

Health Assessment for

PRICE LANDFILL

CERCLIS NO. NJD070281175

PLEASANTVILLE, NEW JERSEY

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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
PRICE'S LANDFILL
ATLANTIC COUNTY
PLEASANTVILLE CITY/EGG HARBOR TOWNSHIP, NEW JERSEY**

Prepared by:
Environmental Health Service
New Jersey Department of Health (NJDOH)

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

OBJECTIVES

The Phase I Remedial Investigation of the Price Landfill site was completed in 1985, and a Record of Decision has been signed. The objectives of this Health Assessment, based upon the current stage of site remediation are:

- * To attempt to assess the nature and magnitude of health effects which may be associated with the site;
- * To evaluate the selected remedial alternative, with respect to the potential public health impact of the site;
- * To identify, if necessary, any actions that need to be taken to prevent or minimize exposure to hazards or contamination associated with the site;
- * To identify, if necessary, deficiencies or gaps in the data or information associated with the site;
- * To document the concerns of the community with respect to the site;
- * To identify, if necessary, additional exposure and sampling points.
- * To assess whether a health study of the site is indicated.

SITE SUMMARY

Chemical and municipal waste that was dumped into Price's Landfill, a former sand and gravel pit, has resulted in

groundwater contamination. Although the Remedial Investigation/Feasibility Study (RI/FS) for the site was completed in 1985, and the Record of Decision (ROD) has been signed, many information and environmental data gaps still exist. Residents near the site have been exposed to contaminants from the site (NJDEP: Phase I Remedial Investigation Report). Some exposure pathway may be continuing today.

The Price's Landfill Site is considered to be a public health concern because humans were exposed, and may still be exposed to hazardous substances at concentrations that may result in adverse health effects. Information on groundwater use in the area is needed to accurately assess the magnitude of the health concern. Price's Landfill is being considered for follow-up health studies.

SITE DESCRIPTION

Price's Landfill, which is located between Fire Road, Mill Road, and Spruce Street in Egg Harbor Township, has been referred to as Price's Landfill, Price's 1, and Price's Pit. The twenty-six acre site is a former sand and gravel pit which was converted to a landfill in 1969, after the soil overburden had been excavated to within approximately two feet of groundwater. From 1971-1976, municipal waste and nearly 9 million gallons of chemical waste were dumped into the landfill (ATSDR Site Summary: Price's Pit). These wastes are known to have included industrial chemicals, sludges, oils, greases, and septic/sewer wastes. There are reported incidences of tank trucks emptying bulk waste into the pit, while other trucks dumped both punctured and unpunctured drums. Chemical waste disposal at the site was terminated in November 1972; sludge disposal was terminated in May 1973; and municipal waste disposal was terminated in 1976.

Ground water contamination with volatile organic compounds (VOC's) and metals was rapid. Domestic wells serving some of the residences became contaminated. A segment of the well field, located within 1 mile of this disposal site, became contaminated. This well field helped to supply water to Atlantic City's resident population of 40,000 and tourist population. Ground water seepage from the emerging aquifer threatened nearby creeks and Absecon Bay (NJDEP: Phase I Remedial Investigation Report).

In 1979, the Atlantic County Health Department recommended that the use of ground water be discontinued. Tank trucks supplied potable water to area residents. In December 1981, thirty-seven affected residences were connected to a community

water system. Also in 1981, efforts were made by state and local agencies to understand the concerns and health experiences of residents. The Atlantic City well field was relocated. Extensive engineering plans were made to reduce the migration of chemical wastes, reduce community exposure, and thereby reduce the risk of adverse health effects among the local population.

The Remedial Investigation/Feasibility Study (RI/FS) for Price's Landfill was completed in February 1985. The Record of Decision (ROD) for the final remedial program selected for the site included: security fencing, extraction wells, an aeration pre-treatment system with discharge to the Atlantic County Utilities Authority, environmental monitoring, and a landfill cap at the conclusion of the ground water extraction process. (USEPA: September 1986).

SITE VISIT

In September 1988, the site was visited by NJDOH personnel. The site is unfenced and is not posted. Residents were observed jogging on the streets adjacent to the landfill, and there was evidence of fresh dumping of construction and household waste. Illegal dumping was evident along the roadside. A slight organic odor of unknown source and composition was present on the landfill.

Large portions of the site are covered with native vegetation. Evidence of local surface water puddling and stressed vegetation was observed on site. Segments of the surface cover soils are exposed and may be subject to erosion.

