

# Health Assessment for

ELLIS PROPERTY

CERCLIS NO. NJD980529085

EVESHAM TOWNSHIP, BURLINGTON COUNTY, 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  
ELLIS PROPERTY  
BURLINGTON COUNTY  
EVESHAM TOWNSHIP, NEW JERSEY**

Prepared by:  
Environmental Health Service  
New Jersey Department of Health

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

**OBJECTIVES**

A report on Phase I of the Remedial Investigation (RI) for the Ellis Property site has not yet been completed. 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 surrounding future sampling of the site, and
- \*addressing public health concerns of area residents, including the proposed development of residential housing units in the area.

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 this assessment. This issue is particularly important at Ellis Property where contaminants from the site may drain into a wetland area behind the site. The emphasis of the health assessment on public health is not intended to diminish the importance of remediation based upon environmental damage.

## **SUMMARY**

The Ellis Property site was contaminated by a drum recycling operation that was conducted on the site. Since groundwater in the area is used for potable purposes, groundwater exposure pathways are considered to be the major pathways of concern. Although quality assurance/quality control (QA/QC) problems were encountered in the sampling of potable wells, potable wells (based on three rounds of samplings) are not considered to be a public health concern. Other contaminated media and pathways are also addressed in this assessment. The contaminants on the site need to be better delineated and demographic information on the site needs to be provided. In addition, demographic information on the area surrounding the site is desirable.

The Ellis Property Site is a potential public health concern under current conditions because humans may be exposed to hazardous substances. Since human exposure pathways to contaminants from the site could not be documented, the Ellis Property Site is not being considered for follow-up health studies. If data becomes available suggesting that human exposure to significant levels of hazardous substances is currently occurring or has occurred in the past, this site will be reevaluated for any indicated follow-up.

## **SITE DESCRIPTION**

Ellis Property is located in Evesham Township in Burlington County, New Jersey. The site is a New Jersey Department of Environmental Protection (NJDEP) lead and is ranked 84 out of the 110 Superfund sites in New Jersey. The site was used as a drum recycling operation, they may have been active until 1979 and used to deposit "empty" drums as recently as 1982. The site is in a semi-rural area and is surrounded by agricultural lands (soybean fields). There is pressure to develop the areas around the site into residential housing (discussed below) (Testimony given by Ellis Site Task Force).

Investigations of the site began in 1980. Approximately 300 drums were found on site in various stages of deterioration. Soil had been stained, and areas of the site were devoid of vegetation. Many of the drums contained acidic or caustic solutions. In 1983, NJDEP removed some of the drums and stained soils from the site. In 1987, two farm buildings on the site were demolished, an area impacted by acidic waste spills was neutralized, and drums that were not removed from the site in 1983 were collected and stacked. The rubble, along with the latter set of drums, are still on the site, although NJDEP is working on their removal. (Personal communications, NJDEP). Based on the results of Phase I sampling data, phase II of the RI will be conducted to delineate contaminants.

## **SITE VISIT**

A site visit was conducted by the New Jersey Departments of Health and Environmental Protection on August 3, 1988. There were no signs indicating that the site was a hazardous waste site or to discourage trespassing on the site. A three-foot snow fence delineated the site but did little to keep trespassers off of the site, and was down in some locations. High vegetation may help to keep people off the site, although there have been indications of people and deer on the site.

Drums and rubble from the demolished farm buildings remain on site, in a designated area. The pile of drums and the piles of rubble create obstacles that may be tempting to climb. In addition, the deteriorating drums leave sharp rusted edges exposed. Although most of the drums are empty, some contain small amounts of unknown, and potentially hazardous, substances (Personal communications, NJDEP). These materials need to be removed from the site, as soon as possible.

Another physical hazard that was observed on the site is a cistern near the "lime area". The cistern may have been used to dump chemicals directly into the ground and/or to the groundwater. The cistern was covered by vegetation and could be a hazard to a trespasser who does not see the hole in the ground. The cistern needs to be covered over and/or clearly identified.

