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June 20, 1990

Mr. A. R. Hanke  
 Site Investigation and Support Branch  
 Waste Management Division  
 Environmental Protection Agency  
 345 Courtland Street, N. E.  
 Atlanta, Georgia 30365

Date: 6/26/90  
 Site Disposition: SSI phase II (M)  
 EPA Project Manager: BT

Subject: Screening Site Inspection, Phase I  
 Singer Company, Inc.  
 Wilmington, New Hanover County, North Carolina  
 EPA ID No. NCD057451270  
 TDD No. F4-9001-103

Dear Mr. Hanke:

FIT 4 was tasked to conduct a screening site inspection at Singer Company, Inc. in Wilmington, New Hanover County, North Carolina. Phase I of the inspection included a review of EPA and state file material, completion of a target survey, and an offsite reconnaissance of the facility and surrounding area.

The Singer Company, Inc. property, now under ownership of Heatcraft, Inc., is located on 602 Sunnyvale Drive in Wilmington, North Carolina. The property is bounded by Sunnyvale Drive to the south, industrial property to the west, light forest stands with a back entrance road to the north, and a stream bordered by woods to the east. The 20-acre property, mostly paved, is situated on a level site within a mixed residential and industrial area (Refs. 1, 2). The facility has two private wells both used for cooling processing equipment. The untreated industrial wastewater is discharged into the municipal sewer system (Ref. 3).

The plant, originally built in 1960, produced refrigeration coils and later expanded to produce compressors and other commercial units (Ref. 4). American Standard operated the plant until 1972. Tappan Industries bought the plant in 1972 and immediately sold it to Singer Company, Inc. within the year (Ref. 4). During 1960 to around 1980, small amounts of lubricating and hydraulic oil and spent paint were dumped on the northern edge of the property (Ref. 3). On November 14, 1980, Singer reported storing the spent oil and paint in 55-gallon drums located approximately 50 feet northeast of the main building (Refs. 1, 3). Approximately 78,000 pounds of spent oil and paint were generated annually and taken to Caldwell Systems for incineration (Refs. 1, 3). One hundred thirty thousand pounds of 1,1,1-trichloroethane, also generated at the facility, were taken to Prillamin in Virginia for recovery (Refs. 1, 3). Singer stored the trichloroethane in two 3,000-gallon aboveground tanks located 50 feet north of the main building (Ref. 1). Both the storage areas for the drums and the aboveground tanks were undiked (Ref. 4).

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A December 14, 1981, laboratory analysis by Law & Company found 85 parts per million (ppm) of cyanide in spent paint filter material generated by Singer. This waste was subsequently determined to be nonhazardous, and therefore acceptable for disposal at the New Hanover County Landfill (Ref. 5).

Singer filed a RCRA Part A application for storing hazardous wastes on November 14, 1980 (Ref. 1). In the application, Singer stated they were granted a surface water discharge permit and an air emission permit. The surface water discharge permit allowed Singer to dispose of coolant water, oil, grease, and chlorine into the neighboring stream east of the property. A monitoring program checked the pH balance and temperature of the stream (Ref. 6).

Climate Control/McQuay purchased the plant from Singer in 1982 (Ref. 4). In 1982, Climate Control requested a change in classification under RCRA to a small-quantity generator (Ref. 7). The facility was classified as a generator on November 22, 1982 (Ref. 8). Violations noted in two RCRA inspections in 1981 and in 1983 included lack of inspections of 1,1,1-trichloroethane tanks on a regular basis by company personnel (Refs. 8, 9).

On November 18, 1983, workers discovered a 400- to 500-gallon spill from a 3,000-gallon tank containing 1,1,1-trichloroethane. Immediate emergency action by Climate Control included informing the Solid Waste Management Branch of the Environmental Health Section in Raleigh, North Carolina of emergency procedures, placing absorbent pads and absorbent booms in the unnamed stream located 30 feet north of the tank, and plugging the leak in the tank. The next morning a local trash removal service excavated and containerized the contaminated soil. Analysis of the contaminated soil detected 1,1,1-trichloroethane at 3,000 ppm (Ref. 11). SCA Services, Inc. in South Carolina transported the contaminated soil and the leaky tank from the area (Ref. 10). Later, Singer replaced the tank (Ref. 3). On August 17, 1984, sediment samples were collected from the unnamed stream containing 31.7 ppm of trichloroethane in the downstream sample in contrast to 0.01 ppm of trichloroethane found in the upstream sample (Ref. 12).

