

# Health Assessment for

RENORA SITE

EDISON TOWNSHIP (BONHANTOWN), NEW JERSEY

02NJD070415005

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

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## SUMMARY

Renora Incorporated is an approximately 1-acre site on the Environmental Protection Agency's (EPA's) National Priorities List (NPL). The site, located at 83 South Main Street in Bonhamtown, Middlesex County, New Jersey, is zoned light industrial. Renora Incorporated began operations in 1978 as a licensed collector/hauler of waste oil and operated until 1982. During this time, Renora also transported and accepted hazardous substances for transfer, storage, and blending. The New Jersey Department of Environmental Protection (NJDEP) and the Edison Township Department of Health and Human Resources inspected the facility on several occasions and found the site to be poorly maintained, with evidence of spills and leaking drums. In 1982 Renora Incorporated ceased operations. EPA initiated removal actions in October 1984, the Potentially Responsible Parties's (PRP's) contractor subsequently assumed responsibility for the removal actions approximately one week later. The removal action continued for 7 months. Approximately 85,000 gallons of waste oil was removed, of which 45 percent was contaminated with polychlorinated biphenyls (PCB's). Approximately 1,100 cubic yards of contaminated soils were excavated and disposed of in a proper treatment facility, about half were contaminated with PCB's.

The Remedial Investigation and Feasibility Study (RI/FS), conducted after the initial removal, indicated on-site surficial soils were contaminated with PCB's, polynuclear aromatic hydrocarbons (PAH's), and lesser quantities of volatile organic compounds (VOC's) and metals. The shallow groundwater was contaminated with chloroethane and metals. The surface water and sediments were contaminated with metals and VOC's.

This site is of potential public health concern because there is potential for exposure to hazardous substances at concentrations of health concern. The Record of Decision (ROD) addresses most of the public health concerns by providing for removal and treatment of the contaminants. The removal actions involve the excavation and offsite disposal of soils contaminated with PCB's above 5 parts per million (ppm). The ROD also selected bioremediation of the PAH contamination provided the pre-design phase treatability study is successful in reducing the concentrations to acceptable levels. The bioremediation process may make use of the contaminated groundwater in efforts to reduce the contamination of that media; however, the metal contamination also present is not amenable to this type remediation.

## BACKGROUND

### A. SITE DESCRIPTION

The Renora Incorporated site, approximately 1-acre in size, is situated on relatively flat land. The land is within the regulatory 100- and 500-year floodplains. However, it was built up from the flood plain with up to 12 feet of demolition debris which now places the site above the actual 100-year flood plain (but still within the 500-year flood plain). Adjacent to the site and forming the north boundary is Mill Brook. The stream bed has been altered such that the stream path is relatively straight instead of the naturally meandering flow path which, prior to straightening, made a significant portion of the site unusable. Also adjacent to the site are several shops: an auto repair shop, a welding shop, a machinery shop, and an electrical supply shop. The western boundary is the Conrail Railroad (and right-of-way) and the south boundary is formed by the New Jersey Turnpike. The site, surrounded by a chain link fence with locking gates, is in a heavily populated area.

Renora Incorporated was owned by Ronald Kaschner and operated on property leased from Clementi Brothers Incorporated. During the time of operation, Mr. Kaschner also operated other waste disposal and hauling services under the names Renora Trucking, Incorporated, Mid-Atlantic Tank Cleaning, Incorporated, and R & A Waste Oil. The NJDEP inspection reports consistently noted the lack of site security, poor housekeeping, and leaking drums and tankers. The NJDEP had investigated several reports of oil spills on the property, and during the inspections, advised Renora Incorporated to seek additional registrations and/or licenses. In March 1980 Renora Incorporated was ordered to cease all operations and clean up the site. Subsequent inspections by NJDEP indicated that the operations had stopped but no remedial activities had begun. In November 1980 the license to collect and haul solid waste was revoked, effectively closing the business. All cleanup activities at Renora Incorporated (performed by Mr. Kaschner) were stopped in December 1980 because of lack of funds. After more than a year of inactivity, the site was abandoned in June 1982 and placed on the NPL in December of that year.

