

Public Health Assessment for

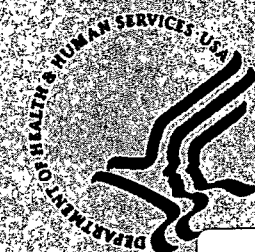
SDMS Document



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LIGHTMAN DRUM COMPANY SITE
(a/k/a LIGHTMAN DRUM COMPANY)
WINSLOW TOWNSHIP, CAMDEN COUNTY, NEW JERSEY
EPA FACILITY ID: NJD014743678
AUGUST 1, 2001

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Agency for Toxic Substances and Disease Registry



800001

Lightman Drum Company Site

PUBLIC HEALTH ASSESSMENT

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(a/k/a LIGHTMAN DRUM COMPANY)**

WINSLOW TOWNSHIP, CAMDEN COUNTY, NEW JERSEY

EPA FACILITY ID: NJD014743678

Prepared by:

**New Jersey Department of Health and Senior Services
Hazardous Site Health Evaluation Program
Consumer and Environmental Health Services
Division of Epidemiology, Environmental and Occupational Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry**

800002

THE ATSDR PUBLIC HEALTH ASSESSMENT: A NOTE OF EXPLANATION

This Public Health Assessment was prepared by ATSDR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) section 104 (i)(6) (42 U.S.C. 9604 (i)(6)), and in accordance with our implementing regulations (42 C.F.R. Part 90). In preparing this document, ATSDR has collected relevant health data, environmental data, and community health concerns from the Environmental Protection Agency (EPA), state and local health and environmental agencies, the community, and potentially responsible parties, where appropriate.

In addition, this document has previously been provided to EPA and the affected states in an initial release, as required by CERCLA section 104 (i)(6)(H) for their information and review. The revised document was released for a 30-day public comment period. Subsequent to the public comment period, ATSDR addressed all public comments and revised or appended the document as appropriate. The public health assessment has now been reissued. This concludes the public health assessment process for this site, unless additional information is obtained by ATSDR which, in the agency's opinion, indicates a need to revise or append the conclusions previously issued.

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FOREWORD

The Agency for Toxic Substances and Disease Registry, ATSDR, was established by Congress in 1980 under the Comprehensive Environmental Response, Compensation, and Liability Act, also known as the *Superfund* law. This law set up a fund to identify and clean up our country's hazardous waste sites. The Environmental Protection Agency, EPA, and the individual states regulate the investigation and clean up of the sites.

Since 1986, ATSDR has been required by law to conduct a public health assessment at each of the sites on the EPA National Priorities List. The aim of these evaluations is to find out if people are being exposed to hazardous substances and, if so, whether that exposure is harmful and should be stopped or reduced. If appropriate, ATSDR also conducts public health assessments when petitioned by concerned individuals. Public health assessments are carried out by environmental and health scientists from ATSDR and from the states with which ATSDR has cooperative agreements. The public health assessment program allows the scientists flexibility in the format or structure of their response to the public health issues at hazardous waste sites. For example, a public health assessment could be one document or it could be a compilation of several health consultations the structure may vary from site to site. Nevertheless, the public health assessment process is not considered complete until the public health issues at the site are addressed.

Exposure: As the first step in the evaluation, ATSDR scientists review environmental data to see how much contamination is at a site, where it is, and how people might come into contact with it. Generally, ATSDR does not collect its own environmental sampling data but reviews information provided by EPA, other government agencies, businesses, and the public. When there is not enough environmental information available, the report will indicate what further sampling data is needed.

Health Effects: If the review of the environmental data shows that people have or could come into contact with hazardous substances, ATSDR scientists evaluate whether or not these contacts may result in harmful effects. ATSDR recognizes that children, because of their play activities and their growing bodies, may be more vulnerable to these effects. As a policy, unless data are available to suggest otherwise, ATSDR considers children to be more sensitive and vulnerable to hazardous substances. Thus, the health impact to the children is considered first when evaluating the health threat to a community. The health impacts to other high risk groups within the community (such as the elderly, chronically ill, and people engaging in high risk practices) also receive special attention during the evaluation.

