

# Health Assessment for

DAYCO CORPORATION/L.E. CARPENTER COMPANY

CERCLIS NO. NJD002168748

WHARTON, NEW JERSEY

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

## 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, risk assessments, risk evaluations and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, this Health Assessment has been conducted using available data. Additional Health Assessments may be conducted for this site as more information becomes available.

The conclusions 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.

**HEALTH ASSESSMENT  
DAYCO INTERNATIONAL SITE  
MORRIS COUNTY  
WHARTON, NEW JERSEY**

Prepared by:  
Environmental Health Service  
New Jersey Department of Health

Prepared for:  
Agency for Toxic Substances and Disease Registry (ATSDR)

**OBJECTIVES**

The Remedial Investigation Report on the Dayco International Site (RI) has not yet been finalized. Therefore, there is not much information available from the United States Environmental Protection Agency (EPA) and the New Jersey Department of Environmental Protection (NJDEP) on the site. The main objectives of this Health Assessment are to:

- \*assess the potential exposure and/or public health implications of the site,
- \*determine what are the community concerns with respect to the Dayco Site,
- \*identify immediate actions, if any, that need to be taken to protect the public health,
- \*identify information gaps and, if possible, fill in the gaps, and
- \*determine if a health study on this site is warranted.

**SUMMARY**

The Dayco Site is contaminated from a former disposal lagoon that existed on the site. Presently the groundwater under the site contains high concentrations of a number of contaminants, including undissolved, free-floating product. Public supply wells in the area supply potable water for

Wharton Borough and parts of Dover. The site is also in a floodplain and borders the Rockaway River. It is recommended that the site be posted as a Superfund site, and that sampling of off-site groundwater and surface water be given top priority. Other media where exposure potentially can occur also need to be sampled.

On the basis of the information reviewed, the Dayco Site is a potential public health concern because humans may be exposed to hazardous substances at concentrations that may result in adverse health effects. The likelihood and magnitude of concern cannot be further evaluated at this time. The Dayco Site has been evaluated for appropriate follow-up with respect to health effects studies. After consultation with Regional EPA staff and State and local health and environmental officials, the Epidemiology and Medicine Branch, Division of Health Studies, ATSDR, will determine if follow-up public health actions or studies are appropriate for this site.

#### **SITE BACKGROUND**

The Dayco Site is located in Wharton Borough in Morris County. Dayco was ranked as a Superfund site mostly due to groundwater concerns. L. E. Carpenter operated a wall covering manufacturing facility at this site, that was owned by Dayco Corporation. During the operations, solid wastes and liquid wastes were disposed of in unlined lagoons in a field behind the building, approximately 20 feet from the Rockaway River.

Although manufacturing is no longer taking place on-site, the site is an active facility in that warehousing and office work is still taking place. The manufacturing that took place on the site has been moved to Pennsylvania.

The site is above the sole-source aquifer that serves both Wharton and parts of Dover. Wharton Supply Wells #1 and #2 are only approximately 2600 feet from the site. The site borders the Rockaway River and is in the flood plain of the River. The site also borders residential houses and other industrial facilities.

In 1982, NJDEP removed approximately 3,500-4,000 cubic yards of sludge and soil from the site. The former lagoon area was covered with fill. Floating free product has been found on the groundwater. A groundwater skimming operation (solvent recovery operation) is currently operating on the site.

The Dayco Site is a Superfund enforcement site. Sampling of the site is being done under an Administrative Consent Order (ACO) between NJDEP and the potential responsible party. Environmental data that is addressed in this health assessment is limited to analyses of samples that were taken before the RI was initiated. This includes samples of the sludge that were removed and samples from downgradient monitoring wells.

#### **SITE VISIT**

On July 5, 1988, the New Jersey Department of Health (NJDOH), along with a representative of Dayco Corporation, conducted a site visit of the site. The site was not identified or posted as a Superfund site. A fence around part of the site did not limit access to the entire site. The site is located in an industrial area but borders a residential neighborhood (across Main Street) and the Rockaway River. Groundwater discharge or seeps into the Rockaway River appear to be likely. There is a pond, which empties out into the Rockaway River, just upgradient from the site.

