

**PRELIMINARY  
Health  
Assessment  
for**

**INTERIM**

WITCO CHEMICAL CORPORATION  
OAKLAND, BERGEN COUNTY, NEW JERSEY

CERCLIS NO. NJD045653854

FEBRUARY 7, 1992

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
PUBLIC HEALTH SERVICE**  
Agency for Toxic Substances and Disease Registry

## THE ATSDR HEALTH ASSESSMENT: A NOTE OF EXPLANATION

Section 104 (i) (7) (A) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, states "...the term 'health assessment' shall include preliminary assessments of potential risks to human health posed by individual sites and facilities, based on such factors as the nature and extent of contamination, the existence of potential pathways of human exposure (including ground or surface water contamination, air emissions, and food chain contamination), the size and potential susceptibility of the community within the likely pathways of exposure, the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified hazardous substances and any available recommended exposure or tolerance limits for such hazardous substances, and the comparison of existing morbidity and mortality data on diseases that may be associated with the observed levels of exposure. The Administrator of ATSDR shall use appropriate data, risks assessments, risk evaluations and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, ATSDR has conducted this preliminary health assessment on the data in the site summary form. Additional health assessments may be conducted for this site as more information becomes available to ATSDR.

The conclusion and recommendations presented in this Health Assessment are the result of site specific analyses and are not to be cited or quoted for other evaluations or Health Assessments.

INTERIM PRELIMINARY HEALTH ASSESSMENT  
WITCO CHEMICAL CORPORATION  
OAKLAND, BERGEN COUNTY, NEW JERSEY  
CERCLIS NO. NJD045653854

Prepared by

Environmental Health Service

New Jersey Department of Health (NJDOH)

and

Division of Science and Research

New Jersey Department of Environmental Protection (NJDEP)

Under Cooperative Agreement with the

Agency for Toxic Substances and Disease Registry (ATSDR)

## **THE ATSDR HEALTH ASSESSMENT: A NOTE OF EXPLANATION**

Section 104 (i)(6)(F) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, states "...the term "health assessment" shall include preliminary assessments of potential risks to human health posed by individual sites and facilities, based on such factors as the nature and extent of contamination, the existence of potential pathways of human exposure (including ground or surface water contamination, air emissions, and food chain contamination), the size and potential susceptibility of the community within the likely pathways of exposure, the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified hazardous substances and any available recommended exposure or tolerance limits for such hazardous substances, and the comparison of existing morbidity and mortality data on diseases that may be associated with the observed levels of exposure. The Administrator of ATSDR shall use appropriate data, risk assessment, risk evaluations, and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, ATSDR prepared this Interim Health Assessment using available data and information. ATSDR will re-evaluate this site and prepare an updated health assessment as warranted by the availability of additional data and information and as resources permit.

## SUMMARY

The Witco Chemical Corporation is a privately owned chemical research laboratory and pilot plant located in an industrial park in Oakland Borough, Bergen County, New Jersey. During the period from 1966 to 1984, Witco discharged industrial wastewater into on-site seepage pits. Witco ceased this practice in 1984 and the site was partially remediated by the company in 1988. Significant environmental pathways are associated with the groundwater and on-site soil media. Analysis of groundwater before remedial activities indicated the underlying aquifer, used locally for potable/domestic and industrial purposes, was contaminated by volatile organic compounds and petroleum hydrocarbons. Post-remedial groundwater data show diminished but significant contamination still present. Sampling of ambient air, at potential points of exposure near the site, is recommended to evaluate possible exposure to site-related and Toxic Release Inventory contaminants. The U.S. Environmental Protection Agency is currently negotiating an Administrative Consent Order (ACO) with Witco requiring the installation of additional monitoring wells and soil borings as part of the ongoing RI/FS. This site is judged to be an indeterminate public health hazard by ATSDR and NJDOH. This site is not being considered at this time for follow-up health activities.

## BACKGROUND

### A. Site Description and History

The Witco Chemical Corporation operates a chemical research laboratory and pilot plant for development of specialty chemicals. From 1966 through 1983, Witco treated laboratory waste water in an underground neutralization tank and then discharged the waste water into a network of six unlined subsurface seepage pits. The six leaching pits were in a stratified drift aquifer that is used for domestic and industrial purposes. Inspections by NJDEP in April and November of 1982 revealed contamination by petroleum hydrocarbons and volatile organic compounds in soil and groundwater samples.