ATSDR uses existing scientific information, which can include the results of medical, toxicologic and epidemiologic studies and the data collected in disease registries, to determine the health effects that may result from exposures. The science of environmental health is still developing, and sometimes scientific information on the health effects of certain substances is not available. When this is so, the report will suggest what further public health actions are needed.

Conclusions: The report presents conclusions about the public health threat, if any, posed by a site. When health threats have been determined for high risk groups (such as children, elderly, chronically ill, and people engaging in high risk practices), they will be summarized in the conclusion section of the report. Ways to stop or reduce exposure will then be recommended in the public health action plan.

ATSDR is primarily an advisory agency, so usually these reports identify what actions are appropriate to be undertaken by EPA, other responsible parties, or the research or education divisions of ATSDR. However, if there is an urgent health threat, ATSDR can issue a public health advisory warning people of the danger. ATSDR can also authorize health education or pilot studies of health effects, fullscale epidemiology studies, disease registries, surveillance studies or research on specific hazardous substances.

Community: ATSDR also needs to learn what people in the area know about the site and what concerns they may have about its impact on their health. Consequently, throughout the evaluation process, ATSDR actively gathers information and comments from the people who live or work near a site, including residents of the area, civic leaders, health professionals and community groups. To ensure that the report responds to the community's health concerns, an early version is also distributed to the public for their comments. All the comments received from the public are responded to in the final version of the report.

Comments: If, after reading this report, you have questions or comments, we encourage you to send them to us.

Letters should be addressed as follows:

Attention: Chief, Program Evaluation, Records, and Information Services Branch, Agency for Toxic Substances and Disease Registry, 1600 Clifton Road (E56), Atlanta, GA 30333.

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Summary

The Lightman Drum Company (LDC) site is located at 139 Route 73 North, Winslow Township, Camden County, New Jersey. The LDC site is situated on approximately 15 acres located in a semi-rural area. Over years of operation, the LDC has been cited by the New Jersey Department of Environmental Protection (NJDEP) for numerous environmental violations. These violations have included the storing of illegal wastes and unlawful discharges of hazardous chemicals. The LDC site is currently an active drum brokerage facility, selling used and reconditioned drums. However, from 1974 through the mid to late 1980's, LDC operated an industrial waste hauling and drum reclamation business where empty drums and drums filled with wastes were stored. Due to the activities at the site, both the on-site soil and groundwater at LDC were contaminated. The site was proposed for inclusion to the National Priorities List (NPL, a.k.a. Superfund) on July 26, 1999.

The Agency for Toxic Substances and Disease Registry (ATSDR) and the New Jersey Department of Health and Senior Services (NJDHSS) have not identified completed human exposure pathways associated with the LDC site. However, on-site soil and groundwater contamination has been found during past site investigations at levels that could pose a potential public health concern. The potential for migration of contaminated groundwater requires further investigation. At this time, off-site groundwater is considered a potential pathway.

Because there is insufficient information to confirm or dismiss the existence of off-site exposure pathways, the ATSDR/NJDHSS have evaluated the LDC site to currently represent an **indeterminate public health hazard**.

USEPA has taken the lead on the LDC site from the NJDEP as of October 22, 1999. Ongoing remedial investigation at the LDC site is planned by USEPA to begin in late 2001. As new data and information become available, the ATSDR/NJDHSS will reconsider the public health implications of the LDC site as necessary. The NJDHSS and the ATSDR believe that conditions warrant ongoing environmental investigation of the LDC site to fully characterize the nature and extent of contaminated environmental media, and to determine the extent of off-site migration of contaminants.

Purpose and Health Issues

This Public Health Assessment evaluates the public health issues associated with the Lightman Drum Company site which was proposed for inclusion on the National Priorities List (NPL) on July 26, 1999. NPL or "Superfund" sites represent those sites which are associated with significant public health concern in terms of the nature and magnitude of contamination present and the potential to adversely impact the health of populations in their vicinity.

This document will, where possible, evaluate human exposure pathways associated with known contaminated environmental media within or associated with the Lightman Drum Company site and recommend actions consistent with protection of public health. At the Lightman Drum Company site, the known contaminated media include on-site soils and groundwater.

