

DEPARTMENT OF HEALTH AND HUMAN SERVICES

July 29, 1991

Environmental Health Scientist, TSS, ERCB, DHAC, ATSDR (E-32)

Health Consultation: Ventron/Velsicol NPL Site  
Wood-Ridge, New Jersey

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BACKGROUND AND STATEMENT OF ISSUES

The Agency for Toxic Substances and Disease Registry (ATSDR) was requested by the New Jersey Department of Health to conduct a site visit at the Ventron/Velsicol Site (VVS) and to evaluate the potential for worker and customer exposure to mercury around the warehouses located on-site. A site visit was conducted on June 17, 1991, by representatives of ATSDR, New Jersey Department of Health (NJDOH), U.S. Environmental Protection Agency (EPA), and the New Jersey Department of Environmental Protection (NJDEP).

The 40-acre site is located in Wood-Ridge and Carlstadt Borough, (Bergen County), on the western bank of Berry's Creek in New Jersey. From 1929 to 1974, a mercury processing plant was operated on-site. The mercury processing plant occupied 7 acres; the remaining 33-acre tract was partially utilized (19 acres) as a landfill for waste produced on-site. Approximately 160 tons of mercury processed waste are estimated to be buried on-site. A major portion of the Ventron/Velsicol Site is marshland.

Two warehouses are currently located on the 7-acre parcel which housed the mercury processing facilities. One of the warehouses is occupied by a food distributor and contains primarily cheese and meat products. The other warehouse is occupied by a furniture distributor. During the site visit, only a few employees were observed working in the warehouses. A publicly owned treatment works and a residential area are located in an area adjacent to the site.

The ATSDR performed a Preliminary Health Assessment on VVS in December 1988. The document concluded that VVS was a public health concern because of the likelihood of human exposure to hazardous substances. Direct dermal contact and ingestion of soil, sediment, groundwater, and surface water by area residents

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and trespassers were identified as likely routes of exposure. Ingestion of fish caught in contaminated waters and inhalation of volatilized contaminants (especially inside the warehouses) or contaminants entrained in air were cited as other possible routes of exposure. The ATSDR Preliminary Health Assessment recommended the following:

1. restrict access to the site;
2. sample the food distribution center for possible mercury contamination;
3. insure that food being distributed from the warehouse complies with U.S. Food and Drug Administration requirements; and
4. provide information further characterizing the site, including but not limited to an area private well inventory and hydrologic characterization of the site.

Air monitoring for mercury was conducted during the site visit using a portable Jerome meter. Elemental mercury vapor was detected in the air at two separate locations on-site. Mercury was detected at a concentration of 0.02 milligrams of Hg per cubic meter of air ( $\text{mg Hg/m}^3$ ) at one point along the railroad tracks adjacent to the fence. Mercury was also detected at 0.04  $\text{mg Hg/m}^3$  at an exhaust vent on the foundation of the furniture distribution center located at 3 Ethel Boulevard.

Access to the site is only partially restricted. A wooded area between the warehouses and Berry's Creek was fenced and marked with a danger sign, stating: "Hazardous Waste Area-No Trespassing." However, during the site visit, a hole in the fence along the railroad tracks was found making this area accessible. The ruins of a cinderblock shelter constructed by transients was observed inside the fenced area. The shelter was reportedly dismantled, and the transients removed by police.

Puddled water was observed on-site in an area between the two warehouses. It was reported that the source of this water is runoff which goes to the creek after it rains. Deposited sediment was observed in the area between the warehouses and in the parking lot.

The NJDEP has completed the remediation of soils in nine residential properties where mercury levels in soil exceeded 14 parts per million (ppm). New sod was observed in the yards of the remediated homes during the site visit. The contamination of the residential soil was apparently due to a malfunctioning

flood-gate that allowed Berry's Creek to overflow during heavy rains. The flood-gate was reportedly repaired. Mercury levels in the air in the residential area were below the detection limit of the instrument used (Jerome meter).