Under a 1982 NJDEP Directive, Witco installed a 6,000-gallon fiberglass tank for laboratory waste, which completely eliminated any subsurface discharges by February 1984. A separate system for discharging noncontact cooling waters into a nearby lake has been established under a NJ Pollution Discharge Elimination System (NJPDES) permit.

Witco conducted its own remediation effort independent of the NJDEP and EPA. Through a private contractor, residual sludge, contaminated soils, and various discharge equipment were removed, and the site was backfilled and closed in January 1988. The remediation plan relied upon an action level of 100 ppm for petroleum hydrocarbons in the soil, and did not evaluate for any other chemical contaminants.

It remains unresolved as to whether the wastes disposed in Witco's seepage pits system should have fallen under Resource Conservation and Recovery Act (RCRA) regulations, and whether stricter RCRA closure requirements would be necessary. Witco is currently applying for a major modification of their New Jersey Pollutant Discharge Elimination system (NJPDES) permit necessary to monitor for potential groundwater contamination as part of the closure process. In addition, EPA has issued a Draft Consent Order for a Remedial Investigation/Feasibility Study in order to ensure that remediation meets EPA requirements.

### B. Site Visit

On April 26, 1989, NJDEP visited the Witco facility, which is located in an industrial park on 9 acres of land in Oakland, N.J. The site borders Hopper Lake, which is inhabited by geese in the summer and apparently used for ice skating in the winter. A housing development also borders the Witco facility. The technical facility is fenced and fully enclosed, and no production operations or industrial activity are visible from the outside. NJDEP personnel visiting the site noticed a distinct

chemical odor in the air near the Witco building. The odor is likely to have come from the current operations of Witco.

NJDOH personnel revisited the Witco site in July 1991. Accompanying NJDOH were EPA, representatives of the Witco corporation, and Weston Industries, the remedial contractor. All parties participated in an informal discussion conducted in the Witco Company's conference facilities. The discussion was followed by a tour of the Witco operational facilities and laboratories.

The Witco facility and surrounding grounds occupy approximately nine acres. The entire area was very clean and well maintained. Eight monitoring wells could be observed in the area of the lawn that once contained the seepage pit(s), but there was no other obvious visual evidence of the presence of an NPL site.

The Witco corporation's laboratory facilities were extremely clean and well ordered; there was no evidence of spillage or of careless work practices. All laboratory waste is reported to be collected and transported off site for disposal.

Hopper Lake was observed to support a variety of aquatic life including fish, various plants, turtles, and Canadian geese. No evidence of vegetative stress was observed in the aquatic plant life, or in the flora surrounding the lake.

#### C. Demographics, Land Use, and Natural Resources Use

The entire population within a three-mile radius of the site obtains its drinking water from either municipal or private wells that draw from the aquifer of concern. There are three towns within this area. The Borough of Oakland's municipal wells supply 13,600 residents; Franklin Lakes well(s) suppl(y)(ies) a population of 8,769; and Pompton Lakes' wells serve a community of 10,000. The total population within the three-mile radius is 42,700.

Approximately 95% of the population of Oakland is on municipal water supplies. Some 20-30 private wells supply the remaining residents with water (Site Inspection Report, NUS). Oakland uses 6 wells to supply the municipal water system.

There are no apparent or readily identifiable sensitive subpopulations associated with the Witco site.

#### D. State and Local Health Data

Based on the evaluation performed as part of this health assessment, there are no indications that human beings have been exposed to site-related contaminants. In addition, there were no

health outcomes of concern identified as part of this evaluation. Therefore, state and local health databases were not searched.

#### COMMUNITY CONCERNS

The Borough of Franklin Lakes borders Oakland and could be affected by the Witco site. There is concern about the effect this site may have on potable water. In November 1991, the Bergen County Department of Health Services was contacted to determine additional community health concerns related to the site. They were not aware of any additional concerns besides those related to the effect of the site on potable water.

#### ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

##### A. On-Site and Off-Site Contamination

Currently documented environmental pathways at the Witco site are associated with contaminated on-site groundwater and on-site soils. At present, there are insufficient data and site information to evaluate fully the possible pathways associated with off-site groundwater, off-site surface water, off-site soils, and off-site/on-site air. In 1982, Witco installed four monitoring wells on their Oakland property. Sampling of the on-site groundwater that year, while the seepage pits were still active, revealed contamination by petroleum products and volatile organic compounds. Before remedial activities at the site, the following substances were found in the on-site ground water supplies (maximum concentration in ppb): toluene (6.9), trichloro-fluoromethane (3.4), ethyl benzene (8.3), 1,2-dichloroethane (12), chlorobenzene (9.1), xylene isomers (25), chloroform (35), and 1,1,2-trichloro-1,2,2-trifluoroethane (360).