Two other observations of the site were: (1) the area in which polychlorinated biphenyls (PCBs) had been found remains stressed with respect to vegetative growth and speciation, and (2) a water heater from one of the farmhouses is still intact. The insulation around the water heater is exposed and appears to be asbestos.

## **COMMUNITY CONCERNS**

Citizens in Evesham Township have a history of being interested in environmental concerns and involved in studies surrounding the Ellis Property site. An Ellis Site Task Force has been organized, that has given testimony on such issues as the sampling that has taken place on the site, sampling of the potable wells, and rezoning of the area near the site. The Ellis Site Task Force has also hired a consultant to review the sampling plan and results of the analyses.

To assess the community concerns surrounding the Ellis Property site, NJDOH spoke with the local health department, met with representatives of the Ellis Site Task Force, and reviewed files from NJDEP and testimonies from the Ellis

Property Task Force. The community concerns surrounding the public health impacts of the site may be summarized as follows:

- 1) A perceived need for additional sampling of ground water and soils both on-site and off-site.
- 2) Continued concern over the site's effect on area ground water and possible contaminant plume definition and migration.
- 3) The accessibility of the site to hunters and area children.
- 4) The possible contamination of adjacent active farming areas.
- 5) The lack of any fencing, posting, or efforts to limit access to the site.
- 6) Opposition to rezoning the site to permit development of the area until completion of remediation efforts.
- 7) The possible effect of the site upon Lenape High School which is located approximately one mile sidegradient from the site.
- 8) The lowering of drinking water maximum contaminant levels for lead.
- 9) The presence of other sites in the area that may impact upon the groundwater and environmental quality of the surrounding area.

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

The site has not been fully characterized, since the contaminants that remain on the site have not been accurately delineated. Further sampling will therefore be needed (discussed below). However, consultants to NJDEP have analyzed samples that were taken from a number of different media, including groundwater on-site, potable wells in the area, surface water, soil, and sediment.

Three rounds of potable well sampling were conducted by NJDEP in the neighborhood around Ellis Property, in May 1987, September 1987, and April 1988. The detected concentrations and presence of contaminants that were detected in the first round of sampling were questionable due to quality assurance/quality control (QA/QC) concerns. These contaminants were methylene chloride, acetone, phthalates, PAHs, dichloropropane, lead, zinc, nickel, and antimony. Methylene chloride, acetone, bis (2-ethylhexyl)phthalate (BEHP), and lead

were all detected in the field or trip blanks. Methylene chloride, acetone, and BEHP are common laboratory introduced chemicals, and may not have actually come from the wells that were sampled. Also of concern during this round of sampling was a potable well that contained numerous organic compounds below the detections limits. The purpose of the September 1987 sampling was to confirm the presence or the absence of organic contaminants in the potable wells. The results of these samples indicated that the organics that were previously detected in the potable wells were due to analysis (QA/QC) problems. It should be noted that methylene chloride and phthalates were again detected in some of the groundwater samples as well as in trip blanks. The sampling event in April 1988 was performed to determine whether the concentration of inorganic compounds (particularly lead) that were earlier detected may have been due to QA/QC problems. The only metals that were detected during this sampling event were zinc and selenium. The concentration of zinc was below the Secondary Drinking Water Standard for zinc. Selenium was detected in 5 potable wells, in a range of 5-13 ppb. The concentration of selenium in one of the wells was above the Federal Maximum Contaminant Level (MCL) for selenium (10 ppb), but is not considered to be a public health concern since it was not previously detected in groundwater samples and the Environmental Protection Agency (EPA) has proposed that the MCL for selenium be increased to 20-50 ppb.

