

NOAA Hazardous Waste Site Report

Delaware City PVC (III-3)
New Castle, Delaware
April 13, 1984

Location and Nature of Site:

In 1966, Stauffer Chemical Company of Westport, Connecticut, founded the 180-acre Delaware City PVC Plant (Figure 1), which is used for the manufacture of polyvinylchloride resin (PVC), polyvinyl acetate and other polymers. From 1971 to 1974 offgrade PVC resin, 3,300 tons of sludge from the wastewater treatment system and residue from the stripping process were disposed of in two on-site pits. These "buried sludge pits" were closed and buried in 1979. Offgrade PVC resin was disposed of in a third pit. This material was removed and the pit backfilled in 1974. These pits constitute the areas on the site where disposal of wastes occurred.

Since 1970 three active earth lagoons, the "offgrade batch pits", have been used for the temporary storage of offgrade PVC resin until the material is removed and landfilled off-site. Analysis of this material has shown high levels of 1,2-dichloroethane (EDC), trichloroethylene (TCE), ethylbenzene and toluene. These lagoons occasionally receive waste or process waters from the plant when there are systems failures. In these cases, liquid from these lagoons is then pumped back into the NPDES treatment facilities.

A fourth lagoon, the "RV Pond", is used for the collection of storm water runoff. Water from this lagoon is pumped to the NPDES treatment facilities. During periods of heavy rain, this pond has overflowed into a drainage way which is a tributary of Dragon Run Creek. There are also two concrete-lined aeration lagoons on-site, which are part of the NPDES treatment facilities.

In May 1981 Stauffer Chemical Company sold the PVC Plant to Formosa Plastics Corporation, who currently operates the facility. The sale did not include the property on which the two buried sludge pits are located, and on which the third disposal pit, now backfilled, was located. This property was retained as part of the Stauffer Chemical Company-Carbon Disulfide Plant, which is located adjacent to the PVC Plant Property.

The principal concern of the U.S. Environmental Protection Agency (EPA) regarding the Delaware PVC Plant is the serious contamination of the shallow groundwater in the Columbia Formation which exists under the site. High levels of VCM, EDC, TCE, and chloroethane were found in groundwater samples from monitoring wells located in the vicinity of the lagoons and buried sludge pits. The pattern of contamination levels indicates that the offgrade batch pits (owned and operated by Stauffer