To identify facilities that could possibly contribute to the air, surface water, and ground water contamination around the Witco Chemical site, ATSDR and the NJDOH searched the 1987 and 1988 Toxic Release Inventory (TRI). TRI was developed by the U.S. EPA from the chemical release (air, water, and soil) information provided by certain industries. The 1988 TRI contained information on air releases of some of the identified contaminants of concern and other similar chemicals. Within the vicinity of the site, releases of dichloromethane (20,710 lbs/year), toluene (9,550 lbs/year), 1,1,1-trichloroethane (5,950 lbs./year), 1,2,4-trimethylbenzene (500 lbs/year), and xylene-mixed isomers (1,000 lbs/year) were reported in the 1988 TRI.

Additional well testings, which were conducted in 1987 and 1988 after the waste holding tank was installed, detected the presence of three organic chemicals. The levels of those contaminants



were bis(2-ethylhexyl)- phthalate (3600 ppb), toluene (71 ppb), and carbon disulfide (11 ppb).

As part of their remediation effort, Witco removed all soils in which their own analysis indicated concentrations of greater than 100 mg/kg of petroleum hydrocarbons in the seepage pit. Remaining soils have not been tested for organic chemical contamination.

Results of limited soil sampling performed adjacent to the seepage pits indicated that the total VOC concentration in each soil sample was below the NJDEP ECRA guideline of 1 mg/kg. The total VOC concentration in the sludge sample obtained from within a seepage pit (sample SPS-07), including tentatively identified compounds (TIC), was above the 1 mg/kg NJDEP ECRA guideline (3 mg/kg). However, if the TICs are discounted, the total VOCs in this sample would also fall below the ECRA guideline.

#### B. Environmental Data Gaps

The RI/FS for the Witco site has not been completed. The following data and information needs are identified as desirable in order to formulate a comprehensive Health Assessment.

The site has not been adequately tested for potential contamination of either on-site soils or off-site water supplies. At present, there are four monitoring wells on site: three down-gradient and one up-gradient. Though Hopper Lake is considered up-gradient of the site, it is directly adjacent to the facility. There are no monitoring wells between the seepage pit area and Hopper Lake. The sediment and surface water of Hopper Lake have been sampled by EPA, but the data were not available for review during formulation of this interim health assessment. There are also several local private wells in the area, which should be tested for possible contamination resulting from the leachate tank field.

Although the seepage pit area has been remediated by the Witco Corporation, soil samples taken during clean-up efforts were analyzed only for petroleum hydrocarbon contamination and not for the presence of volatile organic chemicals.

Since odors were reported during the site visit, and since the TRI identified releases of contaminants that may be affecting the quality of ambient air at the site, air monitoring is needed at potential exposure points to evaluate possible exposure of persons near the site.

#### C. Quality Assurance and Quality Control

The hazard ranking for this site is based on pre-remediation data and does not reflect the environmental data available since

cleanup of the seepage tanks and surrounding soils. The data have been collected by Witco through private contractors whose procedures were not overseen either by NJDEP or by EPA. As a result, there is no quality assurance/quality control (QA/QC) information available for review and evaluation concerning groundwater or soil data. The validity of the conclusions in this assessment is based on the available data and is affected by the quality of the data that cannot be fully assessed.

#### D. Physical Hazards and Other Hazards

No unusual physical or other hazards related to the site were observed during the two site visits.

### PATHWAYS ANALYSES

The primary documented human exposure pathway associated with the Witco site is the potable and domestic uses of contaminated groundwater. It is possible that off-site contamination of the groundwater supply has occurred from the leachate of the Witco seepage pits. Most of the town of Oakland is on a public water supply system supplied by local artesian wells drawing from the aquifer of concern. There are local residents with private wells that could have been contaminated if any plume migration has occurred.

Odors emanating from the site are likely to have been due to the current operations of Witco or to releases of chemicals from TRI facilities in the vicinity of the site. To date, there is no information regarding the specific source of the odor, or regarding human exposure pathways associated with the air.

Except for ice-skating, Hopper Lake is not used for such recreational purposes as fishing and boating. It does not constitute a potential exposure pathway of concern as ingestion of contaminated fish or physical contact with contaminated water is unlikely to occur.