The area where the wastes were disposed is currently under a field of overgrown grass and could not be visually identified. No obviously stained soil was observed. Tanks, drums, and paint cans were on the site, but fuel was the only reported hazardous chemical that is still used on the site. AirProducts, a manufacturing facility, borders the site. There is a drainage ditch on the AirProducts land that appeared to contain a significant amount of oily materials. This drainage ditch may contribute to contamination that has been detected in the groundwater under the Dayco Site. A solvent smell was detected above a vent in a corner of the site, adjacent to some empty paint cans. Vandalism was not observed on-site, although homeless people have been found (at rare instances) seeking warmth in the buildings. A guard is always on-site.

#### **COMMUNITY CONCERNS**

An attempt to identify community concerns concerning the Dayco Site was made by contacting, interviewing, and searching the files of the Bureau of Community Relations (NJDEP) and the local health officer. No concerns were identified. The lack of identifiable concerns could be attributed to the pre-RI stage that the site is in. At this point in time, there has not been a public meeting held by NJDEP on the site and the public may not be aware of the existence or potential public health impacts of the site.

## ENVIRONMENTAL CONTAMINATION

The only medium at the site that has been sampled during the last six years is groundwater. Sample of the soil, sediment, upstream surface water, sludge, and groundwater had been collected and analyzed prior to 1982. Subsequent to the sampling, 3,500-4,000 cubic yards of the sludge has been removed from the site. Groundwater samples have been taken from five wells (four downgradient and one upgradient). Undissolved product has been found floating on the water table. A consultant hired by Dayco Corporation has estimated that 20,000 gallons of recoverable solvent (mostly xylene and ethylbenzene) are floating on top of the aquifer. Tests in 1983 concluded that the thickness of the solvent layer on the groundwater ranged up to 1 foot. An out-skimmer is currently being used to remove and recycle the recoverable solvents.

Although recent sampling of groundwater was reported to be analyzed for both volatile organic compounds and base/neutral compounds, only volatile organic compound data were forwarded to the State. These recent sampling events detected high concentrations of ethylbenzene and xylenes in the groundwater. These concentrations are presented in Table I.

Polychlorinated biphenyls (PCBs) were detected at concentrations above their solubilities in the groundwater at an upgradient well (well #1) in 1981. Since there appears to be floating free product on the water table, these concentrations are possible. PCBs were not detected in three downgradient wells, although the detection limit that was used to analyze the water concentrations were extremely high (932 ppm).

Analyses of other samples taken in 1981 revealed high concentrations of a large variety of compounds (including volatile organic compounds and polyaromatic hydrocarbons (PAHs)). These chemicals are listed below and their detected concentrations are presented in Table I. Since many of the detected concentration were greater than 50 ppm, it is highly likely that the samples were collected from the undissolved product on the water table. (According to the laboratory results, these samples were collected from the top of the water column and contained concentrated solvents. In an April 20, 1981 memorandum, NJDEP indicated that, on March 3, 1981, samples from well #4 consisted of 100% solvent and that samples from well #3 consisted of 80% solvents.)

On July 9, 1982 soil samples from the site were analyzed for volatile organic compounds. Only two locations were

sampled. Ethylbenzene and trifluorotoluene were the only compounds that were detected at concentrations greater than 1 ppm, although numerous unidentified compounds were also detected. In September 1981, downstream surface water samples revealed a low concentration of chloroform, while upstream samples were clean. An upstream water sample, in 1982, did not detect volatile organic compounds. Sediment samples that were collected behind the site, in 1982, revealed appreciable concentrations of a variety of compounds. (These compounds are listed below.) The detected concentrations of these compounds are listed in Table I. Downstream sediment samples, also collected in 1982, did not reveal volatile organic compounds or PCBs.

Detected concentrations in the groundwater could vary according to the screening of the wells and where in the water table the sample was taken. This is particularly true due to the existence of undissolved product on the water table. From recent sampling, ethylbenzene and xylenes are considered to be the primary contaminants of concern. (As discussed below, the list of contaminants of concern are expanded when data from over five years ago are also considered.) Ethylbenzene and xylenes have consistently been detected in the groundwater at high concentrations.

