

**SALMONELLOSIS — Continued**

cases. The remaining 126 (73%) isolates were obtained in culture surveys conducted by state and local health departments. Comparable follow-up data are not available for years before 1973.

Between December 1972 and February 1974, 39 lots containing 474,000 turtles were certified as free of *Salmonella* and *Arizona* contamination in accordance with the revised regulations. These certified turtles originated from 5 sources in Mississippi and Louisiana. *Salmonellae* were isolated after shipment in interstate commerce at various points in the distribution chain from turtles shipped in 15 (38%) of the 39 certified lots, and *Arizona* organisms were isolated from turtles in 1 additional certified lot. Specimens cultured included turtles or turtle tank water obtained from retail stores, distributors' warehouses, or homes. In all, 254,000 turtles (54% of the total) were shipped under the 16 lot numbers from which infected turtles were eventually identified (Table 1).

Laboratory and epidemiologic evidence strongly suggests that turtles from at least 4 Mississippi lots were infected prior to certification: 1) *Salmonella panama* was recovered in North Carolina from specimens of groups of turtles from 1 lot of 10,000 turtles (lot no. 27-106) obtained from previously unopened original shipping containers; 2) *Salmonella braenderup*

was recovered from turtles in New Jersey, Oregon, and Washington which had originated in a lot of 13,000 turtles (lot no. 27-1); 3) *Salmonella litchfield* was recovered in Florida, Oregon, Tennessee, and Washington from turtles obtained from a lot of 33,000 (lot no. 27-10); and 4) *Salmonella typhimurium* was recovered in California and North Carolina from turtles originating in a lot of 22,000 (lot no. 27-11). Eight human cases due to the same salmonella serotype (1 *S. braenderup*, 3 *S. litchfield*, and 4 *S. typhimurium*) were associated with turtles from these lots. *Salmonella* isolates from turtles of the remaining 12 Mississippi and Louisiana lots were obtained or serotyped by single states only.

(Reported by the Bacterial Diseases Division, Bureau of Epidemiology, CDC.)

**Editorial Note**

These and other data previously published (MMWR, Vol. 22, Nos. 14 and 25, and Vol. 23, No. 1) indicate that turtle-associated salmonellosis is a continuing public health problem. At the May 1974 meeting of the Conference of State and Territorial Epidemiologists (CSTE), a resolution was passed requesting "that the Food and Drug Administration (FDA) ban all interstate commerce involving the distribution and sale of pet turtles to the general public until the industry can demonstrate that it can reliably produce and market salmonella-free turtles." On May 28, 1974, FDA published in the *Federal Register* 2 alternative proposals to correct the existing problem. One would ban the sale of pet turtles; the other would improve the certification scheme and impose additional requirements on the sale and shipment of turtles. In commenting on the second proposal the article noted that it was being proposed "as the only alternative to a general prohibition, but the Commissioner believes it is cumbersome and unlikely to be completely effective. The Commissioner has, however, reached no final conclusion as to which course of action should be taken; comments are therefore invited in regard to both proposals." These proposals are of concern to health workers in each state and community. Letters commenting on these proposals may be sent on or before July 29, 1974, to the Hearing Clerk, Food and Drug Administration, Room 6-86, 5600 Fishers Lane, Rockville, Maryland 20852.

Table 1  
*Salmonella* Contamination in Interstate Shipments of Turtles That Had Been Certified *Salmonella*-Free December 1972–February 1974

State of Origin	No. of Certified Lots		No. of Certified Turtles	
	Total	In Which <i>Salmonellae</i> Isolated	Total	In Lots in Which <i>Salmonellae</i> Isolated
Mississippi	16	12 (75%)	228,000	178,000 (78%)
Louisiana	23	4* (17%)	246,000	76,000* (31%)
Total	39	16* (41%)	474,000	254,000* (54%)

\*Includes 1 lot (10,000 turtles) from which only *Arizona* organisms were isolated.

