



160045

STATE OF DELAWARE
DEPARTMENT OF HEALTH AND SOCIAL SERVICES
DIVISION OF PUBLIC HEALTH
ROBBINS BUILDING
802 SILVER LAKE BOULEVARD AND WALKER ROAD
DOVER, DELAWARE 19901

MEMORANDUM

TO: Joseph J. Hardman
Water Management Section
Div. Natural Resources and Environmental Control

FROM: W. Edward Montz, Ph.D. *(W. E. M. M.)*
Environmental Toxicologist
Bureau of Environmental Health

DATE: January 11, 1988

SUBJECT: Haloy/Witco/Brandywine Chemical Company

Recently, I was asked in writing by Joyce McCurdy of the Agency for Toxic Substances and Diseases Registry (ATSDR) to comment on whether the Halby Site in New Castle County constitutes an "imminent public health threat." The purpose of this request was to provide assistance to EPA in determining whether immediate, emergency remedial action was required or that the site could be studied and cleanup initiated later on a lower-priority basis. At the time of the request, a minimal amount of data was presented to me reflecting soil and water concentrations of heavy metals and organics. I subsequently visited the site on two occasions; once with you 12/10/87 and once with Joyce on 12/22/87. I observed the following during my visits:

1. That access to the area is almost completely uncontrolled. On both occasions, we freely drove through the company gate to the lagoon and walked around the area before anyone approached us. We walked around the Conrail tracks bordering the lagoon on both visits and no one informed us that we were in the immediate proximity of a hazardous waste site. In addition, on the second visit, I observed another gentleman (possibly a surveyor?) also walking the tracks freely. There are numerous household waste dumping sites (i.e., discarded washing machines, sofas, boxes) on the properties immediately adjacent to the Halby site. Graffiti is painted on the I-95 bridge structure. All of these observations show that people can wander freely through this area at will.
2. A residential housing area is located very nearby across I-495.
3. Two mobile homes are located on Terminal Avenue between the truck-stop and Brandywine Chemical. These homes appear to be occupied.

AR300227

4. That the Halby site is in generally poor condition (i.e., trash, litter, discarded appliances, and tires) are present.
5. That the lagoon area is in the process of being actively disturbed by heavy equipment used to fill the lagoon. This disturbance is likely to cause wind, soil, and water erosion of both contaminated lagoon sediments as well as the fill material.
6. The lagoon is tidally flushed twice each day through as many as three confluences. Filling this wetland area may constitute a violation of Section 404 of the Clean Water Act. With this degree of water exchange, the concentrations of heavy metals found in the lagoon water samples (see discussion below) is particularly disturbing.
7. The tidal flushing of the lagoon virtually guarantees offsite migration of contaminants which may eventually be deposited in Lodbell Canal, the drainage ditch bordering I-495, and the Delaware Bay.
8. An active discharge of a gaseous substance behind the plant on my 12/22/87 visit burned my eyes, nose, and throat. My guess is that an acid was being discharged.
9. The fill material used in the lagoon was contaminated with bits of asphalt, concrete, Rebar reinforcing rod and miscellaneous debris which suggests that the origin of the fill may have been a landfill site. My understanding is that such material may not be used as fill.
10. The Halby Chemical Site is only a small part of the problem. The entire Port of Wilmington is probably heavily contaminated based on background investigation of businesses which are, or were, present (i.e., smelters, coke plants, other chemical companies, a mineral extraction plant, a fertilizer plant, etc.). The facility immediately across the Conrail tracks from Halby was storing and disturbing huge piles of coke alleged to be high in vanadium content. No dust suppression or erosion control measures were observed. All the above suggests that the problem is far larger than the Halby Chemical site.
11. Numerous occupational health and safety violations were observed in businesses in the Port.
12. The company of record (Brandywine Chemical) is probably only partially correct. The lagoon and frontage along Terminal Avenue has been purchased by a businessman who intends to make the area a truck-stop. Heavy tractor-trailer rigs were pulling in and out of a diesel fuel pump area, disturbing the new fill which is overlaying the contaminated soil in the filled portion of the lagoon.

Appendix A summarizes the results of the sampling and potential health effects of such exposures.