Land use to the north and east is residential. The older residential area is characterized by small free standing homes, rural in nature. One new house and a two year old townhouse rental complex have been built nearby, and a township meeting has been held on a proposal to locate a school on California Avenue. This street appears to be located immediately over where the plume is estimated to be, less than 1,000 yards from the landfill.

Discussion with a local resident indicated that the ground water in many portions of this township is thought to be contaminated, that illegal dumping is very common, and that residents buy bottled water to drink, but continue to use wells for personal and household cleaning.

COMMUNITY CONCERNS

A series of meetings were held by the New Jersey Department of Environmental Protection with members of the community from 1982-1986 to discuss the site hazards and planned remediation. The community's primary concerns centered around the sources of their individual exposure, its intensity and possible health effect(s), the spreading of the plume of contamination to additional areas, and the impact of proposed remedial actions.

According to NJDEP's Community Relations Plan for Price's Landfill, the following specific comments have been made at public meetings on Price's Landfill:

I am angry. Why didn't some one tell us the water was contaminated before we drank it?

So far nobody knows how badly we have been hurt (by using the contaminated drinking water).

Chemical odors are noticeable at the site. My grass has died.

Is the air in my house all right?

When you start cleaning up the water and the chemicals are vented into the air, what is going to happen to us who live nearby?

What is going to happen to the water table as a result of pumping the groundwater? Will wells dry up? Will we get salt intrusion?

What other chemicals beside VOC's and metals are in the site?

A major portion of the public water supply for Atlantic City is from drawn wells within the sphere of influence of the advancing contaminant plume. Will the municipal water supply be protected?

Will the proposed remedial plan adversely affect the quality of municipal sewage treatment in the Atlantic County plant?

What will happen if, as the modeling shows, contaminants enter the swampy area which bounds Absecon Creek?

ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

The primary contaminated media that has been a concern is off-site groundwater. In 1980, contamination of groundwater with volatile organic compounds was identified as a major threat to the community. Studies showed that the shallow aquifer was highly contaminated near the site, and that concentrations decreased approaching the outer margin of the plume. Monitoring data from the Remedial Investigation Report indicate that benzene, chloroform, and 1,2-dichloroethane were present in groundwater within 1/4 mile of the site at thousands of ppb level, while phenol, vinyl chloride and chromium were in the hundreds of ppb, and arsenic and lead were in the tens of ppb. There were no data presented describing levels of "semi volatile" organic compounds.

Field data collected from 1982-1984 as part of the Remedial Investigation revealed that ground water contamination in the shallow aquifer near the site approximated 40-50,000 ppb total VOC's. Data indicated the contamination plume extended nearly 1 mile off-site, and was moving in an east-northeast direction. The concentration of total VOC's at the outer perimeter of the plume ranged from 10 ppb to 1000 ppb.

In 1979, a residential well belonging to a resident living within 1/4 mile of the site was reported to be highly contaminated with VOC's. (NJDEP: Bureau of Community Relations files.) This well is no longer in use. Concentrations of VOC in this well were reported to include:

Benzene	15,200 ppb
Dichloroethane	24,800 ppb
Trichloroethylene	10,700 ppb
Methylene Chloride	6,400 ppb

In 1981, a municipal water line was made available to 37 affected homes in the community. However in 1982, the Atlantic County Health Department reported that 22% of the families living in the vicinity of the dump were still using domestic wells. Current information regarding the use of domestic wells for potable purposes is not definitive.

In 1983, a well field supplying potable water for the Atlantic City Municipal Utility Authority and the New Jersey Water Company was located in close proximity to the site. One well, AC 13, was located less than 1 mile from Price's Landfill. Results of chemical sampling conducted in 1981 showed the presence of trace concentrations of tetrachloroethylene, trichloroethylene, and 1,2-dichloroethane. Well-head sampling

was initiated at AC-2, AC-4, and AC-13, the wells closest to the disposal site. Initial remediation efforts undertaken by the New Jersey Department of Environmental Protection involved relocating the Atlantic City well field to a position 2 miles north-west of the landfill on the northern shore of the western Atlantic County Municipal Utility Authority reservoir.

In 1986 chemical analysis of drinking water from Atlantic City revealed the presence of carbon tetrachloride (3 ppb), 1,2,4-trichlorobenzene (1.2 ppb) and trans-1,2-dichloroethylene (5 ppb). The source of this contamination has not been identified, but there are four Superfund sites and three other landfills in the drainage basin feeding the Absecon Creek. Seepage from these sites may influence water quality both above and below the new well field.