EPA began initial removal actions in October 1984 and after several days, the PRP's contractor assumed responsibility for the removal action. The removal action continued for 7 months. Approximately 85,000 gallons of waste oil was removed, of which 45 percent was contaminated with PCB's. Approximately 1,100 cubic yards of contaminated soils were excavated and disposed of in a proper treatment facility, about half were contaminated with PCB's.

The RI/FS conducted after the initial removal, indicated on-site surficial soils were contaminated with PCB's, PAH's, and lesser quantities of VOC's and metals. The shallow groundwater was contaminated with chloroethane and metals. The surface water and sediments, taken at the site boundary, were contaminated with metals, pesticides, phenolics, and VOC's.

## B. SITE VISIT

ATSDR has not conducted a site visit to date.

## ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

### A. ON-SITE CONTAMINATION

Soil sampling was conducted in 12 areas on-site, with the locations being determined using information from various site activities such as the test pit program, removal actions, observation, etc. The Table of Contaminants lists the contaminants of concern and their maximum reported concentrations.

TABLE OF CONTAMINANTS

<u>Parameter</u>	<u>Soil</u> <u>mg/kg</u>	<u>Groundwater</u> <u>ug/l</u>	<u>Surfacewater</u> <u>ug/l</u>	<u>Sediment</u> <u>mg/kg</u>
PCB	37	ND	ND	ND
PAH's	140	ND	ND	4.7
cadmium	8.1	0.9	0.5	1.2
zinc	1,760	201	133	170
benzene	360	2.1	ND	ND
xylenes	40	16	ND	ND
chloroethane	ND	240	ND	ND

The bulk of the contamination was generally limited to the upper 2 feet of soil, the major contaminants were PCB's and PAH's. Several metals were detected above background concentrations; however, only two, cadmium and zinc, exceed the NJDEP established soil cleanup concentrations. The compounds benzo[a]pyrene (16,000 ug/kg) and benzo[b and k]fluoranthene (15,000 ug/kg each), were representative of the highest concentrations of individual PAH's detected. The PAH's are usually considered as a class of compounds and not individually. The collective concentration of the PAH's exceeds 100,000 ug/kg in several areas. The PCB contamination was also considered collectively as Aroclor 1260, which is an industrial mixture of various congeners of PCB. The maximum concentration detected on-site was approximately 37,000 ug/kg.

Five monitoring wells were installed on-site to provide information on the direction of groundwater flow and quality of the water. It was determined that the groundwater flows to the northwest and discharges into Mill Brook. The groundwater was contaminated with chloroethane and some metals were above background. A seep was found in the stream bank near the culvert at the western corner. The analytical results of a sample from the seep indicated cadmium contamination above the drinking water maximum contaminant level. Several other metals were also detected; however, the second sampling episode results reported most contaminants as none detected. The concentrations of metals found in the groundwater (seep and monitoring wells) generally did not exceed the drinking water standards of New Jersey or EPA in most samples. The

samples where these criteria were exceeded were resampled, and the results were reported as none detected. These two sets of data present significantly different results.

The maximum concentration of chloroethane found in any monitoring well was 240 ug/l. Chloroethane was not found in the surface water or soil samples.

Surface water and sediment samples were also analyzed and the results indicated similar concentrations were found upstream and downstream, although the downstream results were consistently higher. However, the Site Plan, Figure 1-5, shows the sampling point for the downstream sediment sample to be above the location of the seep. If this is the case, then the downstream sediment sample may not be a truly representative sample and the site may be having a much more pronounced effect on the stream and sediments.

Air sampling was conducted using portable sampling equipment, and the results were reported as no detectable concentrations of contaminants.

#### B. OFF-SITE CONTAMINATION

The Site Plan, Figure 1-5, indicates almost all of the sampling was performed on-site, within the fenced area. The sediment and surface water sampling points, one test pit, and the seep appear to be the only sampling points downgradient and offsite. There was a test pit and monitoring well upgradient and outside the site fence. The available sampling results indicated there was no offsite migration of significant amounts of contaminants; however, the results may not be representative of current conditions. A more extensive and intensive monitoring well and soil sampling program conducted downgradient of the site fence line may result in a better representation of contaminant migration. Although some sampling indicated offsite contamination, resampling of those areas detected either no contamination, or concentrations similar to background. It is also unclear as to which set of analytical results, the initial sampling or the resampling, are the more accurate indicators of groundwater contamination.