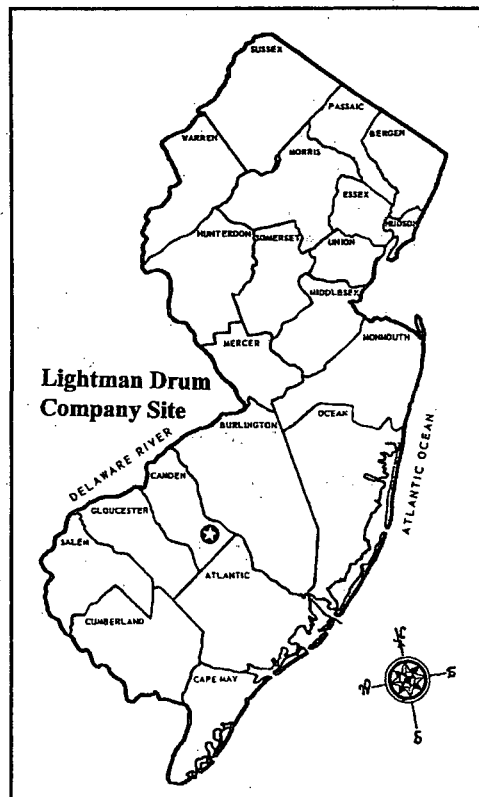
Background

Site Description and History

The Lightman Drum Company (LDC) site is located at 139 Route 73 North, Winslow Township, Camden County, New Jersey (inset). The LDC site is situated on approximately 15 acres located in a semi-rural area. The site is bounded by: Route 73 (Cedarbrook Road) to the east; the right-of-way of the Camden-Winslow branch of the Conrail railroad, and an area of wetlands which flows into the Pump Branch to the west; farmland to the northwest and southwest; and residential homes and commercial businesses to the north and south along Route 73 (Figure 1).

The LDC site is currently an active drum brokerage facility for selling used and reconditioned drums. Approximately one-third of the eastern portion of the property is used for this operation. The remainder of the 15 acres is unused forested land with the far western edge containing a wetlands area.

From 1974 through 1979, the LDC operated an industrial waste hauling and drum reclamation business where empty drums and drums filled with wastes were stored. Drums containing unknown quantities of contaminants were brought onto the LDC site. The drums were sorted and shipped to other facilities for reclamation. Reportedly, drums containing paint thinners, paints, inks, solvents, undercoatings, acids, waste oil, pesticides and glues were brought to the LDC site. After 1979 the LDC site was only permitted to handle RCRA empty drums.



39° 43.78' N; 74° 54.40' W

According to available information, during the first six months of operation, the LDC dumped materials found in the drums either directly onto the ground or into an unlined pit. This pit (5' X 7' X 5' deep) was located on the western portion of the property. In 1977, LDC installed two 5,000 gallon underground storage tanks on the property. These tanks were used to store the consolidated chemical residues from the drums. These underground storage tanks were removed in early 1984.

Chemical residues from drums were also consolidated into over-the-road tanker trailers or in other 55 gallon drums, and stored until disposal. For a limited time (1978 to 1979) the facility was permitted by NJDEP to accept hazardous waste.

Over the years of its operation, the LDC has been cited by NJDEP for numerous environmental violations. These violations have included storing illegal wastes, unlawful discharges of hazardous chemicals to the environment, and other violations of environmental regulations. In 1985, the LDC's warehouse building burned down. The cause of the warehouse fire was found to be "undetermined" by the Camden County Fire Marshal.

In 1987, the NJDEP's monitoring and legal actions led to the discovery and investigation of volatile organic chemical and heavy metal contamination in the soils at the site. The NJDEP's investigations also documented, in 1989, that the groundwater underlying the site was contaminated as a result of the company's operations.

The NJDEP issued an Administrative Order on April 12, 1988, which required LDC to prepare a Remedial Investigation (RI) at the site. In 1989, the Lightman Drum Company hired an environmental contractor, International Exploration, Inc., to perform a RI. The RI included the installation of six monitoring wells and sampling of groundwater to help characterize the site. The RI noted that both the on-site soil and groundwater at the LDC were contaminated.⁽¹⁾

In 1990, International Exploration, Inc., performed a Phase II RI for the LDC. The Phase II RI was intended to delineate the groundwater and soil contamination found during the original RI. The work included the installation of six additional on-site monitoring wells, additional soil and groundwater sampling, a door-to-door well search within one-mile of the site, and an electromagnetic survey to locate buried drums.⁽²⁾

The LDC site was added by the USEPA for inclusion to the National Priorities List (NPL, a.k.a. Superfund) on October 22, 1999.⁽³⁾

Demography and Land Use

The LDC site is located in a mixed residential and rural area. There are no school or day care facilities on or within 200 feet of the property.

