

# Health Assessment for

SWOPE OIL COMPANY

PENNSAUKEN, CAMDEN COUNTY, NEW JERSEY

CERCLIS NO. NJD041743220

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

## SUMMARY

Swope Oil Company site is a National Priorities List site. The approximately 2-acre site is located in an industrial area of Pennsauken Township, Camden County, New Jersey. Swope Oil Company, a chemical reclamation facility, was in operation from 1965 until December 1979 processing oils, paints, and other chemical compounds. The site included one main building and an ancillary "distillation house", a drum storage area, an unlined lagoon, a diked tank farm, and an area containing buried sludge wastes. The surface and subsurface soils and groundwater are contaminated with polychlorinated biphenyls (PCB's), volatile organic compounds (VOC's), phthalate esters, and metals. The PCB, metals, and phthalate esters contamination appears to be mostly in the upper 1.5 feet of soil, while VOC's were the primary groundwater contaminant identified by investigations to date. Both the unconfined aquifer and semi-confined aquifers beneath the site are contaminated. A municipal water supply well approximately 100 feet southwest of the site was contaminated with compounds found on-site. The well was removed from service in May 1984. The site is surrounded by industrial complexes within a one-half mile radius, with the closest residential areas of Delair and Morrisville about one-half mile to the west and southwest, respectively. The Pennsauken High School is to the northeast, also about one-half mile from the site. The site poses a potential health concern for unauthorized persons entering the site, remedial workers, and railroad personnel who may work adjacent to the site. Also, the migration of contaminants into the groundwater poses a potential health concern. The Record of Decision (ROD) adequately addresses the health concerns associated with the potential for exposures to environmental contamination by source control and removal. The ROD does not address the remediation of the contaminated groundwater or the municipal well adjacent to the site and should the well be returned to service, it will require further assessment and appropriate remedial measures.

## BACKGROUND

### A. SITE DESCRIPTION

Swope Oil Company is located on National Highway in an industrialized area of northern Pennsauken Township. The triangular shaped site is bordered on the north and southwest sides by railroad right-of-ways, switching tracks, and warehouses. The National Highway is southeast. The company began reclamation operations in 1965, processing such products as solvents, oils, paints, varnishes, hydraulic fluids, inks, and plasticizers. After several inspections, Swope Oil Company was cited for operating without proper permits. Four years later, in 1979, it was cited again, this time for failure to prepare, maintain, and implement a Spill Containment and Countermeasure Plan. The company ceased operations in December 1979.

The initial remedial actions conducted by the potentially responsible parties at the site involved the removal of surface drums and the contents of the unlined lagoon. A fence was also erected around the site.

### B. SITE VISIT

ATSDR has not conducted a site visit at this time.

## ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

### A. ON-SITE CONTAMINATION

The contaminated media on-site include the surface and subsurface soils, groundwater, surface water runoff and ponded surface water remaining after rainfall events. The surface soils and sediment from ponded surface water have been found to be contaminated with PCB's, phthalates, and a variety of other organic and inorganic compounds. The PCB contamination is widespread and consists primarily of Arochlor 1254, although other commercial mixtures of PCB's, such as Aroclors 1242, 1248, and 1260, have been identified on-site. The PCB concentrations range from 50 to 500 mg/kg, although much higher concentrations have been detected in localized "hot spots". In general, the PCB contamination is limited to the upper 1.5 feet of soil, with concentrations less than 1 mg/kg below that depth. Phthalate esters were also detected at elevated concentrations in soils and sediments. The concentrations ranged from 1 to 6,000 mg/kg. Bis-(2-ethylhexyl)phthalate was the predominant phthalate ester that was identified; however, the di-n-butyl and di-n-octyl esters were also detected. Lower concentrations of VOC's were detected in the area of the buried sludge. Several metals were detected on-site, and the concentrations were within the typical range of background soil concentrations.