According to the RI/FS Report, ground water contaminated by the Price's Landfill appears to have traveled in an east-northeast direction from 1969 to 1984. Computer models anticipate that the contaminated groundwater moving from Price's Landfill will surface in the swampy area adjacent to Absecon Creek, and will enter this drainage.

The continued dumping of domestic wastes and refuse constitute the primary physical hazards associated with Price's Landfill. Sharp objects and glass are in abundance, as are old pieces of furniture and large appliances. The site is not fenced or posted.

QUALITY ASSURANCE/QUALITY CONTROL

The data generated on contaminants from Price's Landfill are from samples taken during or before 1985. Quality assurance and quality control (QA/QC) data on the samples taken prior to 1985 were not available for review. Since much of the health assessment is based on environmental data, the quality of the data has an impact on the health assessment. Information regarding QA/QC reviews, if any, is being sought.

DEMOGRAPHICS

There is little demographic information available regarding the Price's Landfill area with the exception of the site's impact on the Atlantic City water supply. Approximately 100 houses are located within 1.5 miles of the site, yielding a calculated population of 380. (assuming 3.8 individuals per household.) There is a need to compile accurate information on the number of

immediately local (site perimeter) households/persons who are impacted by the site, as well as data concerning possible sensitive populations in the area.

ENVIRONMENTAL DATA GAPS

A number of data gaps, encompassing both environmental and demographic data, need to be filled to accurately assess the potential public health implications of the site. These gaps include:

- * There are no data on the direction of movement or extent of contamination in ground water in 1988.
- * There are no recent data regarding the current usage or level of contamination in residential wells.
- * There are no data available on soil contamination if any, on and near the site.
- * There is no information available on the level of contaminants, if any, in ambient air over the site.
- * Although Atlantic City's wells were relocated two miles from Price's Landfill, analysis of system distribution samples have detected low levels of volatile organic compounds. No data are available to determine contaminant levels in Atlantic City relocated wells, or N.J. Water Co. well #3, and the potential contribution of the site to such contamination.
- * No information or data is available on the effect of moving the supply wells on groundwater flow in the area.
- * No data are available from seepage pits to indicate the quality of water entering Absecon Creek or the possible impact on sediment and biota.

EXPOSURE PATHWAYS

The contamination in Price's Lanfill has the potential for dispersal through soil, water, air, and food which could lead to community exposure and potential health hazards (NJDEP: Phase I Remedial Investigation Report). Potential routes of exposure include ingestion (of potable water and on-site soil), inhalation (of volatilized or suspended contaminants), and dermal absorption (from water or soil).

Groundwater contamination from Price's Landfill has moved off-site affecting nearby residents and production wells serving Atlantic City, and ultimately may threaten the nearby estuarine environment. Although alternative water sources may have been provided to those residents with contaminated well water, such water may still be used for other domestic purposes including bathing and crop irrigation. Users of water drawn from the contaminated aquifer were subjected to oral, respiratory, and dermal exposure.

Although residents complained of the odors emanating from the site during the 1970's and 1980's (Community Relations Plan), there is no information available concerning either the concentration or the composition of suspected organic vapors. Many of the chemicals known to have been dumped at this site have relatively high vapor pressures at ambient temperature. Therefore, it would be reasonable to expect air contamination emanating from the Landfill.

The Atlantic City drinking water collected in 1986 was found to contain trace levels of VOC contaminants. The source of this contamination is unknown but disposal practices in the Absecon Creek drainage basin have given rise to multiple point sources of contamination. Although the Atlantic City well field was relocated 2 miles north of Price's Pit, it is possible that the pit (being in the Absecon Creek drainage basin) could have an effect on the quality of Atlantic City drinking water.

PUBLIC HEALTH IMPLICATIONS

There is little information from which to accurately estimate the nature and magnitude of past exposure at the site. Presently the site is neither fenced nor posted. Thus, exposure to the physical and/or chemical hazards remaining on this site is still possible.