There are both public and private potable water supply wells within a mile of the site which utilize the Kirkwood-Cohansey Aquifer (the aquifer underlying the site) as a source of drinking water. The Winslow Township Water and Sewer Company (WTWSC) has eight of its nine supply wells located within a 4-mile radius of the LDC site. The closest WTWSC public water supply is located approximately one mile south of the site.⁽⁴⁾ Groundwater from each individual well house pumping station is blended into a common distribution line, serving a total population of about 39,025 people. The WTWSC also sells bulk water to the Waterford Township Municipal Utilities Authority, which supplies drinking water for about 1,329 people in that Township. WTWSC also is interconnected with the Berlin Public Works.

Residents near the LDC site who are not connected to the WTWSC water supply use private wells for their source of potable water. According to the USEPA⁽⁴⁾, there are approximately 334 dug wells and 3,714 drilled wells supplying potable water to 11,801 residents within a 4-mile radius of the site. About 53 of these private wells are within 0.25 miles of the site. The closest private well is located approximately 100 feet south-southeast and downgradient of the LDC property line.

Population demographics based upon the 1990 census have been prepared by the ATSDR using area-proportion spatial analysis, and are presented in Figure 3. Within a one mile radius there are approximately 356 homes with as many as 1,126 people.

There is a wetlands area on the western end of the site. The wetland area contributes to the flow in a small stream known as the Pump Branch. Water that discharges to the Pump Branch flows southeast to the Albertson Brook.

Past ATSDR/NJDHSS Involvement

There have been no ATSDR/NJDHSS activities at the Lightman Drum Company site prior to the April 11, 2000 site visit.

Site Visit

On April 11, 2000, S. Kubiak, J. Pasquale, S. Tsai and J. Winegar of the New Jersey Department of Health and Senior Services (NJDHSS) visited the Lightman Drum Company (LDC) site. The NJDHSS was accompanied by C. Agnew of the ATSDR Regional Office. In addition, present at the site visit were representatives of the USEPA, NJDEP and the Camden County Health Department (CCHD). The site tour was conducted by the owner of the property, Mr. Jerome Lightman. The following observations were made during the site visit:

- The LDC site is a long, narrow rectangular area of about 15 acres. The site is located in a rural area with a mix of light industrial and residential properties.
- LDC is an active recycling facility with an office located in a small one-story building, and a concrete pad. The site currently operates under the name "United Cooperage." The

business receives used, empty (<1" of residue) chemical and food product drums and containers. The drums and containers are either crushed and sold as scrap, or they are sold to others as reusable containers.

- Almost half of the property appeared to be covered with thousands of empty chemical and food drums and containers of many sizes and shapes. There were numerous truck trailers located on the property. The trailers appeared to be at various stages of being filled or emptied of drums. Also observed was a drum crushing area.
- Although a perimeter fence borders a portion of the LDC site, the LDC site is not totally protected from access by trespassers. Lack of a continuous fence around the LDC site could make trespassing on the LDC site possible. In fact, the following items were found in the wooded area on the western side of the property; a liquor bottle, empty milk crate, and boards nailed to a tree. Trash items were also found on the wooded area on the northern side of the property. During the summer months there is considerable overgrowth on the western and northern sides of the property hindering access. The property owner did not complain of any problems with trespassers.
- There were numerous hummocks noted in the wooded area on the western side of the property.
- The CCHD reported that there are numerous residences in other areas of Winslow Township that are known to have contaminated private wells. It is not known at this time, however, if this contamination has any relation to the LDC site. According to the CCHD, there are other potential sources of groundwater contamination in the region.