In December 1990, the installation of 12 monitoring wells was completed by NJDEP. Soil samples were collected in conjunction with the well installation. Elemental mercury was detected at a concentration of 1,820 ppm in soil from MW-10 at a depth 0.5 to 2.5 feet. No other metallic or organic contaminants were found in the soil borings at levels that were considered to be of health significance. In February 1991 NJDEP also collected soil/sediment and puddled water samples from around the warehouse, groundwater samples from the 12 wells, and soil samples from under a compost woodchip pile at the Wood-Ridge POTW. The woodchips are allegedly being distributed as landscaping in public access areas. The results of these latter samplings were not yet available.

The Remedial Investigation/Feasibility Study for the Berry's Creek Site is currently in progress.

#### DOCUMENTS AND INFORMATION REVIEWED

1. ATSDR Preliminary Health Assessment, Ventron/Velsicol Site, December, 1988.
2. ATSDR Toxicological Profile for Mercury, ATSDR/TP-89/16, December, 1989.
3. Letter to Richard Salkie, EPA, from Edward Putnam, NJDEP, May 21, 1991.
4. Letter to Arthur Block, ATSDR, from James Pasqualo, NJDOH, September 12, 1990.
5. Memo to James Pasqualo, NJDOH, from Robert Soboleski, NJDEP, May 6, 1991.
6. Memo to James Pasqualo, NJDOH, from Joseph Maher, NJDEP, December 4, 1990.

#### DISCUSSION

Exposure to elemental mercury can occur through ingestion, dermal contact with contaminated soils, and through inhalation of elemental mercury vapors. In general, elemental mercury is poorly absorbed following dermal and oral exposures and probably represents little threat to health via these routes at this site.

However, elemental mercury vapors are rapidly and efficiently absorbed through the lungs and acute and chronic exposures can cause adverse neurological, renal, and developmental effects. The severity of these effects depends on the concentration of mercury, the length of exposure, and individual sensitivity. Tremors of the fingers, eyelids, and lips are early indicators of mercury toxicity.

Concentrations of mercury detected in air at the railroad tracks and at the foundation vent (0.02 and 0.04 mg Hg/m<sup>3</sup>, respectively) suggest that significant exposures may be feasible. The ATSDR has estimated minimal risk levels (MRLs) for inhalation exposures to elemental mercury for intermediate durations (less than a year) and for chronic exposures. The estimated MRLs are 0.003 mg and 0.0003 Hg/m<sup>3</sup>, respectively. The MRL for chronic exposures is based on levels reported to have affected humans (tremors) occupationally exposed to mercury at an estimated mean concentration of approximately 0.03 mg Hg/m<sup>3</sup>, a concentration lower than measured at this site. These workers may have worked for up to 40 years but the mean levels were reported to be 15 years. The range of mercury detected in air at VVS includes the level at which chronic adverse health effects were observed in humans.

Sediment reportedly from the Berry's Creek was observed between the warehouses and in the parking area. The potential exists for this material to be tracked into the warehouses. The potential also exists for contaminated dusts to be transported off-site to public works and residential areas via windborne mechanisms and surface water runoff. Secondary mercury contamination of families of employees is also possible if mercury contamination is tracked to or brought home on workers shoes and clothing.

#### **CONCLUSION**

Based on the information reviewed, ATSDR concludes that the contamination at the Ventron/Velsicol Site may pose a potential health threat to on-site workers, area workers, and residents from the inhalation of mercury vapor and mercury-contaminated dusts.

#### **RECOMMENDATIONS**

Conduct time weighted air monitoring and subsequent laboratory analysis for mercury in the following areas:

1. inside both of the warehouses located on-site;
2. outdoors at the public works area; and

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3. outdoors at the residential area.

If further clarification is necessary or additional information becomes available, please do not hesitate to contact this office (404) 639-0616.

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