

Health Assessment for

HOLLINGSWORTH SOLDERLESS TERMINAL COMPANY

BROWARD COUNTY, FORT LAUDERDALE, FLORIDA

04FLD004119681

APR 7 1985

Agency for Toxic Substances and Disease Registry
U.S. Public Health Service

SUMMARY

The Hollingsworth Solderless Terminal Company (HSTC) National Priorities List (NPL) Site is located in Fort Lauderdale, Broward County, Florida. The site is located in a light to medium industrial area. There is increasing residential activity beyond the industrial area. There are volatile organic compounds (VOC's) present in the groundwater and VOC's and several heavy metals present in the soil. The Record of Decision (ROD) signed April 1986, mandated several remedial actions which included excavation, ventilation, and replacement of treated soils and recovery, treatment, and reinjection of contaminated groundwater.

BACKGROUND

A. SITE DESCRIPTION

The HSTC NPL Site is located in Fort Lauderdale, Broward County, Florida. The 3.5-acre site was in operation from 1968 to 1982 as a solderless terminal manufacturing plant. The process for manufacture used molten salt baths, degreasing of parts, and electroplating. The wash and process waters which contained varying concentrations of trichloroethene (TCE) and heavy metals, were disposed of using drainfields, surface discharges, and an injection well (see Appendix).

The ROD signed April 1986, announced the selected alternatives which include: excavation, ventilation, and replacement of the treated soils, and recovery, treatment, and injection of the contaminated groundwater from the sand zone of the Biscayne Aquifer.

B. SITE VISIT

ATSDR has not conducted a site visit at this time.

ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

A. ON-SITE CONTAMINATION AND OFF-SITE CONTAMINATION

Table 1

Medium	Contaminants	Concentration
Groundwater		(ppb)
Monitoring Wells	Vinyl chloride	ND--5,000
	DCE	ND--6,700
	TCE	ND--520
Soil		(ppm)
Surface Soil	Copper	203,300
	Tin	6,610
Soil Boring	Copper	<1--9,030
	Tin	<1--5,960

Legend

DCE Trans-1,2-dichloroethene
TCE Trichloroethene
ppb parts per billion
ppm parts per million

The off-site groundwater contamination concentrations reported were not of public health concern. Data from the Prospect Wellfield were not available to ATSDR for review. There were no air, biota (e.g., fish, vegetables, crops, livestock, game animals, consumable wild plants, etc.), surface water or off-site soil samples reported. It did not appear that a priority pollutant scan had been done on the groundwater or soil samples. It is possible that by analyzing for only the contaminants anticipated, some contamination may have gone undetected.

C. PHYSICAL HAZARDS

There are no reported physical hazards present at this site.

DEMOGRAPHICS OF POPULATION NEAR SITE

The area surrounding the site is heavily developed. There is light and medium industry immediately surrounding the site. The Fort Lauderdale Executive Airport is approximately one-quarter mile to the west of the site. The Prospect Wellfield surrounds the airport and extends further west to Prospect Lake. Surrounding the area which includes the site, the airport and the wellfield is a medium to high density residential area. The distance to the residential area is approximately 200 feet southeast of the site beyond I-95. The population of the area is unknown.

EVALUATION

A. SITE CHARACTERIZATION (DATA NEEDS AND EVALUATION)

1. Environmental Media

Monitoring of the exhaust from the air stripping unit should be conducted to help determine whether or not control devices will be necessary to remove VOC's.

2. Land Use and Demographics

The land use and demographic information provided to ATSDR was incomplete. Additional information about the businesses currently operating on-site, the numbers of employees, and potential exposures to those employees would be helpful in defining potential human exposure pathways. Information on population and number of homes near the site would also be useful.

3. Quality Assurance/Quality Control

Conclusions contained in this Health Assessment are based on the information received by ATSDR. The accuracy of these conclusions is determined by the availability and reliability of the data.

B. ENVIRONMENTAL PATHWAYS

There has been no air sampling to date. Air pollution dispersion models were used to determine the need for control devices to be placed on the air stripping unit. Reportedly, the results indicated that control devices and monitoring would not be necessary, because the concentrations from the air stripping unit were estimated to be so low. However, monitoring of the exhaust from the strippers is planned initially to determine actual exhaust concentrations. This will indicate whether or not air is a potential environmental media of concern, as a result of the exhaust from the air stripper.

Indoor air may also be of concern in buildings on or near the site. There is a potential for VOC's to volatilize into the soil-air and infiltrate into buildings above the groundwater plume.

Leachability tests were conducted to determine whether the metals present in the surface soil were contaminating surface runoff. It was determined that the concentration of contamination in the surface runoff would not pose a significant threat to area surface water bodies. There were no surface water or sediment samples taken at this site. It is unlikely that the contamination from this site would have a direct effect on the surface water bodies nearby, the closest being 1.5 miles from the site.

Biota was not addressed at this site. Since this site is located in a highly industrialized area where crops, live stock, and other consumable biota are not readily available, it is doubtful that consumption of biota is a pathway of concern.