Discussion

On-Site Contamination

On-Site Soils

The latest data available for review by ATSDR/NJDHSS was ten years old and generated as part of the Phase II RI in 1990. A total of 43 surface and sub-surface soil samples were collected by a contractor for Lightman Drum Inc., International Exploration, Inc. These soil samples were taken from various drum storage areas, monitoring wells, wooded areas, trailer parking areas, and in the areas of the excavated underground waste storage tanks. The depth of soil samples ranged from 6 inches to 50 feet. Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), heavy metals and pesticides were detected on-site. Significant levels of trichloroethylene (TCE), tetrachloroethylene (PCE), toluene, xylenes and ethylbenzene were detected in soil borings from monitoring well MW8B and at the west side of underground diesel fuel tank excavation (Figure 2). Table 1 reports the list of contaminants found at levels approaching or exceeding comparison values, and the maximum concentrations detected from on-site soils including VOCs, SVOCs, metals and

pesticides.⁽²⁾ Compounds that are without comparison values are also listed on this table. The USEPA has taken the lead on the LDC site from the NJDEP as of October 22, 1999. A Remedial Investigation (RI) will be conducted by the USEPA to determine the nature and extent of contamination and the potential public health implications, USEPA expects to initiate RI field activities in late 2001.

On-Site Groundwater

During the Phase II RI in 1990, a total of 12 monitoring wells were sampled by International Exploration, Inc. (Figure 2). Table 2 reports the contaminants and the maximum concentrations detected from on-site monitoring wells detected at levels in excess of New Jersey drinking water standards (NJMCL), including VOCs, SVOCs, total phenolics and metals. Compounds that are without comparison values are also listed on this table. Monitoring wells MW2 and MW8A yielded high levels of VOCs and SVOCs from this initial investigation period. High levels of TCE, PCE, benzene, toluene, xylenes, ethylbenzene and methylene chloride were detected in these wells. The groundwater flow direction is southeast on-site.⁽¹⁾ MW8A was placed in a downgradient direction from the excavated underground storage tank area. This well was intended to monitor the water quality and the possibility of a contaminant plume traversing the site boundary. The high concentrations of organic compounds detected in samples from MW8A suggest that the downgradient extent of groundwater contamination may have migrated off-site.⁽²⁾ The USEPA will be delineating the groundwater contamination as part of their future LDC investigations.

The Responsible Party (RP) hired RT Environmental Services, Inc. to perform on-site groundwater sampling on November 5, 1999. RT Environmental conducted groundwater sampling from five of the 12 on-site monitoring wells. These wells were installed in 1989 and 1990 during the Phase I and Phase II RI under the NJDEP 1988 order. Table 3 reports the contaminants and their concentrations detected in monitoring wells MW2, MW3, MW5, MW9 and MW10. TCE, PCE, benzene, toluene, xylenes and ethylbenzene were detected in MW2 (near the tank excavation area) and MW10 (near the southern drum area).⁽⁶⁾ Well MW8A was not sampled during this round of investigation.

In July 2000, the USEPA conducted sampling of 10 on-site monitoring wells (MW-01, MW-02, MW-02B, MW-03, MW-06, MW-07, MW-08A, MW-08B, MW-09 and MW-10). High levels of VOCs were detected in MW-02 and MW-08A. Elevated metal levels were detected in most wells. Compounds found in excess of the New Jersey Maximum Contaminant Levels (NJMCL) are given in Table 4.⁽⁷⁾

Other On-Site Media

No surface water, air, or sediment samples were collected in either the Phase I or the Phase II RI. The nearest surface water is the Pump Branch, the upper reach of which is adjacent to the western property line of the site. However, the start-of-flow of the Pump Branch is generally south of the site.

Off- Site Contamination

The extent of on-site groundwater contamination is presently unknown. However, based on the 1989 and 1990 Phase I and Phase II RI data, the possibility of off-site groundwater contamination is a concern in the context of potential exposure pathways. The Remedial Investigation to be performed by the USEPA will determine the nature and extent of the contamination.

A study of the potential effects of the LDC on off-site groundwater was recently conducted by USEPA. A total of 16 private wells, both upgradient and downgradient, close to the Lightman Drum Site, were tested in July 2000 for VOCs and metals. Some wells were re-sampled for thallium analysis in January 2001.^(7,8) The results from these two rounds of sampling do not indicate site-related contamination in residential wells. Elevated levels of lead are a concern in two residential wells. The sampling locations are shown in Figure 4 (provided by Churchill Consulting Engineers).