Samples taken, by a consultant to NJDEP, from the wells on-site contained a number of compounds that were also found in the trip blanks (and may not be from the site, as described above). These chemicals included methylene chloride, phthalates, and benzo(a)pyrene. Other than these compounds, the only organic chemical that was detected on site at a concentration that could be a public health concern was trichloroethylene (up to 3,800 ppb). Metals that were detected in the groundwater on-site at concentrations that could be a public health concern include chromium (up to 171 ppb) and lead (up to 260 ppb).

Organic chemicals were not detected in surface water samples. Metals that were detected in the surface water at concentrations above federal MCLs include chromium (up to 59 ppb) and lead (up to 40 ppb). Sediment samples detected high concentrations of chromium (up to 267 ppm), and lead (up to 263 ppm).

Soil samples on site detected some organic chemicals at very low concentrations. These include TCE, benzoic acid, phenanthrene, and fluoranthene. Metals that were detected at elevated concentrations include cadmium (up to 6.2 ppm), chromium (up to 493 ppm), lead (up to 2,070 ppm), and zinc (up to 319 ppm). PCB's had been detected in one area of the site. Soil in that area was removed and neither PCBs nor petroleum

hydrocarbons were detected upon extensive resampling of the area. (As mentioned above, the vegetation in that area still appeared to be stressed.) Samples from the lime area were analyzed for metals (two petroleum hydrocarbon scans were also performed). Analysis revealed high concentrations of chromium and lead. Petroleum hydrocarbons were detected in one sample at a concentration of 42 ppm.

Based on their detected concentrations, toxicity, environmental fate, and frequency of detection the following chemicals were determined to be the chemicals of concern in the various media that were sampled:

**Monitoring wells:** TCE, chromium, lead.

**Surface water:** Chromium, lead.

**Sediment:** Chromium, lead.

**Soil:** Cadmium, chromium, lead.

Chromium and lead are included as contaminants of concern in most of the media listed above. Methylene chloride, benzo(a)pyrene, acetone, and phthalates are not listed as contaminants of concern since they were all detected in trip blanks and may be due to laboratory contamination.

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

Quality assurance/quality control has been a problem at the site. Resampling of potable well did clear up much of the previous QA/QC concerns. The primary problem was due to chemicals being detected in blanks. Caution needs to be taken to not contaminate future environmental samples in either the laboratory or the field. The three rounds of potable well samples that were taken did adequately address QA/QC concerns in the potable wells. The quality of the data impacts upon the conclusions of the assessment but does not appreciably weaken the confidence in the conclusions and recommendations of the assessment.

#### **DEMOGRAPHICS**

Demographic data has not yet been provided in Superfund documents. This information should be available in the Remedial Investigation report that is due soon. Demographic information, including the population within a 2-3 mile radius of the site, the number of potable wells and downgradient potable wells within a radius of the site, and the identification of sensitive subpopulations, is necessary to adequately perform a health assessment. When this health assessment is updated, the demographic information which was provided in the RI will be reviewed for content and accuracy.

According to a conversation with NJDEP, there are approximately twenty potable wells within a one mile circumference of the site.

#### **ENVIRONMENTAL DATA GAPS**

The contaminants on the site need to be fully identified and delineated. This is designed to be accomplished by the planned RI. All necessary media have been sampled. If "hot spots" are detected during the RI that could significantly contribute to contamination of the air, localized air sampling may be necessary. Additional samples will probably be needed in phase two of the RI in the following media: groundwater, surface water, sediment, soils on-site (particularly subsurface soils and soils adjacent to the stacked drums), soils off-site (off-site soils are discussed below). Better characterization of the groundwater flow is also necessary, and is planned as part of the RI. Is the groundwater plume flowing toward potable wells, or does the contaminant plume discharge to surface water?

