

# Health Assessment for

BRICK TOWNSHIP LANDFILL

CERCLIS NO. NJD980505176

BRICK TOWNSHIP, OCEAN COUNTY, NEW JERSEY

JUN 20 1990

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  
BRICK TOWNSHIP LANDFILL  
OCEAN COUNTY  
BRICK TOWNSHIP, NEW JERSEY**

Prepared By:  
Environmental Health Service  
New Jersey Department of Health

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

**OBJECTIVES**

The health assessment at this stage of the remediation can best supplement the Superfund process by:

- identifying any immediate actions that could protect public health,
- reviewing the data collected to date and identify data gaps,
- identifying potential exposure pathways and contaminants of concern,
- making recommendations regarding future sampling of the site,
- addressing public health concerns of area residents, and
- deciding if a feasibility health study is warranted.

This health assessment focuses on public health issues. Environmental issues and natural resources damage issues, which may play a key role in the remediation of the site are not addressed in the assessment. The emphasis of the health assessment on public health is not intended to diminish the importance of remediation based upon environmental damage.

**SUMMARY**

The Brick Township Landfill is located near residential areas in Brick Township, Ocean County, New Jersey. The landfill reportedly accepted wastes including septage, sewage, and chemical wastes over a 30-year period. The liquid wastes were disposed of in percolation pits (lagoons) on-site. The landfill ceased operations in 1979 and a two-foot layer of soil was deposited on the solid waste disposal and septage pit

areas. There is evidence of groundwater contamination at the site.

The Phase I Remedial Investigation/Feasibility Study (RI/FS) report was released in March 1988. Additional sampling of various off-site and on-site matrices is planned to more fully characterize the type and level of contamination in Phase II of the RI. Currently, the site needs to be better secured to prevent access for recreational uses.

The Brick Township Landfill is a potential public health concern. Since human exposure to on-site/off-site contaminants may currently be occurring (and may have occurred in the past), this site is not being considered for follow-up health studies.

## **SITE DESCRIPTION**

Brick Township Landfill, previously known as either McCormick's Dump or French's Landfill, is ranked 12 of the 110 Superfund site in New Jersey. The Landfill, which encompasses approximately 42 acres of land, is located in Brick Township, Ocean County, New Jersey. It is bordered by Sally Ike Road (Route 549) on the east and Garden State Parkway on the west. Residential areas are located in the southeast and southwest, and new home construction has started adjacent to the northeast corner of the landfill. The site is bordered by wooded areas in the north. Unless otherwise specified, information in this section is taken from the Phase I RI/FS report.

Brick Township Landfill has been in operation for over 30 years and had reportedly accepted wastes, including municipal solid waste, commercial waste, bulk liquid waste, and sewage and septic waste. Approximately 100,000 gallons/day of septage was disposed of by the Public Utility Commission in the three percolation pits on the site. In 1971, 1,875 55-gallon chemical drums were accepted for disposal at the site. In 1979, all disposal operations ceased at the landfill. Subsequently, the solid waste disposal and septage pit areas were covered with a two-foot layer of soil. Some of the soil used for capping was excavated from the northeastern section, leaving a borrow pit on the site. According to the New Jersey Department of Environmental Protection (NJDEP), three metal storage tanks (1,900-2,700 gallon capacity) have been removed from the landfill.

There is evidence of groundwater contamination. In 1981, as a precautionary measure, domestic wells adjacent to the site were closed.

The final draft of the Phase I Remedial Investigation/Feasibility Study (RI/FS) was released in March 1988. NJDEP is the lead agency for remedial operations on the Brick Township Landfill.

#### **SITE VISIT**

A site visit was performed by NJDOH to the Brick Township Landfill in August 1989. Although the site is fenced along its southern and eastern borders and a few warning signs were posted, access to the site was easy to achieve. Dirt-bike and All Terrain Vehicle (ATV) tracks were observed at various locations on the Landfill. One set of tracks appeared to have come from the previous day or that morning. There are residences, particularly along Alaska Avenue, that abut the Landfill. Large-scale residential development was occurring in other areas that are adjacent to the Landfill.

According to the RI report, it appears that the site is not properly secured to keep children and nearby residents from entering. Joggers are reported to use the site. Complaints of the site being "lousily secured" were voiced by local residents, who told the state and township representatives during a public meeting that "people ride their motor bikes through here (landfill) and most probably aren't even aware of the hazard." (Community Relations Plan, NJDEP)

#### **COMMUNITY CONCERNS**

The concerns of the community associated with the Brick Township Landfill site are primarily over the impact to area groundwater quality. Review of NJDEP files and the summary of the latest public meeting to discuss the RI/FS study (May 28, 1987) revealed the following specific concerns:

- \* A general lack of security at the site. The site is accessible to children and utilized for dirt-biking and other activities.
- \* Assurance that storage tanks have been removed from the site.
- \* Potential for contamination of the Lanes Mill School wells. (According to officials from the Brick Township

Public Schools and the Lanes Mill School, the school uses city water.)