There are no data or other information presently available to the NJDHSS and the ATSDR describing contamination in other off-site environmental media (surface water, air or sediment/soil).

Pathways Analysis

This section contains discussion of the exposure pathways at the site and their public health implications, if applicable. An exposure pathway is the process by which an individual is exposed to contaminants that originate from some source of contamination. ATSDR/NJDHSS classifies exposure pathways into three groups: (1) "**completed pathways**," that is, those in which exposure has occurred, is occurring, or will occur; (2) "**potential pathways**," that is, those in which exposure might have occurred, may be occurring, or may yet occur; and (3) "**eliminated pathways**," that is, those that can be eliminated from further analysis because one of the five elements is missing and will never be present, or in which no contaminants of concern can be identified.⁽⁵⁾ A completed exposure pathway must include each of five elements that link a contaminant source to a receptor population. The five elements of a completed exposure pathway are the following: (1) source of contamination; (2) environmental media and transport mechanisms; (3) point of exposure; (4) route of exposure; and (5) receptor population.

Based upon current site conditions and information available to the ATSDR and the NJDHSS, there are no documented completed human exposures to site-related contamination in the following media: on-site groundwater, sediments, surface water, and air. A potential pathway to on-site soils may exist through unauthorized access; however trespassing is not likely to occur at a frequency which constitutes a public health concern.

The primary potential off-site exposure pathway pertains to groundwater contamination and its impact on the Kirkwood-Cohansey Aquifer, which is a significant source for public and private potable water supplies in the area. The LDC site has not, at this time, been identified as a source of off-site groundwater contamination. Thus, elements 1 and 2 listed above have not been determined.

In other areas of Winslow Township exposures to contaminated groundwater in residential wells has occurred in the past. However, because the contamination source has not been determined, no completed potential pathway related to the LDC site can be established. Residents with contaminated wells in these areas of Winslow Township, presently under investigation by the NJDEP and the CCHD, have had exposure minimized or eliminated with the installation of point of entry treatment (POET) systems.

Public Health Implications

Based on currently available data, there were no identified completed exposure pathways associated with the site to be evaluated at this time.

Health Outcome Data

Based on currently available data, there were no identified completed exposure pathways associated with the site, therefore no health outcome data was evaluated at this time.

ATSDR Child Health Initiative

ATSDR's Child Health Initiative recognizes that the unique vulnerabilities of infants and children demand special emphasis in communities faced with contamination in their environment. Children are at greater risk than adults from certain kinds of exposures to hazardous substances emitted from a waste site. They are more likely to be exposed because they play outdoors and they often bring food into contaminated areas. They are shorter than adults, which means they breathe dust, soil, and heavy vapors closer to the ground. Children are also smaller, resulting in higher doses of chemical exposure per body weight. The developing body systems of children can sustain permanent damage if toxic exposures occur during critical growth stages. Most important, children depend completely on adults for risk identification and management decisions, housing decisions, and access to medical care.

Under current conditions, there were no identified completed exposure pathways associated with the LDC site. If site conditions change that result in potential exposures to children or pregnant women, the NJDHSS/ATSDR will reexamine childhood health issues at the LDC site.

Community Health Concerns

In order to gather information on community health concerns at the Lightman Drum Company (LDC) site, NJDHSS spoke with the Camden County Health Department (CCHD) and its

Division of Environmental Health. According to conversations with a local official (4/11/00), current community concerns have been centered on residents' potable wells located in other areas of Winslow Township. Although not presently associated with the LDC site, these concerns are being addressed by the NJDEP and CCHD through a well testing program.

There have been community concerns and citizen complaints concerning the LDC site since it began operations in 1974. Complaints about the site to the CCHD and NJDEP have included: chemical odors, excessive noise, airborne particulates (from the dirt driveway), and the dumping and spilling of chemicals from drums onto the ground or into a pit. These complaints have been addressed by these two agencies. The ATSDR and the NJDHSS will review and evaluate any community health concerns which may arise as a result of ongoing remedial activity at the LDC site.