The subsurface soils were generally less contaminated than the surface soils. Subsurface soils collected from two borings indicated contamination at depths of 23 and 42 feet, although most contaminants detected below 12 feet had concentrations of minimal health concern.

A sample of the sludge buried on the east side of the site indicated the presence of a number of organic compounds including PCB's, phthalates, xylenes, naphthalene, and methylnaphthalene.

Groundwater beneath the site is found in two aquifers, an upper unconfined aquifer and a lower confined aquifer. The unconfined aquifer was contaminated with VOC's, phthalates, lead, and mercury. The sample results from the lower aquifer indicated the it was contaminated with VOC's and mercury.

Air monitoring was conducted during the Remedial Investigation (RI). During activities which disturbed the soils, i.e., soil borings and monitoring well installation, detectable concentrations of VOC's were measured above the holes. However, contaminants were not detected while the site surface was undisturbed.

#### B. OFF-SITE CONTAMINATION

Surface soil samples taken off-site indicated migration of contaminants had occurred. The concentration of PCB's in the railroad right-of-ways was less than 100 mg/kg and generally less than 50 mg/kg.

The municipal well (National Highway Well #1) located adjacent to the site was contaminated with VOC's and mercury. This well is screened in the lower confined aquifer. Pump tests performed during the RI indicated that there was a connection between the upper aquifer and the lower aquifer.

#### C. PHYSICAL HAZARDS

The buildings, tanks, and drums remaining on-site may present hazards to persons entering the site. The ROD's calls for the removal of the tanks and buildings and thereby eliminates those specific hazards. No other physical hazards are identifiable on the basis of the available information.

#### DEMOGRAPHICS OF POPULATION NEAR SITE

Swope Oil Company is located in an industrialized section of Pennsauken Township. The closest residential areas are approximately one-half mile west and southwest of the site. They are Delair and Morrisville, respectively. There are numerous industrial and public water supply wells in the area; however, only the closest, National Highway Well #1, has been shown (to date) to be contaminated by compounds present on-site.

#### EVALUATION

##### A. SITE CHARACTERIZATION

###### 1. Environmental Media

The site has been adequately characterized with respect to soil and air contamination, both on-site and off-site. Information concerning the

extent of groundwater contamination was lacking and therefore, a full evaluation cannot be made. The ROD describes a future RI and Feasibility Study (FS) to address the groundwater concerns. However, if National Highway Well #1 is placed back into service, then more information about this well and the status of its well contamination will be required. Currently, the groundwater at the site is not being used. It is not known what influence, if any, the other wells in the area are having on the migration of contaminants in the groundwater beneath the site.

## 2. Land Use and Demographics

Future use of the site was not discussed in the RI. It was assumed in this Health Assessment that after remediation of the site, it would become marketable property. Institutional controls may be required to ensure cap integrity and restrict use of on-site groundwater.

The future use of the municipal well was not discussed. Information concerning the distribution, possible blending or supplementing with other wells, and population served will be required to assess the health implications related to the use of this well.

## 3. Quality Assurance and Quality Control

The analytical data report presented in the RI/FS Appendices was reviewed. It appeared there were insufficient quantities of blanks, duplicates, and spikes. It was assumed that the analytical data has been reviewed by the U.S. Environmental Protection Agency (EPA) and has met their acceptability criteria. The conclusions in this Health Assessment were based on the information received. The accuracy of these conclusions is determined by the completeness and reliability of that information.

## B. ENVIRONMENTAL PATHWAYS

The migration of some site contaminants can occur primarily through groundwater transport, i.e., metals and VOC's. Other transport mechanisms include surface water runoff and sediment (e.g., of PCB's and phthalates because of their adherence to soil particles). Air and food chain mechanisms were not apparent pathways.