- \* Possible surface water runoff from the landfill entering the Lanes Mill School property.

Other community concerns included the availability of official documents and reports concerning the site and questions as to why purchasers of property adjacent to the site were not notified of the presence of a Superfund site. Residents have also expressed an interest in actively participating in the review and commentary process for the proposed RI/FS.

#### **ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS**

The site has not yet been fully characterized, although further monitoring is planned in Phase II of the RI/FS. Unless otherwise specified, the following information is taken from the Phase I RI/FS report (1988).

##### Sampling: 1978 - 1985:

Between 1978 and 1985, sampling was conducted on various matrices at the Brick Township Landfill (including well water, surface water, and residue in the septage pits) to characterize contamination on the site. Approximately fifty chemical compounds were identified in the media sampled from within and surrounding areas of the Brick Township Landfill. Contaminants detected were grouped into five general categories, i.e., pesticides, inorganics (metals), base-neutrals, halogenated organics, and organic solvents. Because of potential quality assurance/quality control (QA/QC) problems, most of the data before 1985 is reviewed in a qualitative manner.

Pesticides were found in septage pits and landfill monitoring wells, with the highest concentrations in the southeastern section of the landfill near Sally Ike Road. Pesticides found included alpha-, beta-, and gamma-BHC, chlordane, heptachlor, heptachlor epoxide, and alpha-endosulfan.

Some of the inorganic contaminants detected in the landfill and off-site media included lead, chromium, cadmium, and iron. Of the inorganics measured in the landfill and off-site monitoring wells, the highest concentrations were observed in the southeast quadrant of the site.

Three phthalate esters (ethylhexyl, butylbenzyl, and di-n-butyl) and two polynuclear aromatic hydrocarbons (naphthalene and anthracene) were detected in certain samples. In December 1981, up to 100 ppm of phthalates were found in the septage pits. However, these concentrations were not found at other times. The highest concentrations of phthalates appeared in the monitoring wells located in the southeastern quadrant. Samples from monitoring wells in the southeastern quadrant also indicated the presence of naphthalene and anthracene.

Compounds of concern detected in the halogenated hydrocarbon series within the landfill and in the surrounding areas of the landfill, in various matrices, included dichloroethanes and chlorobenzenes.

Samples from monitoring wells contained dichloroethanes, dichloroethenes, and chlorobenzene. Typically, the highest concentrations appeared in wells near the southeastern quadrant. According to the RI/FS report, it is not clear at this time if well water contamination from halogenated compounds is from the landfill leachate or from other sources such as the possible use of PVC adhesives in well construction, since later samples did not verify the initial results.

Non-chlorinated volatile organic compounds detected in the various on-site and off-site matrices included ethylbenzene, toluene, and benzene. Water samples from the wells in the southeastern quadrant section showed the highest concentrations.

Based on analytical data collected on various matrices prior to 1985, it appears that the groundwater has been contaminated and that the contaminants from the landfill are migrating towards the southeastern section of the site.

#### Phase I RI/FS - Sampling: 1987:

Toxic contaminants of concern detected in monitoring wells included cadmium, lead, mercury, benzene, chlorobenzene, trichloroethane, tetrachlorethylene, and phthalates. Arsenic, cadmium, chromium, lead, and mercury were detected in leachate water/sediment samples. Chlorobenzene, toluene, xylene, and ethylbenzene were found in test pit soil.

An appreciable difference exists in the concentration of organics chemicals that were detected in the groundwater data before and after 1985. Previously, a wide range of chlorinated organic chemicals were found in the on-site and

off-site wells. In most cases, highest concentrations detected were in areas in the southeastern quadrant of the Brick Township Landfill.

Interpretation of levels of chlorinated compounds exceeding 1,000 ppb in groundwater in sampling conducted prior to 1985 should be treated with caution. According to the RI/FS, at least one of the wells reportedly had been constructed with PVC adhesives, and later sample results failed to confirm initial findings.

Elevated levels of soil gas (methane) were detected at the landfill and the levels at the site boundaries exceeded 1,000 ppm. In addition to methane, non-methane constituents were also found to be present in the soil gas, and elevated concentrations were detected near the northern and eastern sections of the landfill.

#### Physical Hazards

Removal of the soil for capping of the septage pit area left a 3-4 foot deep borrow pit in the northern section of the site. At times, the borrow pit may contain standing water. During heavy rains, water accumulates in the borrow pit and could pose a potential drowning hazard to children. This pit should be filled and access to the pit area be restricted to avoid accidents.

#### **QUALITY ASSURANCE/QUALITY CONTROL**

According to the RI/FS Phase I, all pesticide/PCB data in test pit soils were rejected, based on QA/QC guidelines. No laboratory reports and QA/QC review information are available on the analytical data collected on the Brick Township Landfill prior to 1985. In general, the lack of adequate information on QA/QC reduces the confidence that one has in assessing the potential health hazard that a waste site poses or has posed.