On July 24, 1987, Climate Control reported a discharge of 1,1,1-trichloroethane from an overflowing sludge drum which drained across the concrete pad and into the neighboring stream. The report did not address the amount of spillage, but sampling indicated residual levels of 1,1,1-trichloroethane remaining in the soil (Ref. 13).

Heatcraft, Inc., the current owner, bought the plant for their refrigeration production in July 1988 (Ref. 14). Under RCRA, Heatcraft is listed as a generator (Ref. 15). On April 18, 1989, an administrative order on consent was issued by the North Carolina Waste Branch for Heatcraft to initiate a groundwater monitoring program due to the history of spills at the facility (Ref. 13).

The Heatcraft, Inc. facility lies in the Coastal Plain Physiographic Province in the Cape Fear River Basin of eastern North Carolina. This area has a humid climate with a net annual precipitation of approximately 15 inches (Ref. 16). July through September is the wettest part of year (Ref. 17, p. 6). The land surface in New Hanover County has a gentle slope to the east at approximately 1 degree. Geology in the area is typical of the coastal plain and consists of sedimentary rocks overlying a basement of igneous and metamorphic rocks. In the facility area, these sediments are approximately 1,100 feet thick and are the source of groundwater in the area (Ref. 18, p. 30).

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Water occurs in the facility area in an unconfined, water-table aquifer. Three geologic units in the 4-mile radius of the facility make up this aquifer system. This system consists of surficial sands and gravels and the Cretaceous-age formations including the Pee Dee, Black Creek, and Cape Fear. East and south of the facility, the Castle Hayne is present as a limestone where the Cretaceous formations are represented by a mix of sand, silt, and clay typical of offlap sediments (Ref. 18, pp. 13, 15, 16). Where the Castle Hayne Formation does appear, it lies above the Cretaceous-age formations (Ref. 18, Table 1).

The surficial aquifer is the aquifer of concern in the study area. Groundwater within this aquifer is encountered 10 to 15 feet below land surface (bls) and is the source of groundwater throughout the county. A well completed at 20 feet bls in the sands and gravels had a water level of 11 feet bls. Wells in the Castle Hayne Formation are typically completed at 80 to 150 feet bls and have water levels of 8 to 40 feet bls. Yields from wells in this formation are typically 60 to 100 gallons per minute (gpm). The Peedee Formation is the main source of groundwater from this aquifer. Nearby wells in the Peedee Formation are 86 to 140 feet bls, have water levels of 11 to 15 feet bls, and yield 132 to 275 gpm (Ref. 17, Figure 3, pp. 70-74). The deeper formations are not usually tapped for water supply wells. The Cape Fear River is considered to be a groundwater barrier (Ref. 19).

Most residents within Wilmington's city limits are served by Wilmington's municipal water system. Wilmington uses two surface water intakes, one located 22 miles upstream and an emergency station 3.5 miles upstream along the Cape Fear River (Ref. 20). The emergency station has been used only twice in 29 years. A Cape Fear Utility groundwater well is located 1.8 miles southeast of Heatcraft along Silva Terra Drive (Refs. 21, 22). Water from this well intermixes with water from other Cape Fear Utility wells, serving a population of 20,000 people (Ref 22).

Residents not served by Wilmington's or Cape Fear Utility's water systems obtain potable water from private wells. Within 3 miles, the number of residences using private wells is approximately 65; within 4 miles, an additional 55 residences use private wells (Ref. 21). The number of residences using private wells was determined by counting houses on a topographic map outside the Wilmington and Silva Terra water systems' service areas. The average well depths are 10 to 25 feet bls (Ref. 18). The nearest private drinking well is 250 feet from Heatcraft (Ref. 2).