#### C. PHYSICAL HAZARDS

The information reviewed did indicate the on-site wastes, waste containers and serviceably contaminated soils were removed from site. There were no other reported physical hazards remaining on-site.

#### DEMOGRAPHICS OF POPULATION NEAR SITE

The population of Bonhamtown is approximately 2,200 people. The majority of land near the site is zoned residential. A 315 unit condominium complex, Edison Glen, has been developed to the north, across Mill Brook from the site, another complex is planned for the area just west of Edison Glen. The new complex will contain more than 500 units and will be about 2,000 feet from the site. The Edison Glen housing complex is approximately 500 feet from the site. The future land use plan for the site is undetermined, however it is currently zoned light industrial.

The auto repair shop is the closest business, approximately 100 feet east. There is a restaurant and park between 500 and 1,000 feet from the site.

The municipality supplies the drinking water for the area. There are no well fields within one-half mile of the site. It was reported that the Edison Township Water Department has no knowledge of any private wells in the area and there are no industrial wells near the site.

## EVALUATION

### A. SITE CHARACTERIZATION

#### 1. Environmental Media

The site inside the fence was characterized with sufficient soil and groundwater sampling. There is some concern about the limited surficial soil and groundwater information outside the fenced area, as discussed in the Offsite Contamination Section above. Although it is highly likely that the shallow groundwater under the site discharges into Mill Brook, without additional monitoring wells and further offsite groundwater sampling this cannot be substantiated (refer to discussion above in Offsite Contamination).

#### 2. Land Use and Demographics

No additional information is necessary concerning demographics in the area; however, should site zoning and/or land use change in the future, further consideration by ATSDR may be warranted.

#### 3. Quality Assurance and Quality Control

The Case Narrative, prepared by the contractor, nor the Data Review Summary, prepared by EPA, was provided in the data received. The RI had results for the field and trip blanks; however, information concerning the spikes and blinds was not available. The duplicate sample analyses were presented. It was assumed that the analytical data has been reviewed by 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 the supplied information.

### B. ENVIRONMENTAL PATHWAYS

Based on the information reviewed, the surficial soils, contaminated with PCB's, PAH's, and lesser amounts of metals, were the most contaminated media. The extent of contamination was generally within the first few feet of the surface. Most of the PCB contamination was located in the north and northwest section of the site. The PAH's were found in these areas as well as the northeast and southeast corners of the site. Normally, PAH's strongly adhere to soil particles and are not very mobile. However, the presence of VOC's and other petroleum hydrocarbons

may increase the water solubility of the PAH's (as well as the PCB's) thus increasing the groundwater concentration and migration rates. Soil contamination was generally limited to the upper few feet of the surface.

The contaminants detected in the shallow groundwater were primarily chloroethane, cadmium, and zinc. There was no reported use of the groundwater in the area. The drinking water is supplied by the municipality and no private wells were reported in the area.

Sediment and surface water did not reveal elevated concentrations of contaminants. There was no information available on biota pathways.

### C. HUMAN EXPOSURE PATHWAYS

Direct contact with, inhalation of, or ingestion of surficial soils presents the most probable exposure pathways. This is of most concern to the remedial workers, especially during excavation procedures. Implementation of optimum dust control measures and proper use of personal protective equipment may significantly reduce the potential for exposure. Also of equal concern from direct contact and inadvertent ingestion are those who trespass on-site or near the site. Although the site is surrounded by a fence which should minimize any unauthorized access, the general area near the site does get some traffic because of the close proximity of the auto repair shop. Also, with the building of the housing complexes across Mill Brook, there will be area children playing in Mill Brook and possibly on the creek bank adjacent to the site fence or along the railroad right-of-way.

Ingestion of groundwater is of minimal concern at this time. The contamination of the groundwater appears to be confined on-site and there are no on-site drinking water wells. The water in the area is reportedly supplied by the municipality, and there are no private drinking water wells in the area.