#### **DEMOGRAPHICS**

Within a one-mile radius of the landfill, the population size is reported to be approximately 3,000 (ATSDR Site Summary, 1988). Residential areas are located close to the landfill site. At the southern boundary is a townhouse development (Briar Mills Village) and a section of Sutton Village. New housing construction has started adjacent to the northeast corner of the site. As a result of groundwater

contamination, an elementary school was not built on an area east of the landfill known as McCormick Tract.

No information is available on the presence of potentially susceptible groups in the community, i.e., sick, children or elderly.

#### **ENVIRONMENTAL DATA GAPS**

Although samples have been taken from all of the necessary media on site (with the possible exception of air), the site has not been fully characterized. Additional samples of the surface soil, subsurface soil, groundwater, surface water, sediment, and possibly air, need to be collected and analyzed to delineate the contaminants and to identify potential localized areas of concern. Further site characterization is planned by NJDEP in the Phase II RI/FS.

#### **EXPOSURE PATHWAYS**

Landfill leachate has contaminated the groundwater as is evident from the presence of chemicals in off-site wells. The landfill is above a portion of the uppermost aquifer of the region, the Cohansey Sand. The underlying Cohansey aquifer is a major source of drinking water for area residents. The extent of groundwater contamination is not clear at this time.

Soil gas migration is of considerable concern as elevated levels of methane and non-methane organic soil gas have been detected near site boundaries. Seepage of methane and other non-methane organic soil gas into dwellings adjacent to the border could produce a potentially explosive indoor environment. Furthermore, exposure to gaseous contaminants that migrate from the site could occur, thus creating a potential health hazard for the inhabitants.

Human exposure to chemical contaminants from the Brick Township Landfill could occur through inhalation (gaseous pollutants or airborne respirable particles), ingestion of contaminated water and surface soil, and skin contact.

The facility is accessible to unauthorized personnel as is evident from the presence of dirt-bike and ATV trails at various sites on the landfill. Contaminated soil may be inhaled, ingested, or deposited on the skin from exposure to clouds of dust generated on the site from soil disturbance (e.g., trail bike riding or other recreational activities).

Incidental exposure through ingestion of surface soils can also occur from eating and smoking without prior washing of soil contaminated hands. Children getting on site are a primary concern with soil ingestion.

One private well with low level contamination is still being used for drinking and other domestic purposes. Other wells are apparently used for non-drinking outdoor uses.

#### **PUBLIC HEALTH IMPLICATIONS**

At this stage of the investigation, when the contamination on the site has not yet been fully delineated, it is difficult to accurately assess the public health implications of the site. As discussed above, the public may be exposed to contaminants from the site because of groundwater contamination and recreational use of the landfill area.

Exposure to groundwater contaminants may have occurred prior to the installation of a public water supply system. One well in the area is still in use.

#### **CONCLUSIONS AND RECOMMENDATIONS**

On the basis of the information reviewed, the Brick Township Landfill is a potential public health concern. As noted in the Exposure Pathway Section, human exposure to contaminants could occur via inhalation, ingestion, and/or skin contact.

Since exposure to landfill contaminants can potentially occur via various pathways, the landfill should be properly secured on all boundaries to restrict entry. In addition, signs warning the public of possible harmful exposure should be erected to ensure community awareness of health hazards associated with possible exposure to landfill contaminants.

The borrow pit in the northern section of the site needs to be filled immediately to prevent accidents, such as accidental drowning of children when the pit could be filled with water.

Private wells in the area that are still in use for drinking or other purposes should be sampled periodically.

Better information on the demographics of the population living near the site should be gathered. Sensitive

populations in communities living adjacent to the site should be identified and informed of preventive measures to minimize possible exposure to landfill contaminants.

Additional testing, planned in the Phase II RI/FS, is needed to characterize on-site and off-site contamination and the direction and extent of the leachate plume.

In accordance with CERCLA as amended, the Brick Township Landfill 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 Brick Township Landfill 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

### Documents and Memoranda:

Site Inspection Report, August 5, 1982.  
Hazardous Ranking Scoring Information, August 9, 1982.  
ATSDR Site Summary, June 20, 1988.  
NJDEP, Brick Township Landfill Project, Remedial  
Investigation and Feasibility Study, Volume I and II,  
March, 1988. Ebasco Services, Inc.  
Site Status Reports on Hazardous Waste Remediation,  
October, 1987, NJDEP.  
Community Relations Plan, Brick Township Landfill.  
Division of Waste Management, NJDEP, September, 1986.  
Memorandum - Charlotte Snyder, NJDEP/DHSM, to  
Martha Coopersmith-Gray, NJDEP/BSM, "Brick Township  
Landfill Public Meeting."

### Interviews/Telephone Communication:

Sanitary Inspector, Ocean County Health Department.  
Bureau of Community Relations/NJDEP.  
Health Officer, Ocean County Health Department.  
Principal Inspector, Ocean County Health Department.  
Principal, Lanes Mill School, Brick Township, Ocean  
County.  
Business Administrator, Brick Township Public Schools,  
Brick Township, Ocean County.