#### **EXPOSURE PATHWAYS**

Although there are potential human exposure pathways, there were no demonstrated human exposure pathways to contaminants on the Ellis Property. People could be exposed to contaminants from Ellis Property via the groundwater, surface water, direct contact, air, and food chain. The major pathway of concern is groundwater since there are private potable wells within a mile of the site. A housing development is being planned that will use groundwater for potable supply. Farms in the area use groundwater for irrigation. It does not appear that potable wells have, to date, been adversely affected by the site. However, possible plumes from the site need to be identified and delineated before an assessment on future groundwater impacts can be made.

There are drainage ditches on the site that potentially carry contaminants to a wetlands and an intermittent stream. Within three miles downstream, the surface water is reportedly used for recreation and irrigation. Although this pathway needs to be addressed in the RI (for natural resources damage and public health implications), the stream is removed from the site. Based on the nature of the stream, the distance from the site where the stream is utilized, and the concentration of contaminants that were detected on the site, it is unlikely that the downstream use of the stream poses a public health concern.

A pathway that has not yet been addressed is contaminant migration to the neighboring soybean fields. Although these

fields do not require groundwater irrigations, contaminants from the site could impact the fields via wind blown dust and past chemicals spills.

At the concentrations that have been detected to date, direct contact with soil does not appear to present an acute hazard. Although there is evidence of hunters and deer on the site, the likelihood of frequent or prolonged exposure is currently limited by the high weeds on the site and the isolation of the site from high population areas. There has also been evidence that other people have trespassed or dumped garbage on the site. A more accurate assessment of the public health implications of direct contact with contaminated soil can be made after more information is available.

Direct contact with the drums on site and inhalation of the asbestos insulation around the water heater could be a potential public health concern. Removal of the drums and water heater would eliminate this potential problem.

Soil and soil gas screening samples have indicated that there is no problem with inhalation of contaminants in the air. In addition, wind blown dust would be reduced by the vegetation on the site. However, if "hot spots" are detected during the RI, the air exposure pathways may require further evaluation.

#### **PUBLIC HEALTH IMPLICATIONS**

Further investigation of the site is necessary to accurately determine the magnitude of the public health implications. The second and third rounds of the potable well sampling indicated that the wells were not contaminated at levels of public health concern. Drums and rubble may pose a public health concern and need to be removed. More samples are needed on site or near the site to delineate the contamination.

A legitimate concern of the Ellis Site Task Force and other citizens in the area surrounds the development of housing in the area (Testimony by Ellis Site Task Force and personal communication with NJDEP). There is a housing development that is being proposed within a mile of the site that would use groundwater as its potable water supply. NJDEP has raised concerns about this proposed development. In addition, there is a proposal to rezone areas that are near the Ellis Property site from "Industrial Park" to "Residential 3", which would result in an increased population at risk of exposure.

#### **CONCLUSIONS AND RECOMMENDATIONS**

On the basis of the information reviewed, the Ellis Property site is a potential public health concern under

current conditions because humans may be exposed to significant levels of hazardous substances. As noted in the Exposure Pathways Section, human exposure to contaminated groundwater, surface water, soil, and air is possible but not documented.

The following recommendations are provided to protect the public health from potential adverse impacts of the site:

- \*Physical hazards and the asbestos insulated water heater need to be removed from the site.
- \*The site needs to be fenced and identified as a hazardous waste site.
- \*The site needs to be better characterized.
- \*Areas near to site should not be rezoned for residential use, until assurances can be made that the site will not impact the health of future residents.

In accordance with CERCLA as amended, the Ellis Property site has been evaluated for appropriate follow-up with respect to health effects studies. Since human exposure pathways to contaminants from the site could not be documented, the Ellis Property Site is not being considered for follow-up health studies. 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: Remedial Investigation - Draft Report (August 1988)  
Site Investigation Report (July 6, 1982)  
Hazardous Rank Scoring Package (July 26, 1982)  
Data Package (used in RI report)

Interviews: Technical Coordinator, NJDEP  
Health Officer, Burlington County Health  
Department  
Ellis Site Task Force

File reviews: Technical Coordinator, NJDEP  
Ellis Site Task Force