Data from samples that were analyzed in 1981 and before were also used to identify contaminants of concern. Using this data and based on detected concentrations, toxicity, mobility, and persistence, the following contaminants are identified as the contaminants of concern in the respective media:

**Sludge:** Chloroform, Benzene, 1,1,2-Trichloroethane, Dibromochloromethane, Mesitylene, Cumene, Butylbenzene, Toluene, Trichloroethylene, Xylenes, Styrene, and Nonane.

**Groundwater:** Phenols, Decane, Butylbenzene, Xylenes, Toluene, Nonane, Mesitylene, Benzene, Ethylbenzene, Styrene, 1,2-Dichloroethane, Tetrachloroethylene, Methylene chloride, Heptane, 1,1,2-Trichloroethane, Dibromochloromethane, Propylbenzene, and Polychlorinated Biphenyls (PCBs).

**Surface Water:** Chloroform

**Sediment Behind Site:** Toluene, Ethylbenzene, Xylenes, Propylbenzene, and 2,3-Benzofuran.

**Soil:** Ethylbenzene and Trifluorotoluene.

The highest detected concentrations of these contaminants are presented in Table I.

Table I - Highest Detected Concentration of Contaminants of Concern

<u>Contaminants</u>	<u>Media</u>	<u>Concentrations (ppm)</u>
Chloroform	Sludge	203
	Surface Water	low level
Benzene	Sludge	79
	Groundwater	>50
1,1,2-Trichloroethane	Sludge	102
	Groundwater	>50
Dibromochloromethane	Sludge	3,703
	Groundwater	>50
Mesitylene	Sludge	3,940
	Groundwater	>50
Cumene	Sludge	50,000
	Groundwater	>50
Butylbenzene	Sludge	11,650
	Groundwater	>50
Toluene	Sludge	4,526
	Groundwater	>50
Xylenes	Sludge	50
	Groundwater	184
	Sediment	225
Styrene	Sludge	50,000
	Groundwater	>50
Nonane	Sludge	50,000
	Groundwater	>50
Decane	Groundwater	>50
Ethylbenzene	Groundwater	9,440
	Soil	3,720
	Sediment	157
1,2-Dichloroethane	Groundwater	>50
Tetrachloroethylene	Groundwater	>50
Methylene chloride	Groundwater	>50
Heptane	Groundwater	>50
Propylbenzene	Groundwater	>50
	Sediment	5.5
PCBs	Groundwater	16.8
Trifluorotoluene	Soil	3,310
Dichlorobenzene	Sediment	10.5
2,3-Benzofuran	Sediment	1.5

(Ethylbenzene and xylenes are the only chemicals that have consistently been detected in the groundwater.)



## **QUALITY ASSURANCE/QUALITY CONTROL**

Adequate quality assurance/quality control (QA/QC) review and information was not routinely collected on analyses of samples in 1980. Neither the laboratory report nor QA/QC information was available on the sampling that was conducted in 1981. It should be noted that the 1981 samples revealed PCBs in the groundwater at concentrations above the solubility of PCBs in water, and that PCBs were detected in the upgradient well. (Although these results are generally questionable they are possible, due to the undissolved product.) A QA/QC review was conducted by NJDEP on the samples that were collected in 1986. The review concluded that many of the laboratory deliverables, necessary to perform an adequate QA/QC review, were not provided. Since the sampling was not performed under the ACO and future sampling will be conducted under the ACO, additional laboratory deliverables were not requested by NJDEP.

The lack of QA/QC confirmation of the data that is available for the site, along with the age of the sampling events, lead one to question the accuracy of the data that has been reported. Since much of this health assessment is based on this data, the confidence that one has in the conclusion of this Health Assessment is lower than a Health Assessment where the environmental data has passed a QA/QC review. However, the evaluation of this site suffers more from the data gaps in environmental and demographic information than from the quality of the data.