Public Comment and Availability Session

A Public Comment release of the Lightman Drum Public Health Assessment was made available from March 26 through May 11, 2001. Comments were received from a contractor for LDC (Golder Associates Inc.) and from the USEPA. All of their comments have been addressed in this document. No comments were received from the general public.

In addition, an Availability Session was held on April 26, 2001 at the Winslow Township Municipal Building. An Availability Session is held during the Public Comment period for any NPL site when the NJDHSS or the ATSDR believe there are community concerns or questions regarding the site. These sessions provide citizens the opportunity to meet with representatives of the NJDHSS and the ATSDR privately to discuss site or health matters. Several local government officials attended the session with concerns about residential private wells that have exhibited contamination and are presently being treated with POET systems. However, the contamination of these wells have not been associated with the Lightman Drum Co. site. Therefore, to address this issue the NJDHSS, and ATSDR held a joint availability session and public meeting with interested citizens on June 28, 2001.

Conclusions

Hazard Category: Lightman Drum Company Site

Because there is insufficient information to confirm or dismiss the existence of off-site exposure pathways, the ATSDR/NJDHSS have evaluated the LDC site to currently represent an **indeterminate public health hazard**.

Although the ATSDR and the NJDHSS have not identified completed human exposure pathways associated with the LDC site, 1989 and 1990 Phase I and Phase II data indicate that on-site soil and groundwater contamination was present at levels of potential public health concern. Groundwater contaminants are present at levels above ATSDR Comparison Values and/or NJMCLs and thus represent a potential public health concern.

Additional study of the potential effects of the LDC on off-site groundwater was recently conducted by USEPA. The results from these two rounds of sampling do not indicate site-related contamination in residential wells.

A Remedial Investigation (RI) will be conducted by the USEPA to determine the nature and extent of contamination and the potential public health implications. USEPA expects to initiate RI field activities in late 2001.

Recommendations

Cease/Reduce Exposure Recommendations

1. It is prudent to continue the restriction of public access to contaminated areas of the site.
2. Residents utilizing private potable wells should take appropriate measures to insure water quality including periodic testing and maintenance of filtration systems as necessary.
3. As new site data and information are available, the ATSDR and NJDHSS will review the potential public health implications of the site as warranted.

Site Characterization

The NJDHSS and the ATSDR believe that conditions warrant ongoing environmental investigation of the LDC site to fully characterize the nature and extent of contaminated environmental media, and to determine the extent of off-site migration of contaminants.

Public Health Action Plan

The Public Health Action Plan (PHAP) for the Lightman Drum Company (LDC) site contains a description of the actions to be taken by ATSDR and/or NJDHSS at or in the vicinity of the site subsequent to the completion of this Public Health Assessment. The purpose of the PHAP is to ensure that this health assessment not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. Included is a commitment on the part of ATSDR/NJDHSS to follow up on this plan to ensure that it is implemented. The public health actions to be implemented by ATSDR/NJDHSS are as follows:

Public Health Actions Taken

1. Available environmental data and other relevant information for the LDC site have been evaluated to determine human exposure pathways and public health issues.

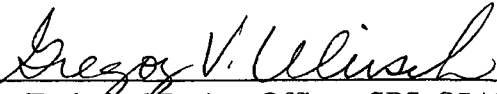
2. The ATSDR/NJDHSS held a public availability session to complement the Public Comment Release of this document. The public availability session was on April 26, 2001.

Public Health Actions Planned

1. ATSDR and the NJDHSS will coordinate with the appropriate environmental agencies to develop plans to implement the cease/reduce exposure and site characterization recommendations and will evaluate new site data when it becomes available.
2. The NJDHSS will prepare a site specific public health fact sheet for the LDC site which will be made available to local health agencies and other interested parties.
3. This Public Health Assessment will be placed in a local repository, and will be provided to persons who request it.
4. The ATSDR and the NJDHSS will reevaluate and expand the Public Health Action Plan (PHAP) as warranted. New environmental, toxicological, or health outcome data, or the results of implementing the above proposed actions, may determine the need for additional actions at this site.


Certification

The Public Health Assessment for the Lightman Drum Company site was prepared by the New Jersey Department of Health and Senior Services under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the public health assessment was initiated.



