	27	12	5	6	10
W.S. CENTRAL	1,789	1,068	399	204	70	47	87
Austin, Tex.	51	32	12	4	3	-	7
Baton Rouge, La.	45	26	12	7	-	-	2
Corpus Christi, Tex.	41	27	10	3	1	-	7
Dallas, Tex.	216	105	52	38	14	7	1
El Paso, Tex.	64	43	13	2	3	3	3
Fort Worth, Tex	113	70	26	10	5	2	5
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	72	40	19	7	2	4	4
New Orleans, La.	74	42	14	12	6	-	-
San Antonio, Tex.	182	118	35	19	3	7	22
Shreveport, La.	109	69	22	9	6	3	9
Tulsa, Okla.	88	60	15	4	3	5	9
MOUNTAIN	653	416	137	63	24	13	38
Albuquerque, N. Mex.	91	58	17	11	2	3	5
Colo. Springs, Colo.	32	20	6	3	3	-	4
Denver, Colo.	105	67	22	13	2	1	2
Las Vegas, Nev.	100	57	29	8	5	1	4
Ogden, Utah	24	16	6	-	1	1	2
Phoenix, Ariz.	132	73	28	19	6	6	8
Pueblo, Colo.	26	23	2	1	-	-	2
Salt Lake City, Utah	51	30	14	4	3	-	2
Tucson, Ariz.	92	72	13	4	2	1	9
PACIFIC	1,887	1,192	343	191	88	64	127
Berkeley, Calif.	16	11	3	2	-	-	-
Fresno, Calif.	92	55	12	17	4	4	11
Glendale, Calif.	27	19	4	1	3	-	1
Honolulu, Hawaii	87	52	22	10	2	1	13
Long Beach, Calif.	84	45	15	7	9	8	8
Los Angeles Calif.	469	278	88	56	29	12	20
Oakland, Calif.	64	42	13	7	-	2	4
Pasadena, Calif.	36	26	3	2	2	3	1
Portland, Oreg.	148	105	20	9	7	7	9
Sacramento, Calif.	138	95	23	10	7	3	19
San Diego, Calif.	173	101	33	21	7	9	19
San Francisco, Calif.	133	79	27	19	5	2	3
San Jose, Calif.	159	100	40	9	7	3	6
Seattle, Wash.	161	109	28	15	4	5	3
Spokane, Wash.	65	49	7	3	1	5	8
Tacoma, Wash.	35	26	5	3	1	-	2
TOTAL	12,516††	7,936	2,536	1,249	415	369	702

*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.

§Data not available. Figures are estimates based on average of past available 4 weeks.

Postsurgical Infections — Continued

Physicians are requested to report clusters of infections in postoperative patients suspected to be associated with the use of propofol through state health departments to the Epidemiology Branch, Hospital Infections Program, Center for Infectious Diseases, CDC; telephone (404) 639-3406.

References

1. Kemper PM, Learned DW. Anesthesia practice: a vector of infection? [Abstract]. Anesthesiology 1989;71:A948.
2. Rosenberg AD, Bernstein RL, Ramanathan S, Albert DB, Marshall MH. Do anesthesiologists practice proper infection control precautions? [Abstract]. Anesthesiology 1989;71:A949.

Current Trends

Silicosis: Cluster in Sandblasters — Texas, and Occupational Surveillance for Silicosis

In November 1988, a physician in west Texas reported three cases of silicosis in sandblasters to the Ector County Health Department (ECHD). One of the workers, a 34-year-old man, subsequently died with acute silicotic alveolar proteinosis. All three workers had been employed at a facility that sandblasted oil-field drilling pipes. Following the physician's report, in January 1989, the ECHD and the Environmental Epidemiology Program, Epidemiology Division, Texas Department of Health (TDH), contacted local physicians and identified seven additional sandblasters who had onset of silicosis since 1985.

An investigation by ECHD and TDH included a review of personal and occupational histories obtained from each worker. Local radiologists evaluated chest radiographs; for four cases, a "B" reader* also reviewed the most recent chest radiograph for each patient for evidence of pneumoconiosis using the 1980 International Labour Office (ILO) guidelines (*1*). TDH staff reviewed lung tissue pathology reports and conducted an environmental survey of the plant.