AR300228

On 1/5/88, I participated in a conference call with Joyce McCurdy (ATSDR), Dr. Dave Millar (ATSDR Toxicologist), and Doug Fox (OSC for EPA). The conference consisted of us discussing the data and some of the problems identified in my field visits. The others concluded, over my objections, that the site did not constitute an imminent public health threat requiring emergency remedial measures. The entire matter will be referred to Leonard Nash (EPA) for eventual clean-up following site evaluation. Dr. Millar stated that the numbers simply were not high enough to justify emergency removal. I asked him what levels had to be present to trigger emergency removal and he could give me no guidelines. I asked him to define "imminent public health threat" and he could give me no criteria for declaring a site an emergency but that each site would be handled on a "case-by-case basis." I object to this philosophy on several grounds. First, the lack of applicable standards leaves interpretation of sample results open to too much personal opinion. It is obvious Dr. Millar and I disagree about the degree of threat posed by the level of contaminants known to be present. Second, it is virtually impossible to produce the 'proof' required to trigger clean-up action if there are no standards. Third, the entire concept of "public health threat" is open to individual interpretation and, obviously, this is another area where Dr. Millar and I disagree. I make the following observations regarding the database on which ATSDR's opinion is based:

1. The number of samples taken were inadequate (only one lagoon water and three lagoon sediment samples were taken). Up to nine sites were to have been sampled, but, because of accessibility, the contractor only sampled three sites.
2. The sample protocol was inadequate.
 - a. No samples were taken off the site.
 - b. No groundwater samples were taken.
 - c. No air samples were taken.
 - d. No samples were taken at the drainage ditch near I-495.
 - e. No samples of associated biota were taken (i.e. fish, shellfish).
 - f. No epidemiological data were collected to assess human exposure.
3. The sampling regime was not adequately comprehensive. For example, vanadium content of the lagoon, based on contamination from adjacent coke piles, was never measured.
4. No effort appears to have been given to explaining the origin of substances found in the lagoon which were never supposed to have been a part of processes conducted at Halby/Witco/Brandywine. Where did lead, chromium, etc. present at the Halby site, originate and what concentrations of these materials are present at this site(s)?
5. No bioaccumulation and/or synergism of compounds was considered.

AR300229

6. Carcinogenic effects were not considered in these most recent conversations. In a 5/9/85 EPA memo from Bruce Blinott to Jim Butch, he concludes that under certain likely conditions, the lagoon is "contaminated with 275,000 times the 10^{-6} level" of acceptable cancer risk.

7. No efforts were made to assess probable routes of exposure.

8. Adequate temporal sampling was not performed. Given the lagoon water exchanges which occur daily, it is of considerable concern that levels of contaminant are present in concentrations observed.

9. Neurotoxicity and fertility threats were not considered (as discussed in the 5/9/85 EPA memo cited above).

10. No survey was made of workers and residents in the area. The 5/9/85 EPA memo states that these people "have complained in the past not only about the noxious odors but have felt ill because of them."

In my opinion, ATSDR should reconsider its decision based on a more comprehensive scientific sampling and additional data.

Given the magnitude of the Port of Wilmington problem, I would make the following recommendations, (in priority order):

1. That access to the Halby site be restricted at the earliest possible date to protect public health.
2. That existing statutes (e.g., DNREC, OSHA, Health Dept.) be enforced throughout the Port of Wilmington immediately.
3. That permanent remedial measures be instituted at the site as soon as possible.
4. That plans be made for a comprehensive study to assess the extent and magnitude of the contaminant problems in the port.

I feel that implementing these recommendations will do a reasonable job of protecting public health and the environment.

AR300230

Samples Tested*	Water (Lagoon) Concentrations in parts per million (ppm)	Sediment (Lagoon) Concentrations (ppm)	Airborne Concentrations Threshold Limit (mg/M ³)	State of Delaware Regulations (Title 16 Section 122(3)(c)) Delaware Code, 6/82	
Arsenic(As)	38	120-490	0.2	0.05 mg/L	Cancer, cardiovascular disease, neurological effects
Cadmium (Cd)	1	<1-6	0.05	0.010 mg/L	Proteinuria, Breathing difficulties; and renal tubular drainage
Chromium (Cr)	13	37-87	0.5	0.05 mp/l	Respiratory tract lesions, lung cancer, gastrointestinal disturbances and other problems.
Copper (Cu)	91	200-750	Fumes: 0.2	1 mg/L	Mild anemia, "Metal Fume Fever"
Lead (Pb)	43	155-372	0.15	0.05 mg/L	Chronic poisoning, Symptoms include: Gastrointestinal disturbances, weakness; in external muscles, tremors.
Zinc (Zn)	329	374-3320	Oxide fumes: 5	5 mg/L	"Metal Fume Fever", Liver dysfunction

*Tests performed by Roy F. Weston from Martel Laboratory Services, 1025 Cromwell Bridge Road, Baltimore, MD 21204.
Phone: (301) 825-7790.

AR300231