### EPIDEMIOLOGIC NOTES AND REPORTS

#### ANGIOSARCOMA OF THE LIVER — Connecticut

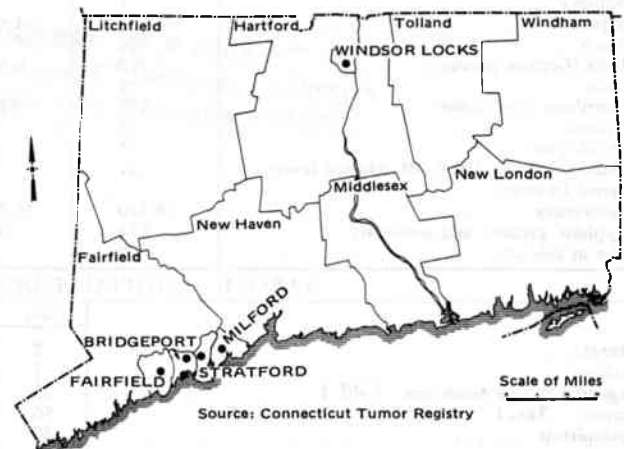
From January 1935 through December 1973, 8 cases of angiosarcoma of the liver were reported to the Connecticut Tumor Registry; the diagnosis of hepatic angiosarcoma has been confirmed in 6 of these cases by pathologists at the National Cancer Institute.

One case was diagnosed in 1950, 1 in 1967, and 4 in 1972 and 1973. The 1950 case occurred in a resident of north-central Connecticut, while the 5 more recent cases were found in residents of 4 closely adjacent communities in the southwestern portion of the state (Figure 1).

Two of the patients appear to have had occupational exposure to polyvinyl chloride (PVC). One, a 47-year-old man diagnosed in January 1973, had been employed for the 10 preceding years as an accountant in a factory which produces vinyl sheets and processes PVC resins; it is reported that he frequently visited the production area of the plant. Another patient, a 61-year-old man diagnosed in June 1973, had worked from 1933 through 1971 in an electrical products manufacturing concern, and from 1938 through 1963 he had operated

(Continued on back page)

Figure 1  
CASES OF ANGIOSARCOMA OF THE LIVER  
BY PLACE OF RESIDENCE  
CONNECTICUT — 1935-1973



## ANGIOSARCOMA – Continued

machinery there which applied plastics containing PVC to wires as insulating material.

Another 2 patients who had no occupational exposure to PVC had been long-time residents of the Bridgeport-Stratford area. One of these was a 73-year-old man, diagnosed in 1967, who had lived his entire life within 2 miles of the electrical products factory mentioned above. He had worked as a firefighter from 1917 to 1942, as a metal worker from 1942 to 1944, and as a corset cutter from 1945 until his retirement in 1961; additionally he had a history of chronic alcohol ingestion. The other resident was an 83-year-old woman, a housewife and retired cook, who was diagnosed in December 1973. She had lived for 35 years within 1/2 mile of the vinyl products plant.

There was no history of occupational or of potential community exposure to PVC for the 2 remaining patients. One was a housewife in north-central Connecticut, the other an unemployed, disabled man with chronic alcoholism who had moved to Connecticut from New York City 4 months before his diagnosis in May 1973. None of the 6 confirmed patients had known exposure to thorium dioxide (1) or to arsenical compounds (2), 2 materials known specifically to induce angiosarcoma of the liver in man. By history, none had excessive exposure to aerosol sprays. None had a past history of hepatitis. Two had histories of alcoholism, as noted, but none are known to have taken other potentially hepatotoxic drugs or medications.

(Reported by Barbara W. Christine, M.D., Chief, Chronic Disease Control Section, Harold S. Barrett, M.D., Deputy Commissioner of Health, and Douglas S. Lloyd, M.D., Commissioner of Health, Connecticut State Department of Health, the National Institute of Occupational Safety and Health, and the Cancer and Birth Defects Division, Bureau of Epidemiology, CDC.)

## Editorial Note

Recent reports (3,4) have described 13 cases of angiosarcoma of the liver among men engaged in the synthesis of

PVC from vinyl chloride monomer (VCM). There is evidence to suggest that VCM may have been the cause of hepatic angiosarcoma in those cases (5,6). In the present series 2 cases of hepatic angiosarcoma are described in men who had no known exposure to VCM, but who did work with PVC. While these findings establish no causal connection between exposure to PVC and angiosarcoma of the liver, they do raise the possibility of such a relationship. Further studies throughout the nation will be needed to define the possible risk factors in persons who have worked with PVC.