Based on the available information, of the tanks on-site, an appreciable portion were empty. The contents of the other tanks had been divided into four groups: (1) incinerable liquids, (2) water-miscible liquids, (3) incinerable solids, and (4) solids disposable in landfills. None of the tanks contained PCB's at concentrations above 50 mg/l. Although a visual inspection of the tanks reported them to be in good condition, the leaking of these tanks may cause further site contamination. The ROD requires the removal and proper disposal of tank contents followed by dismantling and removal of the tanks. This should be an effective remediation.

The soils over the site are contaminated. Some areas were more contaminated than others, such as the soils around the tank farm, the sediments in the wastewater lagoons, and the buried sediment. The

remedial alternative chosen by the ROD provides for excavation of soils in the contaminated areas and disposal in approved hazardous waste landfills. The excavations should remove both PCB and phthalate contamination to concentrations of minimal concern. The excavation should also significantly reduce the metal and VOC contamination.

The geology of the site is such that the soil is a coarse sand mixed with some silt and clay, approximately 130 feet thick. Beneath this layer is a clay layer approximately 20 feet thick which underlies the site. It was suggested that in the southern portion of the site, this clay layer may have a window which allowed site contamination to penetrate into the lower aquifer. The extent of groundwater contamination in the lower aquifer is not yet known, however, National Highway Well #1, was contaminated with site-related compounds.

There are no surface water bodies on the site (streams, ponds, etc.). After rainfall events, water does pond in some areas on-site. Analytical results revealed this water to be contaminated with metals, PCB's, and phthalates. Surface water runoff can carry the contaminants off-site to areas such as the railroad switching yard or drainage ditches which ultimately lead to Pennsauken Creek and the Delaware River.

The air monitoring data indicated there was contamination by VOC's around the soil borings and other disturbances to the surface but there was no contamination detected on site when the surface was undisturbed. The RI did not investigate the transport of contaminants through windborne dusts.

The food chain was not considered to be a viable pathway because of the environment. The heavily industrialized area and the lack of residential property appreciably reduces the probability of the collection of non-cultivated foodstuffs and/or backyard-type gardens.

#### C. HUMAN EXPOSURE PATHWAYS

The remedial workers are a population of concern and may be exposed to the contaminants through dermal contact, inhalation, and inadvertent ingestion of soils. However, through the use of proper personal protective equipment and adherence to other applicable Occupational Safety and Health Administration (OSHA) and National Institute for Occupational Safety and Health (NIOSH) guidelines and regulations, all of these exposure routes can be mitigated.

Trespassers on the site are also at risk, especially children. Exposure through soil ingestion and inhalation are of health concern particularly for any subpopulations especially sensitive to contaminant exposures likely to occur.

Although the site is surrounded by a fence which should keep unauthorized personnel from entering, there are numerous physical hazards on site which could cause personal injury.

Railroad employees working in the railroad right-of-way may be exposed to PCB's through dermal contact, inadvertent ingestion, or inhalation of contaminated dusts. These exposure pathways should be eliminated during the clean-up activities.

Assuming the site will become a business property, there is potential for future employee exposure to PCB's and some metals by dermal contact, ingestion, or inhalation of soils and sediments from around the site. The contaminated surface soils and lagoon sediments will be removed during remedial activities. This should reduce the potential for exposure through contact, inhalation, or ingestion of contaminated soil.

#### PUBLIC HEALTH IMPLICATIONS

To date, contaminants found to be of greatest concern (base on the groundwater and soil information obtained) are lead, mercury, and PCB's.

Although a variety of other metals were detected on-site, lead contamination was found to be most predominant. Two monitoring wells on-site indicated lead levels above the EPA Maximum Contaminant Level (MCL). The estimated magnitude of long-term exposures to lead in soil and dusts from the higher contaminated areas indicate that such exposures are likely to be of public health concern. Lead may inhibit hemoglobin synthesis and decrease red blood cell survival. It may cause renal, peripheral nerve, and hepatic dysfunction, and may increase blood pressure. Subpopulations particularly sensitive to lead toxicity include developing fetuses, children, and individuals with hepatic or renal disorders.