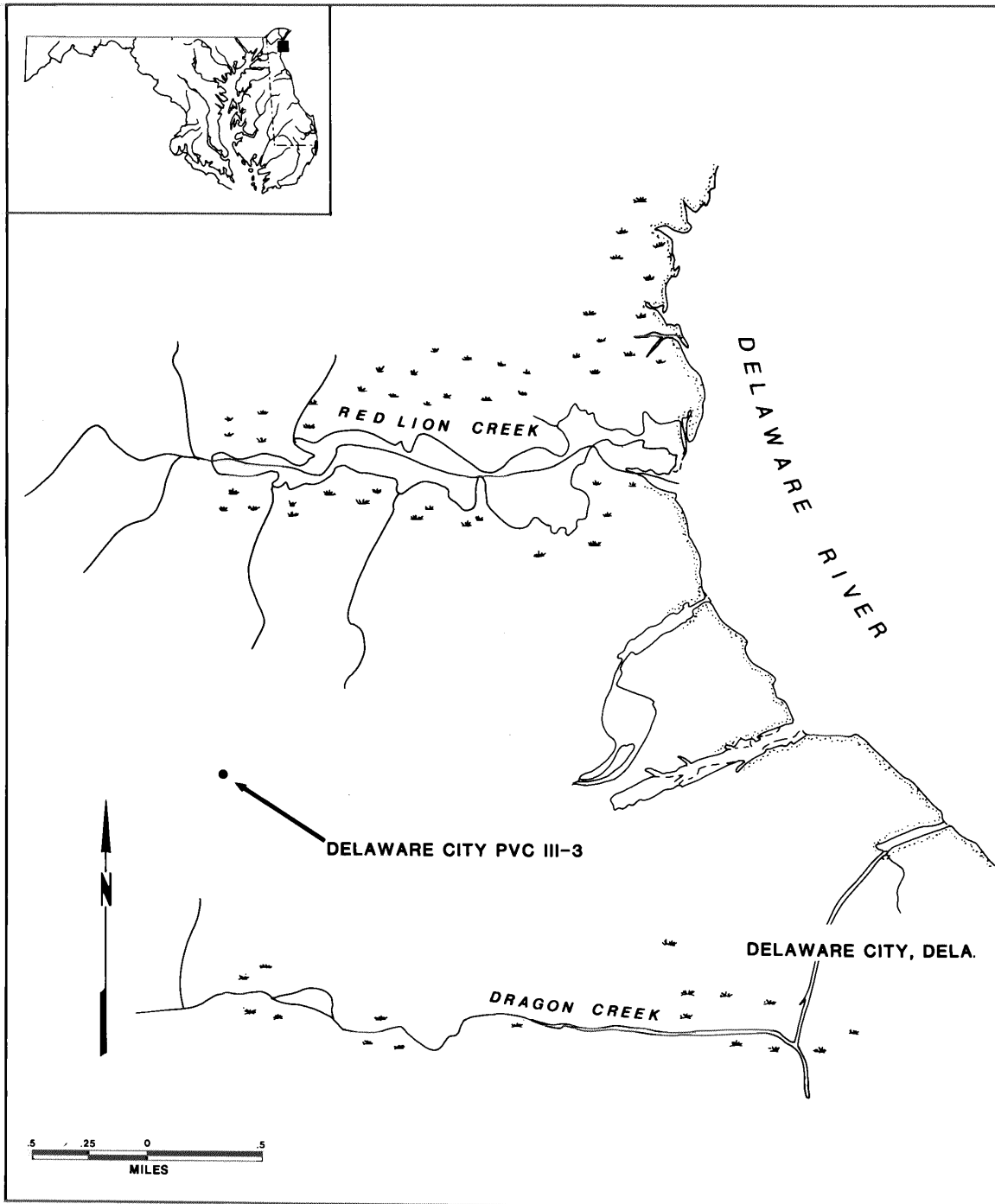


FIGURE 1. Site location.

Chemical Company until 1981) and currently owned and operated by Formosa Plastics Corporation) which are part of the active manufacturing process, are a primary source of the groundwater contamination. To a lesser degree, surface waters also show evidence of contamination.

Proximity of Chemical Hazard to Marine Resources:

The site is adjacent to stream tributaries of both Dragon Run Creek and Red Lion Creek. Dragon Run Creek is a mile to the south, and Red Lion Creek is two miles to the north. Dragon Run Creek is a Class 2 stream used for industrial and drinking water supplies. Getty Oil Refinery has an intake for drinking water which is located about two miles east of the PVC Plant.

During periods of heavy rain, the RV collection Pond has overflowed, resulting in runoff and shallow water discharge going directly into a tributary of Dragon Run Creek. Sample results from an EPA site inspection in March 1982 indicate surface water contamination by low levels of organics: chloroform (22 ppb); trace quantities of EDC; 1,1 dichloroethane (less than 10 ppb); and other organic chemicals in a tributary of Dragon Run Creek. This sample was obtained from a small drainage outfall downstream of all the pits and lagoons and also downstream of the outfall from the sanitary wastewater treatment plant.

Given the low levels of contaminants detected in surface waters and the mile distance from the site to Dragon Run Creek, it appears that there is only moderate potential for significant contamination migrating off-site.

Marine Resources at Risk:

Dragon Run Creek and Red Lion Creek are small tributaries of the Delaware River. The Delaware River and its tributaries provide significant habitat for a variety of finfish resources (See Table 1).