The groundwater in the area of the site is located in two aquifers, the shallower Biscayne Aquifer and the deeper Floridan Aquifer. The Biscayne Aquifer is divided into three zones. The first zone is a fine to medium sand that extends 60 to 70 feet below the surface. The second zone is an aquitard consisting of cemented shell and sandstone which extends to approximately 100 feet below the surface. The third zone consists of limestone and is the greatest water production zone in the aquifer. The overall depth of the aquifer is 250 feet.

The rate of flow in the limestone is approximately 300 to 600 feet per year. The rate of flow in the sand is approximately 5 to 80 feet per year. The regional flow is in the southeastern direction and the local flow is to the south. Camp Dresser and McKee, Inc., the Environmental Protection Agency (EPA) Region IV Contractor, conducted transport modeling in late 1984. It was determined from this modeling that HSTC was not contributing to the contamination at the Prospect Wellfield, even under worst case conditions. This study was not made available to ATSDR for review.

According to EPA there is no use of private wells in the area. It is reported that all industries and homes use municipal water. The municipal wells used for the water supply all reportedly meet State and federal drinking water standards. The selected remedy will extract the contaminated groundwater from the sand zones of the Biscayne Aquifer, on-site. The water will be passed through an air stripping unit to remove the VOC contamination. The treated water will then be injected back into the aquifer, upgradient of the site.

The action mandated in the ROD requires the contaminated soil to be excavated, ventilated, and replaced on-site. This action was based on the photoionization detector results which indicated VOC's in the east drainfield near Plant #1. This action has been completed. The results were not satisfactory, therefore a remedy of vacuum extraction has been developed to remove the remaining VOC contamination.

Potential environmental pathways at this site are the migration of contamination from the groundwater through the soil-air into buildings, the continued migration of the groundwater plume, and the migration of VOC's from the air stripper exhaust.

C. HUMAN EXPOSURE PATHWAYS

The contamination in the groundwater contains concentrations that are of health concern if a human should become exposed to the contaminated water. However, the groundwater is not likely to pose a human exposure concern, since it is reported that there are no private wells in the area.

Inhalation of VOC's volatilized from the contaminated groundwater could be a pathway if contaminated groundwater is located below commercial or industrial establishments in the area. Or, if it is determined after monitoring of the exhaust from the air stripper, that the concentrations of VOC's emitted are of public health concern.

PUBLIC HEALTH IMPLICATIONS

Inhaled TCE can adversely effect the central nervous system (CNS). CNS effects for humans have been detected in a range from 81 ppm to 110 ppm (Nomiyama and Nomiyama 1977, Salvini et al., 1971). Hepatic and renal toxicity can occur in humans as a result of acute exposure to TCE. Based on liver tumor production in mice, EPA has designated TCE as a potential human carcinogen. Although these levels are considerably higher than those expected for this site, since air monitoring results are not available and exposure concentrations at this site are unknown, the public health implications of such exposure cannot be accurately assessed at this time.

Vinyl chloride is a known human carcinogen causing angiosarcomas of the liver in workers exposed to high concentrations (Wagoner 1983). Other target organ cancers linked to vinyl chloride exposures are lung and brain cancers (Wagoner 1983). There are other adverse health effects caused by chronic low level exposures to vinyl chloride.

CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

This site is of potential health concern because of the potential risk to human health resulting from possible exposure to hazardous substances at concentrations that may result in adverse health effects. As noted in the Environmental Pathways and Human Exposure Pathways Sections, human exposure to contaminated air may be occurring now. The monitoring planned for when the air stripper is put into operation should indicate whether or not the exhaust from the air stripper will be of public health concern.

B. RECOMMENDATIONS

1. The information requested in the Data Needs and Evaluation Section of this Health Assessment should be provided to ATSDR.

2. In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended, HSTC Site, Fort Lauderdale, Broward County, Florida, has been evaluated for appropriate follow-up with respect to health effects studies. Although there are indications that human exposure to off-site contaminants may have occurred in the past, this site is not being considered for follow-up health studies at this time because the level and extent of possible human exposure to site chemicals has not been defined and it is unclear that current exposure is occurring.