The surface water and sediments in Mill Brook do not appear to be negatively impacted by the site. However, because of the significant difference between sampling results, the limited sampling of surficial soils on the bank (the soils possibly contributing to sediment and surface water contamination through surface water runoff), the presence of the seep near the culvert at the railroad tracks, and the close proximity of children, the surface water and sediments are of concern.

Air monitoring results indicated there were no VOC's detected in the ambient air. The vapor pressures of PCB's and PAH's are low and would not be expected to be present at concentration of concern under normal conditions. As previously addressed, during site excavation these contaminants may be introduced into the air. The use of appropriate dust control measures and personal protective equipment should reduce the potential for exposure.

The food chain pathways were not addressed in the RI; however, the site is situated in an area where hunting is prohibited. Mill Brook, which at one time supported fish, has been degraded by construction along its

banks which tends to severely limit the capacity to support a fish population. The presence of edible cultivated and non-cultivated plants was not discussed; however, with the exception of cadmium, the contaminants present on-site do not normally lend themselves to uptake and accumulation. Therefore, food chain pathways are of minimal concern.

#### PUBLIC HEALTH IMPLICATIONS

Based on information submitted to ATSDR, direct contact and indirect ingestion exposures to on-site soils are of concern. Indirect exposures can occur as a result of inadvertent consumption of soil on the hands or food items, mouthing of objects, consumption of non-food items (pica), or a combination of these activities (Lagoy, 1987).

The concentrations of PCB's in on-site soils are such that long-term exposure to these contaminated media would 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 are considered probable human carcinogens.

PAH's are a class of compounds ubiquitous to the environment. They are formed during incomplete combustion of carbonaceous materials and are commonly found in smoke, tar, petroleum products (especially used oils which have been heated), and cooked foods. Some individual PAH's have been shown to be carcinogenic in animal studies. Usually, PAH's are found as complex mixtures of many compounds, which presents problems in ascribing human carcinogenicity to specific PAH's. The American Conference of Governmental Industrial Hygienists has designated PAH's to be human carcinogens and has developed recommendations for workplace exposure limits for industrial/occupational environments. The EPA has classified some PAH's as probable human carcinogens. The concentrations of PAH's found on-site pose a public health concern. The major short term effect of contact with the PAH contaminated soils may be dermatitis.

The presence of cadmium in initial sampling episodes exceeded the standards of the NJDEP for soil and drinking water. Cadmium exposure through inhalation may result in lung and/or prostrate cancer but by oral ingestion, cadmium has not been shown to be a carcinogen. However, chronic ingestion may result in renal tubular dysfunction. Other effects on the respiratory tract, which may be proportional to the concentrations and duration of exposure, can range from chronic bronchitis to emphysema.

#### CONCLUSIONS AND RECOMMENDATIONS

Based on the information reviewed, ATSDR has concluded that this site is of potential public 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 Human Pathway Section above, there is no current significant human exposure evident.



The remedial worker is of most concern for exposure to hazardous substances. This concern may be minimized through the proper training and use of personal protective equipment.

The ROD adequately addresses the public health concerns of this site as it exists inside the site fence and concerning the contaminants present, with the exception of the metals. The concentrations of metals reported in the two sets of sampling data are significantly different. Further sampling should be conducted in order to obtain more accurate information concerning the actual metals' concentrations. The ROD selected remedy does not address the metals contamination or their removal (should they exist in concentrations of concern). There are concerns with the sediments, groundwater, and the surficial soil contamination outside the fenced area because of the limited data.

Should land use plans and/or zoning change for the site, further review by ATSDR may be warranted.

The recommendations are as follows:

1. Provide proper safety training and protective equipment to remedial workers and follow all other applicable guidelines and precautions.
2. Implement institutional controls to prevent future land use from increasing exposure to remaining contamination (e.g., restrictions on shallow groundwater usage and residential zoning).
3. Collect and analyze more surficial soil samples outside the fenced area, sediment samples downstream, and better characterize the groundwater to determine the true extent of contamination. After evaluation of the new data, amend remedial actions as necessary to protect public health.
4. Collect and conduct metals analyses on samples collected from all media offsite and amend ROD to incorporate any additional procedures necessary to protect public health.
5. In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended, the Renora Incorporated 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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## REFERENCES

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