Each of the 10 workers had histories of occupational exposure to silica and a chest radiograph consistent with pneumoconiosis; eight had a lung tissue pathology report of silicotic nodules or silicotic alveolar proteinosis (*2*). All were Hispanic males; their mean age at diagnosis was 30.5 years (range: 24–50 years), and seven were <30 years of age. All had chest radiographic abnormalities consistent with silicosis, most commonly reported as severe, diffuse interstitial disease with multiple small rounded opacities in most lung fields. The four radiographs evaluated by the "B" reader confirmed these findings, with ILO profusion category ranging from 1/1 (small opacities definitely present on comparison with standard radiographs) to 3/3 (the highest level of small opacity profusion as defined by standard radiographs). Six patients underwent bronchoscopic lung examination with transbronchial lung biopsy, and three underwent thoracotomy. Lung tissue pathology reports described silicotic nodules in eight of the surviving patients; in the ninth, the specimens did not support a definitive diagnosis. Silicotic alveolar proteinosis was identified in the fatal case. Tuberculosis was considered in all the reported patients, three of whom had

*A physician certified by CDC's National Institute for Occupational Safety and Health (NIOSH) to interpret chest radiographs to detect pneumoconiosis using International Labour Office guidelines.

Silicosis — Continued

reactive tuberculin skin tests. However, all sputum and tissue samples obtained from all patients were negative for *Mycobacterium tuberculosis*.

All 10 workers had used sandblasting machinery. Nine of them had worked at one facility, which employed approximately 60 persons. Duration of exposure to sandblasting ranged from 18 months to 8 years (mean: 4.5 years). Nine workers (eight at the one facility) reported no previous silica exposure; the remaining worker had sandblasted oil-field drilling equipment elsewhere for 3 years before working at the one facility for 5 years.

The sandblasting operation required that a rod containing a 1:1 mixture of flint and garnet (20.5% free silica) be passed under high pressure through the drilling pipe to remove contaminants and to prepare the interior surface for the application of a protective plastic coating. Although blast cabinets connected to exhaust systems enclosed the sandblasting operation, the cabinets were in poor repair and permitted the release of clouds of dust throughout the work area. Protective booths, constructed in an attempt to reduce worker exposure to silica, drew air from areas with substantial silica contamination. Workers manually shoveled used sandblasting material back into the machinery for re-use.

Personal breathing-zone air samples, obtained in November 1988, documented respirable free silica exposures ranging from 400 to 700 $\mu g/m^3$ for workers in the sandblasting area and were consistent with results reported by the Occupational Safety and Health Administration (OSHA) during a similar environmental inspection. These exposures substantially exceeded 100 $\mu g/m^3$, the current OSHA permissible exposure limit (PEL) for respirable silica (in effect since September 1989) (*3*).[†] Supplied-air respirators had not been used during sandblasting. Workers reported wearing only disposable respirators, and none of the affected workers had been fit-tested for a respirator.

Silicosis is a reportable condition in Texas; the TDH is intensifying case detection efforts to determine whether the cluster reported here reflects an industry-wide problem.

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Editorial Note: This report underscores the potential health hazards associated with abrasive blasting with silica sand—hazardous work through which even young workers can contract silicosis, a serious and potentially fatal respiratory disease. The investigation illustrates conditions characteristically present at sandblasting worksites associated with cases of silicosis: failure to substitute less toxic abrasive blasting materials; presence of massive clouds of dust, resulting in dangerous exposures to silica for unprotected sandblasters and co-workers; and lack of an effective respiratory protection program for workers. In addition to producing intense dust exposures, the process of abrasive blasting typically fractures sand into finer particles. Freshly fractured silica appears to be more biologically active than aged silica (*5*). This factor may contribute to the development of acute accelerated forms of silicosis, as described in this report.

Abrasive blasting is used in many industries and settings (e.g., to clean sand from foundry castings, to prepare ship hulls and metal bridges for painting, and to clean

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[†]The NIOSH recommended exposure limit (REL) is a 10-hour, time-weighted average level of 50 $\mu g/m^3$ (*4*).

Silicosis — Continued

surfaces of stone buildings), and silicosis associated with sandblasting has been described among shipyard workers (*6*), tombstone sandblasters (*7*), and others (*6*). Silicosis specifically associated with the process of cleaning oil-field drilling pipe has not been previously reported; however, an independent clinical report has described diagnostic procedures used for one of the 10 cases reported here (*8*).

Materials less hazardous than silica sand are available for abrasive blasting (*9,10*). Because of the severe risk for silicosis associated with abrasive blasting with silica sand and the difficulty in controlling these hazards, NIOSH recommended in 1974 that silica sand (or other substances containing >1% free silica) be prohibited as abrasive blasting material (*4*).

Surveillance of silicosis among sandblasters is problematic for at least three reasons (*6*). First, there is no single union or central registry of sandblasters. Second, sandblasting may be only an intermittent part of a worker's job responsibilities, and certain occupations (e.g., painter) may involve intermittent sandblasting. Third, even when a sandblaster dies with silicosis, this diagnosis may not be listed on the death certificate (*6*).

