PRELIMINARY

Health Assessment for

UNIVERSAL OIL PRODUCTS NATIONAL PRIORITIES LIST (NPL) SITE

EAST RUTHERFORD, NEW JERSEY

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, 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.

PRELIMINARY HEALTH ASSESSMENT
UNIVERSAL OIL PRODUCTS NPL SITE
EAST RUTHERFORD, NEW JERSEY
February 15, 1989

Prepared By:
Office of Health Assessment
Agency for Toxic Substances and Disease Registry

Background

The 75-acre Universal Oil Products property is located in East Rutherford, New Jersey. About 33 acres of the site were used for plant facilities. The site is bound by commercial and industrial property, marshland, and Route 17. A residential area and high school are approximately one-half mile west of Route 17. The Universal Oil Products is listed by the U.S. Environmental Protection Agency (EPA) on the National Priorities List (NPL).

Aromatic chemicals were produced at the property beginning in 1932. Recovery of solvents and waste chemicals was conducted at the site from 1960 through 1979. Approximately 4.5 million gallons of chemical wastes were discharged to on-site unlined lagoon(s).

The Universal Oil Products NPL Site is presently unoccupied. The eastern marshland portion of the site is densely vegetated. The remainder of the site is discontinuously covered with building foundations, scrub-brush, and aged blacktop roadways. Some unvegetated areas and unpaved roadways also exist. The old lagoon(s) have been backfilled.

The NPL site is within the coastal wetlands management area of the Hackensack River Basin. The site is bordered on the southwest by Berry's Creek which joins the Hackensack River about 3.5 miles downstream. A system of natural and artificial surface water channels cross the site and drain into the tidally-influenced Ackerman's Creek. The Ackerman's Creek flows into Berry's Creek.

The following documents were provided to the Agency for Toxic Substances and Disease Registry (ATSDR) for review: Draft Report, Technical and Regulatory Review, Universal Oil Products, East Rutherford, New Jersey, October 2, 1987; Groundwater Quality Data, Technical and Regulatory Review, Universal Oil Products, East Rutherford, New Jersey, 1987; Sediment Quality Data, Technical and Regulatory Review, Universal Oil Products, East Rutherford, New Jersey, 1987; and Lagoon Sludge Quality Data, Technical and Regulatory Review, Universal Oil Products, East Rutherford, New Jersey, 1987. These documents form the basis of this Preliminary Health Assessment.

UNIVERSAL OIL PRODUCTS NPL SITE

Environmental Contamination and Physical Hazards

A site investigation has been conducted since 1980. To date, on-site soil, groundwater, sediment, and surface water has been sampled. The table below lists the contaminants of public health concern at the Universal Oil Products NPL Site.

Table of Contaminants of Concern

Contaminant	Range in Parts per Billion (ppb)
Soil	
Benzene	<200-33,000
Chlorobenzene	<200-44,000
Trans-1,2-dichloroethylene	<200-33,000
Tetrachloroethylene	<200-46,000
Trichloroethylene	<200-104,000
Polychlorinated biphenyls (1248)	<19-480,000
Lead	<15-1,820,000
Manganese	<5-20,000,000
Sediment	
Polychlorinated biphenyls	<5,000-300,000
Groundwater	
Benzene	<5-44,000
Chlorobenzene	<5-21,000
1,1,2,2-Tetrachloroethane	<10-3,800
Trans-1,2-dichloroethylene	<5-6,300
Trichloroethylene	<5-21,000
Vinyl chloride	<4-1,000
Toluene	<5-160,000
1,2-Dichlorobenzene	<10-2,000
1,4-Dichlorobenzene	<10-56
1,3-Dichlorobenzene	<10-110
Polychlorinated biphenyls	<4-1,100
Lead	<5-280
Arsenic	<2-110

UNIVERSAL OIL PRODUCTS NPL SITE
Surface Water

Benzene	<5-8.3
Trans-1,2-dichloroethylene	<5-200
Trichloroethylene	<5-230
Vinyl chloride	<10-16
Lead	<5-120

The information provided to ATSDR did not document any physical hazards associated with the Universal Oil Products NPL Site.

Potential Environmental and Human Exposure Pathways

The Universal Oil Products NPL Site is located in the Hackensack River Basin. Groundwater contamination has been shown in the upper and lower alluvium aquifers. This contamination could migrate into the Brunswick Aquifer. The Brunswick Formation is approximately 125 feet below land surface and is considered the principal water supply aquifer throughout much of northern New Jersey. Therefore, a potential human exposure pathway is the ingestion, inhalation, and direct dermal contact with contaminants in groundwater.

Analyses of on-site soil samples show volatile organic compounds (VOCs) (e.g., benzene), polychlorinated biphenyls (PCBs), and heavy metal (e.g., lead) contamination within the top four feet. Humans could be exposed to these contaminants by ingesting and direct dermal contact with the soil. An addition human exposure pathway is the inhalation of contaminated fugitive dust and volatilized contaminants.