The additional finding in this study of angiosarcoma of the liver in 2 persons who had no occupational exposure to vinyl chloride, but who may have had community exposure, is also worrisome but again establishes no causal connection. It might be expected on the basis of data from the Third National Cancer Survey that approximately 4 cases of angiosarcoma of the liver would occur in Connecticut in a 10-year period and that approximately 0.6 cases would occur in the 4 previously mentioned communities in southern Connecticut during the same interval. Epidemiologic investigation of additional cases of hepatic angiosarcoma that may be found to have had possible community exposure to vinyl chloride will be necessary to clarify the significance of these cases.

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The data in this report are provisional, based on weekly telegraphs 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.

In addition to the established procedures for reporting morbidity and mortality, the editor welcomes accounts of interesting outbreaks or case investigations of current interest to health officials.

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# Morbidity and Mortality



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE

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**CURRENT TRENDS**  
**SURVEILLANCE OF TURTLE-ASSOCIATED SALMONELLOSIS - United States**

Revised Federal Regulations for the importation of turtles, tortoises, and terrapins and their bacteriologic testing and certification for interstate shipment went into effect on December 18, 1972 (MMWR, Vol. 21, No. 52). These revisions prohibited the importation of turtles or turtle eggs into the United States and the interstate shipment of turtles that had not been certified free of *Salmonella* and *Arizona* organisms by the health authority of the state of origin. In addition, details of the testing procedure required for certification were stipulated.

In 1973, the first full year that these regulations were in effect, 184 *Salmonella* isolations from turtles or turtle water

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were reported to the CDC Salmonella Surveillance Activity compared with a mean of 200 isolates reported per year for the previous 5 years. Follow-up data on 173 of the 184 isolates reported in 1973 revealed that 47 (27%) were obtained during investigations of 22 incidents of human salmonellosis involving 35 bacteriologically confirmed human

**TABLE I. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES**  
(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	24th WEEK ENDING		MEDIAN 1969-1973	CUMULATIVE, FIRST 24 WEEKS		
	June 15, 1974	June 16, 1973		1974	1973	MEDIAN 1969-1973
Aseptic meningitis . . . . .	39	52	52	863	949	886
Brucellosis . . . . .	5	1	4	66	61	72
Chickenpox . . . . .	2,662	4,398	—	89,160	133,834	—
Diphtheria . . . . .	1	3	1	140	96	80
Encephalitis:						
Primary: Arthropod-borne and unspecified . . . . .	10	24	24	379	495	484
Post-Infectious . . . . .	7	5	7	121	137	140
Hepatitis, Viral:						
Type B . . . . .	175	168	168	4,216	3,622	3,622
Type A . . . . .	815	—	—	20,052	—	—
Type unspecified . . . . .	157	882	1,000	3,992	23,748	25,937
Malaria . . . . .	2	7	41	69	109	1,202
Measles (rubeola) . . . . .	828	802	813	16,925	21,352	23,494
Meningococcal infections, total . . . . .	11	26	26	729	799	1,441
Civilian . . . . .	10	25	25	707	780	1,263
Military . . . . .	1	1	1	22	19	148
Mumps . . . . .	1,147	1,530	2,165	38,370	47,727	58,233
Pertussis . . . . .	24	—	—	572	—	—
Rubella (German measles) . . . . .	310	670	1,089	8,049	23,626	33,599
Tetanus . . . . .	1	1	3	27	26	45
Tuberculosis, new active . . . . .	677	607	—	14,111	14,689	—
Tularemia . . . . .	8	11	3	48	57	48
Typhoid fever . . . . .	7	10	8	154	355	127
Typhus, tick-borne (Rky. Mt. spotted fever) . . . . .	41	32	28	224	176	118
Venereal Diseases:						
Gonorrhea . . . . .	18,330	15,955	—	390,621	355,832	—
Syphilis, primary and secondary . . . . .	454	393	—	11,069	11,328	—
Rabies in animals . . . . .	60	87	76	1,277	1,764	1,769

**TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY**

	Cum.		Cum.
Anthrax: . . . . .	2	Poliomyelitis, total: . . . . .	2
Botulism: . . . . .	5	Paralytic: . . . . .	2
Congenital rubella syndrome: Calif. 1 . . . . .	33	Psittacosis: . . . . .	12
Leprosy: Tex. 1 . . . . .	56	Rabies in man: . . . . .	—
Leptospirosis: . . . . .	20	Trichinosis: N.Y. Ups. 1, N.J. 2 . . . . .	53
Plague: . . . . .	—	Typhus, murine: . . . . .	10

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