## **DEMOGRAPHICS**

There is not much information that is provided in the EPA documents on the site. The information that is provided concerns the number of people, within a three mile radius that are served by groundwater in the area. The population size reported was 27,000 people (5,500 in Wharton and 22,000 in Dover). (The 1980 census reported that 5,485 people lived in 1,911 residences in Wharton Borough, of which 305 were below 5 years old and 607 were above 65 years old.) The nearest residence is reported to be 150 feet from the site and Wharton Public Supply Wells #1 and #2 are approximately 2,600 feet from the site.

Demographic data gaps that exist include the number of people that work on the site, the number of people that live within a two to three mile radius of the site, identification

of sensitive populations in Wharton Borough, and an approximate number of people who may use the Rockaway River for recreation.

#### **ENVIRONMENTAL DATA GAPS**

There are many gaps in what is currently known about the concentrations of contaminants at this site. Samples that were taken between 1980 and 1982 are inadequate to characterize the site, were not subjected to an adequate QA/QC review, and are outdated. More data is needed to assess accurately the contaminants of concern and exposure pathways of concern. None of the contamination has yet been delineated. The RI sampling plan, under the Administrative Consent Order (ACO), needs to delineate the contamination that exists on the site and identify the migration of the contamination to off-site areas where the public can be exposed to the contaminants or where natural resource damage may occur.

Since the Rockaway River is used recreationally for fishing and bathing and groundwater appears to discharge directly to the River, it is particularly important to collect samples of the Rockaway River surface water and sediment. Soil samples could be used to identify the contaminants and contaminant concentrations to which trespassers and/or workers on the site could be exposed, as well as delineating the source of the contaminants that are moving off-site.

#### **EXPOSURE PATHWAYS**

People could be potentially exposed to contaminants at the Dayco Site via the air, surface water, groundwater, and soil. The lack of environmental data at the site makes it difficult to clearly establish which exposure pathways and media are of a greater or lesser concern. To be protective of public health, it is assumed that the pathways are a concern until proven otherwise.

Data have demonstrated that the groundwater under and near the site was heavily contaminated (and presumably still is contaminated) with a large variety of chemicals. In addition, due to the proximity of the site to the Rockaway River, it is likely that the upper aquifer flows toward and directly discharges into the River before the public is exposed to the groundwater. Verification is needed that both the shallow and deeper groundwater aquifers do not flow towards or into the cone of influence of the Wharton Supply Wells #1 and #2, which are only approximately 2600 feet from the site. Other wells in

the area are reported to be used for non-potable purposes (e.g., watering lawns and private gardens). If the groundwater in these wells is contaminated, people could be exposed by direct contact with soils, the mist from the garden hoses, and/or ingestion of vegetables and fruit. Studies need to be conducted to verify the direction of the flow of the groundwater, to determine if there has been any contamination of a deeper aquifer, and to determine what use is made of the contaminated aquifer.

It is assumed, until proven otherwise, that the surface water has been contaminated by the site via groundwater discharge and run-off. The site is in the flood plain of the Rockaway River, which increases the possibility of contaminant migration via runoff. The Rockaway River is used for fishing, was previously used for bathing (a bathing beach in Dover was closed approximately 10 years ago), and may still be used for cooling off by residents as it flows through residential areas. Potential surface water exposure pathways include dermal contact, accidental ingestion, and fish ingestion. Irrigation of crops would be a problem if the River is used for irrigation purposes.

Direct contact with the soil is a potential concern if trespassers or the workers on the site are in the contaminated area(s). The possibility of trespassers is increased by the site being near a residential area and not being fenced or posted. However, the site is patrolled by a guard, does not appear to be heavily vandalized, and the area that contained the lagoons has been covered over by weeds. Access to the River at the site boundary, where there is a possibility of seeps, is limited by undergrowth, including poison ivy. It is recommended that the site be further protected from trespassing by more fencing and posting (particularly in the area of known dumping).

Air contamination has not been investigated. Air is a potential pathway, particularly from contamination by volatiles. Residents near the site, along with workers on the site could potentially be exposed. The weeds on the lagoon area probably help in reducing the amount of non-volatile contaminants in the air.