In 1982, the State and local departments of health conducted a survey of 50 households near Price's Landfill. The defined study area includes these 50 households and covers a sector up to about one and a half miles downgradient (north and northeast) of Price Landfill. Residents living within these households were defined as the exposed population. (Twenty seven percent of the houses to be sampled in the "exposed" segment of the community were found to be vacant.) The unexposed population or control households were from a similar type of housing in the same county. The survey consisted of a questionnaire administered to each member of the household to gather information on exposure to toxic substances, the presence of symptoms and reported medical

problems. Questions focused on: the quality of the potable water supply, fertility, irritation (of the eyes, nose, and skin), gastrointestinal and muscular symptoms. Symptoms and disease were self-reported. Information provided by residents living adjacent to the dump was compared with that provided by controls living some distance away. Rashes, eye irritation, muscle pain, and nausea were more commonly reported by the potentially exposed population. Symptoms were more common among females. As there is no quantitative information on the exposures of each individual a correlation between exposure (contaminated water) and health outcome is difficult to determine.

The RI/FS presents a risk assessment on the use of contaminated drinking water by residents. This assessment is based on limited residential well data developed by USEPA in 1980 and 1984 which show VOC contamination. The consequent discussion of health risk is largely limited to cancer. Cancer risk estimates may have been underestimated due to the limited exposure pathways that were used in the risk assessment (eg., enrichment of indoor air contamination resulting from domestic water use was not considered). Additionally, data showing potential exposure to other carcinogens known to be present in the ground water (eg. vinyl chloride) were not used. Data developed by the New Jersey Department of Environmental Protection which demonstrated that residential wells at critical locations contained up to three orders of magnitude more contamination than those cited, were also not considered in the risk assessment.

Exposure to contaminants in the groundwater such as vinyl chloride, benzene, or via other exposure pathways, if any, could result in an increased risk of cancer or other chronic diseases. Acute health effects may have been a public health concern at the maximum concentrations when the site was first identified.

The public health impact of using water from the contaminated aquifer may have been sufficient to cause adverse health effects on residents living close to the site. Although thirty-seven households were connected to a public water supply in 1981, there is no information on whether private wells were closed and capped. If the wells continue to be used for cleaning or bathing, exposure may be continuing. The presence of new dwellings in the area, including a proposed school, underscores the importance of gathering information on the current extent and movement of the contaminant plume.

Because of the data gaps associated with information on potential air, soil, and sediment contamination, these pathways

cannot be accurately evaluated. It is possible that exposure to contaminants in the air and soil could pose additional public health concerns.

CONCLUSIONS AND RECOMMENDATIONS

On the basis of the information reviewed, the Price's Landfill Site is considered to be a public health concern because humans were exposed, and may still be exposed to hazardous substances at concentrations that may result in adverse health effects. As noted in the Environmental Contamination and Physical Hazards and the Environmental Pathways sections, human exposure to VOCs has occurred in the past, and may be occurring, via ingestion and use of contaminated water. Information on groundwater use in the area is needed to accurately assess the magnitude of the health concern.

Many questions must be addressed at Price's Landfill before the impacts of the site on public health can be assessed. Environmental and demographic information gaps, as described above, need to be filled. In particular:

- * A definitive survey of local ground water use is recommended to determine how many residents, if any, are still utilizing ground water in the site's area of influence.
- * A better understanding of the groundwater plumes current extent and movement is necessary.

In addition, fencing and posting of the site should be done immediately. Recent development pressure in the community has resulted in a proposal to build a school in the general vicinity of the disposal site. This proposal should be reviewed in the context of potential exposure.

The risk assessments performed in the RI/FS of the site may have underestimated the effect of the contamination and consequent risk to the local population. The effectiveness of initial and recommended remedial actions in the ROD cannot be judged until more information is available.

In accordance with CERCLA as amended, the Price's Landfill site has been evaluated for appropriate follow-up with respect to health effects studies. Since human exposure to on-site and off-site contaminants may currently be occurring and has occurred in the past, this site is being considered for follow-up health

studies. After consultation with Regional EPA staff and State and local health and environmental officials, the Division of Health Studies, ATSDR and NJDOH, will determine if follow-up public health actions or studies are appropriate for this site.

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

Superfund Documents:

Agency for Toxic Substances and Disease Registry (ATSDR), Site Summary: Price's Pit #1, July 1988.

New Jersey Department of Environmental Protection (NJDEP), Remedial Investigation Feasibility Study; Price's Pit #1, (performed by CDM), 1985.

NJDEP, Public Meeting Fact Sheet; July, 1986.

United States Environmental Protection Agency, Record of Decision: Price's Pit #1, Appendix A-G, September 1986.

Interviews:

NJDEP Community Relations Coordinator. NJDEP Site Manager
NJDEP Technical Coordinator
Ocean County Health Department Environmental Coordinator.