Sediment and surface water samples were taken on site. The analyses of these samples show VOC and heavy metal contamination. In addition, analyses of sediment samples show PCB contamination. Humans could accidentally ingest or come in direct dermal contact with these contaminants.

Another human exposure pathway at the NPL site is the ingestion of contaminated on-site biota. The biota in the marsh and creeks could bioaccumulate the contaminants. ATSDR was not provided with any information concerning the naturally occurring biota in the marsh or creeks. Fish are known to bioconcentrate PCBs as much as 100,000 fold. Therefore, it is possible that fish or plants could accumulate site-related contaminants at levels of public health concern, if consumed by humans. It is known, however, that no crops or livestock are grown at the Universal Oil Products NPL Site.

ATSDR was not provided with any off-site sediment, surface water, or groundwater sampling analyses results. Therefore, it is not possible to determine the total extent of off-site contamination. The off-site human population could be exposed to site-related contaminates via ingestion, inhalation, and direct dermal contact with groundwater, surface water, sediment. An additional potential off-site human exposure pathway is the ingestion of contaminated biota.

UNIVERSAL OIL PRODUCTS NPL SITE

Demographics

ATSDR was not provided with any demographic information concerning the population surrounding the Universal Oil Products NPL Site. It is known, however, that Wallington Township residents and local industry use the deep aquifer as a source of potable water supply and process water. The Wallington Township wells are located approximately 2.5 miles upgradient from the NPL site.

No information concerning the recreational uses of the marsh, creeks, and Hackensack River was provided to ATSDR.

Evaluation and Discussion

The alluvium deposits underlying the Universal Oil Products NPL Site are approximately 125 feet thick. These deposits contain two aquifers. The first aquifer occurs in the upper 20 to 30 feet and is under water table conditions. The upper alluvium aquifer is believed to discharge to local bodies of water. The lower alluvium aquifer occurs under semi-confined conditions and is generally found in the lower 60 to 70 feet of the deposits. It can not be determined at this time whether the two alluvium aquifers are hydraulically connected. No pump tests have been performed and only two wells monitor the lower alluvium aquifer.

Analyses of groundwater samples taken from the upper alluvium aquifer show the highest contamination. Groundwater contamination was also detected in the lower alluvium aquifer. However, only a few samples were taken in the lower alluvium aquifer. The total extent of groundwater contamination in either of the alluvium aquifers has not been determined; no off-site samples were taken.

Beneath the alluvium deposits is the Brunswick Formation, which is composed of shale, siltstone, and sandstone. Where highly fractured, the Brunswick Formation is a prolific source of groundwater. No monitoring of this groundwater aquifer has been performed. The Brunswick Aquifer is considered to be the principal aquifer for much of northern New Jersey. A major concern relating to the Universal Oil Products NPL Site is the possible migration of site-related contaminants at levels of public health concern into the Brunswick Formation.

Another deficiency noted was the lack of off-site surface water and sediment sampling. Analyses of on-site surface water and sediment samples show contaminants at levels of public health concern. These contaminants could migrate off-site.

No air sampling was conducted. However, there are significant levels of VOCs within the top four feet of on-site soil. It is possible that high air levels of VOCs could occur during warm or hot-weather.

ATSDR has prepared, or will prepare, Toxicological Profiles on the site contaminants (with the exception of manganese) noted above.

Conclusions and Recommendations

Based on the available information, this site is considered to be of public health concern because of the risk to human health caused by the likelihood of exposure to hazardous substances via ingestion, inhalation, and direct dermal contact with contaminants in the soil, groundwater surface water, and sediment. There is also a possibility of exposure to hazardous substances via ingestion of contaminated biota.

In order to protect the public health, ATSDR recommends the following:

1. Consideration should given to monitoring the lower alluvium and Brunswick Aquifers for site-related contaminants. The possibility for contaminant migration into these water-bearing zones and affecting potable water supply wells should be evaluated.

2. A well survey should be conducted to confirm that there are no wells in the path of off-site contaminant migration.

3. Off-site groundwater, surface water, and sediment sampling should be conducted.

4. Consideration should be given to conducting a biota consumption survey. If biota are consumed by humans, consideration should be given to obtaining edible fish, animal, or plant samples from the marsh and local creeks. This sampling should be conducted to assure that heavy metals and PCBs have not bioaccumulated to levels of concern.

5. Demographic information should be obtained for surrounding areas. Information on the local residential population, age, sex, socioeconomic status, and ethnic background would be advantageous in determining the presence of any sensitive subpopulations.

6. Consideration should be given to conducting on-site air sampling for volatile organic compounds.

Further environmental characterization and sampling of the site and impacted off-site areas during the Remedial Investigation and Feasibility Study (RI/FS) should be designed to address the environmental and human exposure pathways discussed above. When additional information and data becomes available, e.g., the completed RI/FS, such material will form the basis for further assessment by ATSDR as warranted by site specific public health issues.