Each case of silicosis should be considered a sentinel health event indicating the potential presence of ongoing hazardous worksite exposures that need evaluation; physician reporting is a useful adjunct to this process. The TDH participates in the Sentinel Event Notification System for Occupational Risks (SENSOR) program (*11*), a collaborative effort involving NIOSH and 10 state health departments.[§] The program is intended to improve occupational disease surveillance at the state and local levels through targeted, provider-based reporting of selected work-related conditions or exposures and worksite follow-up of reported cases. In addition to Texas, five other states (Michigan, New Jersey, New York, Ohio, and Wisconsin) in this program list silicosis or silica exposure as a SENSOR condition for targeted surveillance.

To facilitate provider-based surveillance of work-related conditions and to enhance uniformity of reporting in the states, NIOSH periodically disseminates recommended surveillance case definitions for selected occupational diseases and injuries. Because these definitions are intended for surveillance-related functions, they may differ from those used for other purposes, such as determining workers' compensation or level of disability. The surveillance reporting guidelines and case definition for silicosis[¶] (see box) are recommended for surveillance of work-related silicosis by state health departments receiving reports of cases from physicians and other health-care providers.

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[§]California, Colorado, Massachusetts, Michigan, New Jersey, New York, Ohio, Oregon, Texas, and Wisconsin.

[¶]This definition was reviewed and approved by a panel of consultants convened by NIOSH that comprise the Surveillance Subcommittee of the NIOSH Board of Scientific Counselors: H Anderson, MD, Wisconsin Department of Health and Social Services; M Cullen, MD, Yale University School of Medicine; E Eisen, ScD, Harvard School of Public Health; R Feldman, MD, Boston University School of Medicine; J Hughes, MD, University of California, San Francisco; MJ Jacobs, MD, University of California, Berkeley; K Kreiss, MD, National Jewish Center for Immunology and Respiratory Medicine; J Melius, MD, New York State Department of Health; J Peters, MD, University of Southern California School of Medicine; and D Wegman, MD, University of Lowell.

Silicosis – Continued

SURVEILLANCE GUIDELINES FOR STATE HEALTH DEPARTMENTS: SILICOSIS

Reporting Guidelines

State health departments should encourage physicians, including radiologists and pathologists, as well as other health-care providers, to report all diagnosed or suspected cases of silicosis. These reports should include persons with:

A. A physician's provisional or working diagnosis of silicosis

OR

B. A chest radiograph interpreted as consistent with silicosis

OR

C. Pathologic findings consistent with silicosis.

State health departments should collect appropriate clinical, epidemiologic, and workplace information on reported persons with silicosis as needed to set priorities for workplace investigations.

Surveillance Case Definition

A. 1. History of occupational exposure to airborne silica dust*

AND

2. Chest radiograph or other imaging technique interpreted as consistent with silicosis†

OR

B. Pathologic findings characteristic of silicosis.§

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*Exposure settings associated with silicosis are well characterized and have been summarized in several reviews (*12,13*). The induction period between initial silica exposure and development of radiographically detectable nodular silicosis is usually >10 years. Shorter induction periods are associated with heavy exposures, and acute silicosis may develop within 6 months to 2 years following massive silica exposure.

†Cases can be classified as simple or complicated. Simple silicosis is present if the largest opacity is <1 cm in diameter. Complicated silicosis (also known as progressive massive fibrosis [PMF]) is present if the largest opacity is ≥1 cm in diameter. Common radiographic findings of nodular silicosis include multiple, bilateral, and rounded opacities in the upper lung zones; other patterns have been described. Since patients may have had mixed dust exposure, irregular opacities may be present or even predominant. Radiographs interpreted by NIOSH-certified "B" readers should have profusion categories of 1/0 or greater by the International Labour Organization classification system (*1*). A bilateral alveolar filling pattern is characteristic of acute silicosis and may be followed by rapid development of bilateral small or large opacities.

§Characteristic lung tissue pathology (*2*) in nodular silicosis consists of fibrotic nodules with concentric "onion-skinned" arrangement of collagen fibers, central hyalinization, and a cellular peripheral zone, with lightly birefringent particles seen under polarized light. In acute silicosis, microscopic pathology shows a periodic acid-Schiff positive alveolar exudate (alveolar lipoproteinosis) and a cellular infiltrate of the alveolar walls.

Silicosis — Continued

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Erratum: Vol. 39, No. SS-2

On page 4 of the article "Behavioral Risk Factor Surveillance, 1988," the third sentence of the second paragraph should read: "Men were more than three times more likely to be binge drinkers than were women (median prevalences: men = 24.6%, women = 7.2%)."

Addendum: Vol. 39, No. 24

In the article "Arboviral Infections of the Central Nervous System—United States, 1989," the first person in the credits on page 415 should be "B Jinadu, MD, Kern County Dept of Health."

[illegible]

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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.

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