#### **PUBLIC HEALTH IMPLICATIONS**

There is the potential for adverse public health implications from this site. The likelihood and magnitude of the potential concerns cannot be further evaluated until more

sampling occurs, and until more demographic and groundwater gradient information are supplied. Use of the groundwater and surface water for potable, recreational, and irrigation purposes appears to constitute the major human exposure routes of concern.

Periodic sampling under the New Jersey Safe Drinking Water Act has demonstrated that Wharton Supply Wells #1 and #2 are contaminated with low levels of trichloroethylene (TCE) and 1,2-dichloroethane. (The maximum detected concentrations of these chemicals were 15 ppb and 19 ppb, respectively. Recently, these contaminants were detected at approximately 1 ppb.) It is particularly important to determine if the Wharton Supply Wells #1 and #2 have been impacted by the site and if contaminant concentrations in the wells may increase.

#### **CONCLUSIONS AND RECOMMENDATIONS**

On the basis of the information reviewed, the Dayco Site is considered to be a potential public health concern because humans may be exposed to hazardous substances at concentrations that may result in adverse health effects. As noted in the Exposure Pathways section above, human exposure to contaminants at the Dayco Site may occur (and may have occurred in the past) via the air, surface water, ground water and soil. The likelihood and magnitude of concerns cannot be further evaluated at this present time.

As discussed above, there are many data gaps that exist in the information that is available on the site. The RI should be able to fill in the data gaps that are described above. Of particular concern is the delineation of the contamination that exists on the site, the public supply well, surface water River sediment, and on-site soils. If appreciable concentration of contaminants are detected in the surface water or potable groundwater, the use of these media may need to be restricted.

It is also important that workers on the site and residents in the area are made aware that the site may contain appreciable concentrations of hazardous chemicals. The site needs to be posted as a Superfund site. If areas of high concentrations of hazardous chemicals are detected (e.g., the former lagoon area), fences may need to be erected around the areas to keep out trespassers.

In accordance with CERCLA as amended, the Dayco International site has been evaluated for appropriate follow-up with respect to health effects studies. Since a population exposed to on-site and off-site contaminants at a level of

public health concern has not yet been identified, the Dayco International site is not being considered for follow-up health studies at this time. However, if data become available suggesting that human exposure to significant levels of hazardous substances is currently occurring or has occurred in the past, ATSDR and NJDOH will reevaluate this site for any indicated follow-up.

This Health Assessment was prepared by the State of New Jersey, Department of Health, Environmental Health Service, under a Cooperative Agreement with the Agency for Toxic Substances and Disease Registry. The Division of Health Assessment and Consultation and the Division of Health Studies of ATSDR have reviewed this Health Assessment and concur with its findings.

## REFERENCES

EPA Documents - Site Investigation Report, December 1984  
Hazardous Ranking Scoring Information, January 1985  
October 24, 1986 Progress Report (from GeoEngineering to L.E. Carpenter)  
January 8, 1984 Progress Report (from GeoEngineering to L.E. Carpenter)  
Amended Administrative Consent Order between L.E. Carpenter and NJDEP (September 26, 1986)  
Administrative Order between L.E. Carpenter and NJDEP  
Proposed Groundwater Decontamination Program, (from GeoEngineering), October 31, 1983.  
Memo from NJDEP/Bureau of Environmental Measurement and Quality Assurance to NJDEP/Bureau of Case Management  
Memo from NJDEP to File ER-46-82, September 24, 1982  
Memo from NJDEP/Division of Water Resources (DWR) to File, February 4, 1982  
Memo from NJDEP/DWR to File, April 20, 1981

Interviews - Madison District Health Officer  
NJDEP Technical Coordinator  
NJDEP Case Manager  
NJDEP/DWR Enforcement Officer

File Review - Madison District Health Officer  
NJDEP Technical Coordinator  
NJDEP Case Manager

Dayco International Site  
Update - April 17, 1990

New information on the Dayco site has become available. This information includes a draft Remedial Investigation report (dated January 1990) and a soil gas report entitled "Final Report on Finding of Petrex Survey". In addition, groundwater data (not reported in the RI) is currently undergoing a QA/QC review by NJDEP and should be available soon. An evaluation of information in these documents will be included in the form of an addendum to this health assessment, when this assessment is updated.