Anadromous fish migrate through the Delaware Bay estuarine system during the early spring on their way to freshwater spawning grounds. For most of the anadromous fish of the Delaware bay this occurs upstream of Burlington, New Jersey, although some spawning does occur in freshwater tributaries (4). The adults return to the lower parts of Delaware Bay. Juvenile fish, hatched in the spring, remain in the upper parts of Delaware Bay until the late summer and early fall when they also migrate back into the lower parts of the Bay (3).

The Dragon Creek watershed is located within 3 miles of known spawning grounds of the Atlantic sturgeon at Supawna Meadows National Wildlife refuge. The Atlantic sturgeon is a species of special concern to the state of Delaware. This site is located along a major migratory route for anadromous fish, including the Shortnose sturgeon, a species of special federal concern.

It is unknown to what extent other species of finfish utilize the Dragon Creek watershed area, but this region of the Delaware River is unlikely to be an important nursery or spawning area for other

anadromous fish due to the fairly high level of development in this area and to their preference for less saline waters for spawning. Blueback herring, American shad, and striped bass may utilize this area as nursery grounds.

Some tidal wetlands are present at the mouth of Dragon Creek, and some species of fish may be harvested by recreational and commercial fishermen in the Delaware River adjacent to Dragon Creek.

The Delaware Bay estuarine system is an important wintering area for many waterfowl and seabirds, particularly loons, grebes, and gannets. They tend to concentrate in coastal bays and wetland areas. Bald eagles nest at Augustine Wildlife Area and Appoquinimink Wildlife Area.

Table 1. Fishery Resources of Tidally Influenced Regions of the Delaware River (1, 2, 5)

Finfish Species	Adult Habitat	Spawning Area	Nursery Area	Commer. Fish.	Rec. Fish.	Migr. Route
Anadromous						
Alewife	X	X	X	X	X	X
Blueback herring	X	X	X	X	X	X
American shad	X	X	X	X	X	X
Shortnose sturgeon (Note 1)						X
Atlantic sturgeon		X				
Striped bass		X	X	X	X	X
Gizzard shad		X	X	X		
Non-andromous						
Atlantic menhaden			X			
White perch		X	X	X	X	X
Flounder	X					
Northern kingfish	X					
Bluefish			X			
Atlantic croaker			X			
Spotted seatrout					X	
Channel catfish	X					
White catfish				X	X	
Brown Bullhead				X	X	
Bluegill	X				X	
Black crappie	X					

Several State and Federal Management Areas are located on the Delaware River in the vicinity of Dragon Creek:

Chesapeake and Delaware Canal Wildlife Area	4 mi downstream
Augustine Wildlife Area	9 mi "
Ft. Mott State Park	3 mi "
Ft. Delaware St. Park	1 mi "
Supawna Meadows National Wildlife Refuge	3 mi "
Appoquinimink Wildlife Area	12 mi "

The U.S. Department of the Interior has stated that none of the natural resources under the trusteeship of the Secretary of the Interior have been affected by the hazards at this site.

Summary of Site Related Actions:

A remedial investigation has been completed and an enforcement action has been initiated against the responsible parties. In April 1982, Stauffer started a detailed hydrogeological investigation at the site, which included drilling several shallow monitoring wells and performing a resistivity survey. The company presented the results to EPA in February 1983, along with a proposal for a detailed feasibility study. A cleanup order is currently being negotiated. In addition, Stauffer has provided alternate water supplies for residents whose water is contaminated.

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References:

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2. U.S. Fish and Wildlife Service, 1980. Atlantic Coast Ecological Inventory.
3. Breder, C.M., and D.E. Rosen, 1966. Modes of Reproduction in Fishes, TEH Publications.
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5. Research Planning Institute, Environmental Sensitivity Atlas. Delaware, (unpublished).
6. EPA Region III Site Inspection of Delaware City PVC Plant, June 28, 1982.