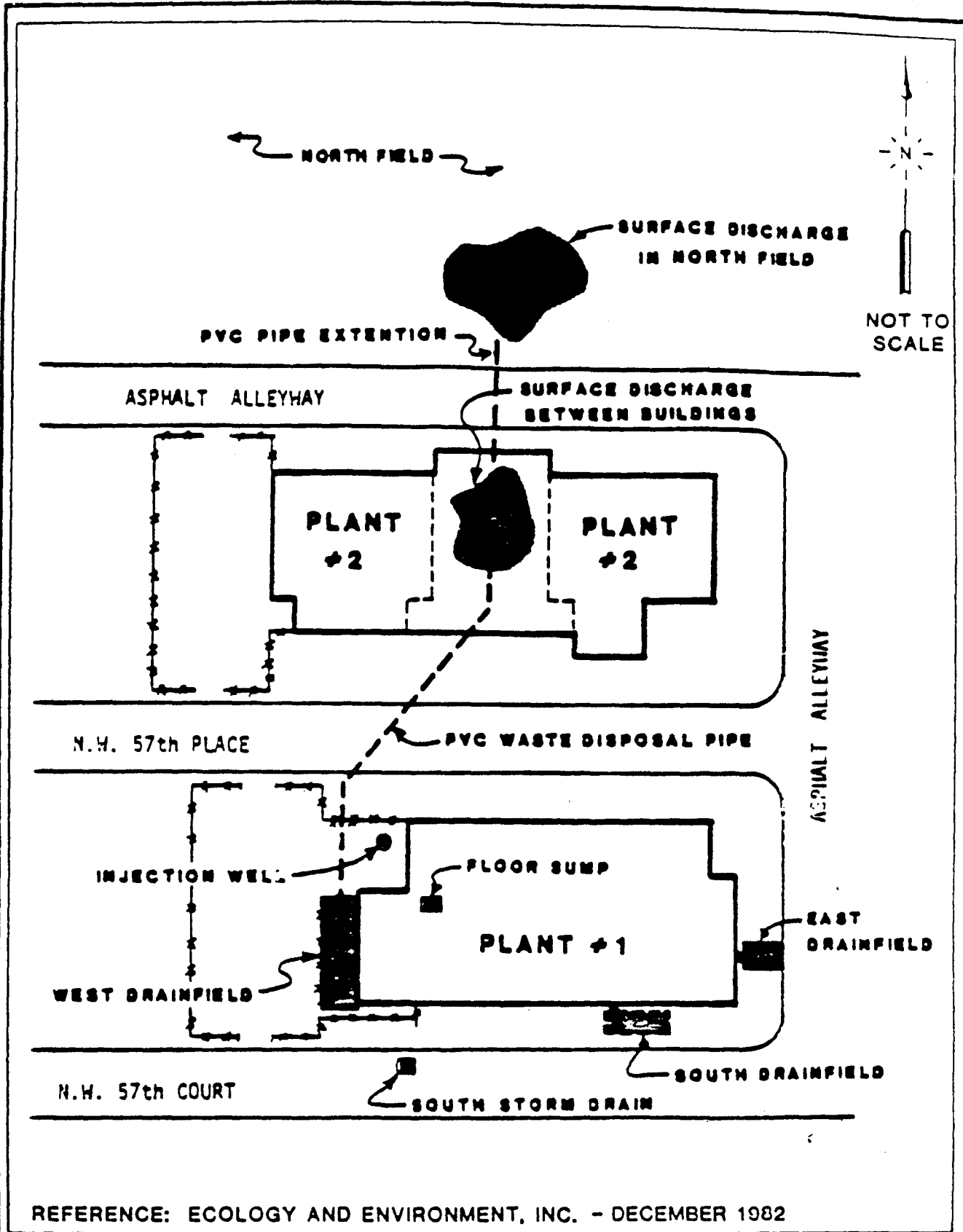
PREPARERS OF REPORT

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REFERENCES

1. Feasibility Study, Hollingsworth Solderless Terminal Company, Fort Lauderdale, Broward County, Florida, 1986.
2. Remedial Action Master Plan, Hollingsworth Solderless Terminal Company, Fort Lauderdale, Broward County, Florida, 1982.
3. Record of Decision, Hollingsworth Solderless Terminal Company, Fort Lauderdale, Broward County, Florida, 1986.
4. Revised final Remedial Report, Hollingsworth Solderless Terminal Company, Fort Lauderdale, Broward County, Florida, Camp Dresser and McKee, 1987.
5. Prospect Wellfield Impact Analysis and Appendices, City of Fort Lauderdale, Camp Dresser and McKee, 1980.
6. Casarett and Doull's Toxicology, The Basic Science of Poisons, Ed. 3, Curtis D. Klaassen, Ph. D. et al., Macmillan Publishing Company, New York, 1986.
7. Environmental and Occupational Medicine, Rom, 1983.
8. Sittig, M., Handbook of Toxic and Hazardous Chemicals and Carcinogens, 2nd edition, Park Ridge, NJ, Noyes publications, 1985.
9. Wagoner, J.K., Environ. Health Perspect. 52: 61-66, 1983.
10. Nomiyama K, Nomiyama H. 1977. Dose-response relationship for trichloroethylene in man. Int Arch Occup Environ Health; 39:237-248.
11. Salvini M, Binaschi S, Riva M. 1971. Evaluation of the psychophysiological functions in humans exposed to trichloroethylene. Br J Ind Med; 28:293-295.



REM II
 HSTC SITE LAYOUT
 HOLLINGSWORTH SOLDERLESS TERMINAL COMPANY
 FORT LAUDERDALE, FLORIDA

FIGURE NO.
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