Surface water runoff from Heatcraft flows east to northeast into an unnamed stream 10 feet from the property (Ref. 21). The stream flows southward approximately 2 miles into Barnards Creek. Barnards Creek then empties into the Cape Fear River 1.5 miles west. The Cape Fear River, intermixing with saltwater, flows south beyond 15 miles before entering the Atlantic Ocean. A strong tidal influence forces northward water flow during incoming tides. There are no surface water intakes within 15 miles downstream from the facility (Ref. 23). Sport and commercial fishing take place on the Cape Fear River (Ref. 24).

Mott's Creek, a mixture of pure stand wetland communities, is located 3.5 miles south of the facility along the Cape Fear River; Carolina lilyopsis (Lilaeopsis carolinensis), a state-designated threatened plant species, is found in this area (Ref. 25). Endangered and threatened animal species found in New Hanover County and Brunswick County include the American alligator (Alligator mississippiensis), the Atlantic loggerhead (Caretta caretta), the green turtle (Chelonia mydas), the eastern coral snake (Micrurus fulvius), the eastern diamond back rattlesnake (Crotalus adamanteus), the peregrine falcon (Falco peregrinus), the mountain lion (Felis concolor), the bald eagle (Haliaeetus leucocephalus), the

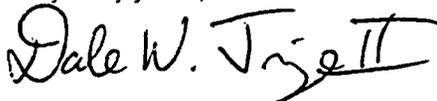
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least bittern (Ixobrychus exilis), the Atlantic ridley (Lepidochelys kempi), the manatee (Trichechus manatus), the eastern brown pelican (Pelecanus occidentalis), red-cockaded woodpecker (Picoides borealis), Bachman's sparrow (Aimophila aestivalis), the anhinga (Anhinga anhinga), and the shortnose sturgeon (Acipenser brevirostrum) (Ref. 25). Endangered and threatened plants in the area include the greenfield ramshorn (Helisoma eucosmum), the Cape Fear ramshorn (Planorbella magnifica), the seabeach amaranth (Amaranthus pumilus), the Carolina spleenwort (Asplenium heteroresiliens), the Chapman's sedge (Carex chapmanii), the Carolina lilaeopsis (Lilaeopsis carolinensis), the spring-flowering goldenrod (Solidago verna), the Carolina goldenrod (Solidago pulchra), the Cooley's meadowrue (Thalictrum cooleyi), the pinebarrens sandreed (Calamovilfa brevipilis), Harper's fringe-rush (Fimbristylis perpusilla), sarvis holly (Ilex amelanchier), the rough-leaf loosestrife (Lysimachea asperulifolia), the loose watermilfoil (Myriophyllum laxum), Carolina grass-of-parnassus (Parnassia caroliniana), the yellow fringeless orchid (Platanthera integra), the sandhills pixie-moss (Pyxidantha barbulata var. brevifolia), the wireleaf dropseed (Sporobolus teretifolus), Cooley's meadowrue (Thalictrum cooleyi), the sea pink (Sabatia kennedyana), and the dwarf bladderwort (Utricularia olivacea) (Ref. 26).

Access to Heatcraft is limited due to fencing (Ref. 2). The facility also has a full-time guard (Ref. 4). Population within 1 mile of Heatcraft is 2,077; within 4 miles the population is 38,932 (Ref. 27). Land use within 4 miles of Heatcraft is residential, commercial, and industrial. The Roe Elementary School is located 0.5 mile to the north (Ref. 21).

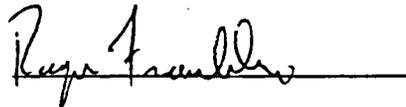
Because of the past 1,1,1-trichloroethane spillage, the possibility of groundwater contamination to the aquifer of concern, the close proximity of private wells, and the threat to recreational activities and wildlife, the Singer Company, Inc. property is recommended for Phase II of this Screening Site Inspection. If you have any questions concerning this assessment, please feel free to contact me at NUS Corporation.

Very truly yours,



Dale W. Trimpe II  
Project Manager

Approved:



DWT/gwn

Enclosures

cc: Robert Morris