### PUBLIC HEALTH IMPLICATIONS

It is difficult at present to address the potential health implications associated with the Witco Chemical Corporation site, since the RI/FS on the site has not yet been completed, and since the nature and extent of the contamination associated with the site have not been comprehensively delineated and characterized.

None of the municipal wells operated by Oakland Township are considered to be threatened by actual or suspected contaminant plumes emanating from the site. In only one municipal well (#5) has contamination been demonstrated. This well showed low-level

contamination with trichloroethene and tetrachloroethane. Those contaminants are not site-related, and are relatively common ground water contaminants in the region. The well was temporarily taken out of service and fitted with an appropriate treatment system. The most serious public health implication associated with the site is the use of private wells in the area. Witco discharged its wastes to unlined seepage pits for approximately 18 years, affecting groundwater quality. The cumulative effect on public health from possible exposure to contaminated groundwater during that period is unknown because the use of private wells in the area has not been characterized.

#### CONCLUSIONS AND RECOMMENDATIONS

ATSDR and NJDOH have judged this site to be an indeterminate public health hazard. The limited data and information available do not indicate that humans are being exposed or that they have been exposed to levels of contamination that would be expected to cause adverse health effects. However, data and information are not available for all environmental media to which humans may be exposed. Of particular concern is the quality of ambient air and private well water in the vicinity of the site.

Since Witco based its remediation efforts only on the level of a petroleum hydrocarbon action, there is little information available about possible volatile organic chemical contamination in the soil. Appropriate soil testing is necessary for this site, including variable boring depths and analysis for all compounds on the EPA's Hazardous Substance List.

More data are needed on possible groundwater contamination, which will require the installation of additional monitoring wells on site. Hopper Lake, because of its nearness to the site, should have both surface water and sediment samples taken for complete analysis to determine if contamination by the Witco facility has occurred. Depending on future on-site monitoring and determination of groundwater movement, analysis of local private wells may be necessary to determine if contaminants have migrated off site.

Sampling of ambient air, at potential points of exposure near the site, is recommended to evaluate possible exposure to site-related and TRI contaminants.

If additional evaluations indicate that a complete exposure pathway exists or if a particular health outcome is of concern to the community, then health outcome data will be collected and evaluated in future assessments for this site.

The Witco Chemical Corporation site, Oakland, New Jersey, was reviewed by ATSDR's Health Activities Recommendation Panel for

appropriate follow-up with respect to health activities. This site is not being considered at this time for follow-up health activities because no present or past pathway of exposure to site contaminants can be defined based on the currently available data relevant to the site. However, if data identified in this health assessment, or other data become available suggesting that human exposure to hazardous substances at levels of public health concern is currently occurring or has occurred, ATSDR and NJDOH will reevaluate the site for any indicated health activities follow-up.


CERTIFICATION

This Interim Preliminary Health Assessment was prepared by the New Jersey Department of Health and the New Jersey Department of Environmental Protection under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the preliminary health assessment was initiated.

  
\_\_\_\_\_

Technical Project Officer, SPS, RPB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this preliminary health assessment and concurs with its findings.

  
\_\_\_\_\_

Division Director, DHAC, ATSDR

## REFERENCES

### Site Documents:

Malcome Pirnie, Inc., Potential Hazardous Waste Site Preliminary Assessment,; Witco Chemical Corp., February 7, 1985.

NJDEP, Division of Water Resources, Groundwater Quality Management, Public Notice, Draft Permit NJPDES Discharge to Ground Water permit.

NUS Corporation, Site Inspection Report and Hazard Ranking System Model; Witco Chemical Corporation, Field Investigation Team Activities at Uncontrolled Hazardous Substances Facilities, June, 1987.

Weston, Inc., Plans and Specifications for Excavation and Disposal of the Deactivated Wastewater Neutralization and Leaching Pit Area at the Oakland, New Jersey Facility, Prepared for Witco Corporation, July, 1987.

Weston, Inc. Excavation and Disposal of the Deactivated Wastewater neutralization and Leaching Pit Area at the Oakland, New Jersey Facility, Prepared for Witco Corporation, April, 1988.

Weston, Inc., Compilation of Groundwater Monitoring Data for the Oakland, New Jersey Facility, Prepared for Witco Corporation, April, 1988.

### Personal Communications:

U.S. Environmental Protection Agency, Region II, Remedial Project Manager.

New Jersey Department of Environmental Protection, Division of Hazardous Waste Management, Case Manager.

Division of Water Resources, Bureau of Ground Water Discharge Control, Case Manager.