The concentrations of PCB's in on-site and off-site soils are such that long-term exposure to contaminated soil is likely to pose a public health threat. Short-term exposure to PCB compounds may result in acneform eruptions of the skin and impaired liver function. Longer term exposure may result in alterations of the endocrine system. PCB's have been found to be mutagenic and have been designated probable human carcinogens.

The mercury contamination is elevated above typical background concentrations of soils. The concentration of mercury in the water from the closed municipal well fluctuates around the EPA MCL of 2 ug/l. A speciation analysis to determine the type of mercury compounds present was not performed. The extent and rate of absorption and accumulation of mercury in the body depend upon the species. Inorganic mercury is poorly absorbed by the gastrointestinal tract (7 percent) as compared to organic mercurial compounds (90 percent). Inorganic mercury concentrates in the kidneys and is excreted primarily in the feces, renal excretion increases with time. Chronic exposure to low concentrations of inorganic mercurial compounds may induce glomerulonephropathies of immunological etiology. Organic mercurial compounds concentrate in the central nervous system and are excreted in the feces with no change in renal excretion with time. They may cause neurological disorders such as paresthesia, ataxia, and dysarthria. There are also selective effects on the cerebellum and the occipital cortex. The probability of human exposure to mercury compounds (at concentrations likely to be of human health concern) is presently low at this site and in its vicinity.

Phthalate ester contamination was detected in surface soils, sediments and the buried sludge at concentrations of health concern. The most abundant phthalate ester on-site was bis-(2-ethylhexyl)phthalate. While little is known about the human health effects of these compounds, bis-(2-ethylhexyl)phthalate has been shown to be an animal carcinogen. The phthalate esters, as a general class, have been shown to be prolific peroxisome proliferators. It has been hypothesized that this is the probable mechanism of their carcinogenicity. Symptoms of acute exposure to the phthalate esters include nausea, diarrhea, and irritation of the eyes, mucous membranes, and respiratory tract.

#### CONCLUSIONS AND RECOMMENDATIONS

Based on the information reviewed, ATSDR has concluded that 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 above, there is potential for human exposure to lead and PCB's via inhalation and ingestion of the dusts and dirt from the soil and ingestion of mercury from the municipal well (if placed back into service). The potential exists for exposure to contaminants from the sediments of the former lagoon, and to contaminants from the storage tanks and soils from various areas around the site. Potential exposure routes are ingestion, inhalation, and dermal contact which may lead to adverse health effects. The ROD has identified and proposed remedial activities for removal and disposal of the contaminated soils, buildings, and tanks such that human health concerns should be obviated.

The remedial worker is of concern especially during excavation activities; however, this concern may be mitigated through the proper use of personal protective equipment and following all other applicable OSHA and NIOSH guidelines and precautions. Railroad workers are also of concern because of the surface contamination found in the railroad right-of-way. This concern should be eliminated during remediation activities. Future land use and activities may pose health concerns for future employees depending upon the concentration of contaminants remaining and the activities on-site.

The recommendations are as follows:

1. Provide proper safety training and protective equipment to remedial workers.
2. Develop remedial alternatives for the contaminated groundwater.
3. Develop remedial alternatives for National Highway Well #1 if it is to be placed back into service.
4. Further ATSDR review may be warranted depending on future land use and additional information obtained concerning well contamination and well water use.

5. In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended, the Swope Oil Company site has been evaluated for appropriate follow-up with respect to health effects studies. Inasmuch as there is no extant documentation or indication in the information and data reviewed for this Health Assessment that human exposure to on-site contaminants is occurring or has occurred in the past, this site is not being considered for follow-up health studies at this time. However, if data becomes available suggesting that human exposure to significant levels of hazardous substances is currently occurring or has occurred in the past, ATSDR will reevaluate this site for any indicated follow-up.

PREPARER OF REPORT

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