Technical Project Officer, SPS, SSAB, DHAC

The Superfund Site Assessment Branch (SSAB), Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this public health assessment and concurs with its findings.



for Chief, SSAB, DHAC, ATSDR

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Figures

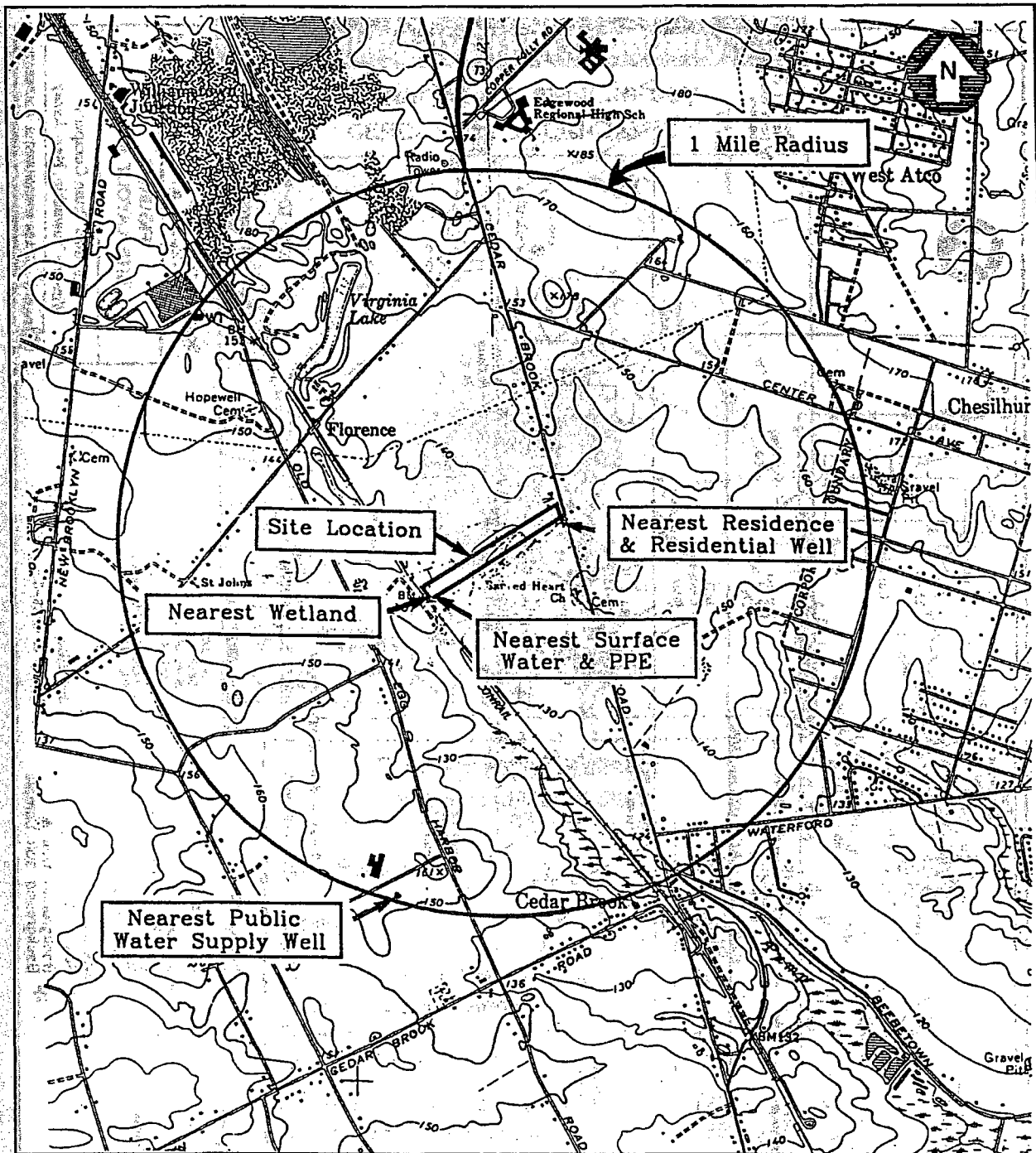


Figure 1. Lightman Drum Company, Site Map
 Adapted from Foster Wheeler

Figure 2 - LDC Site layout map.

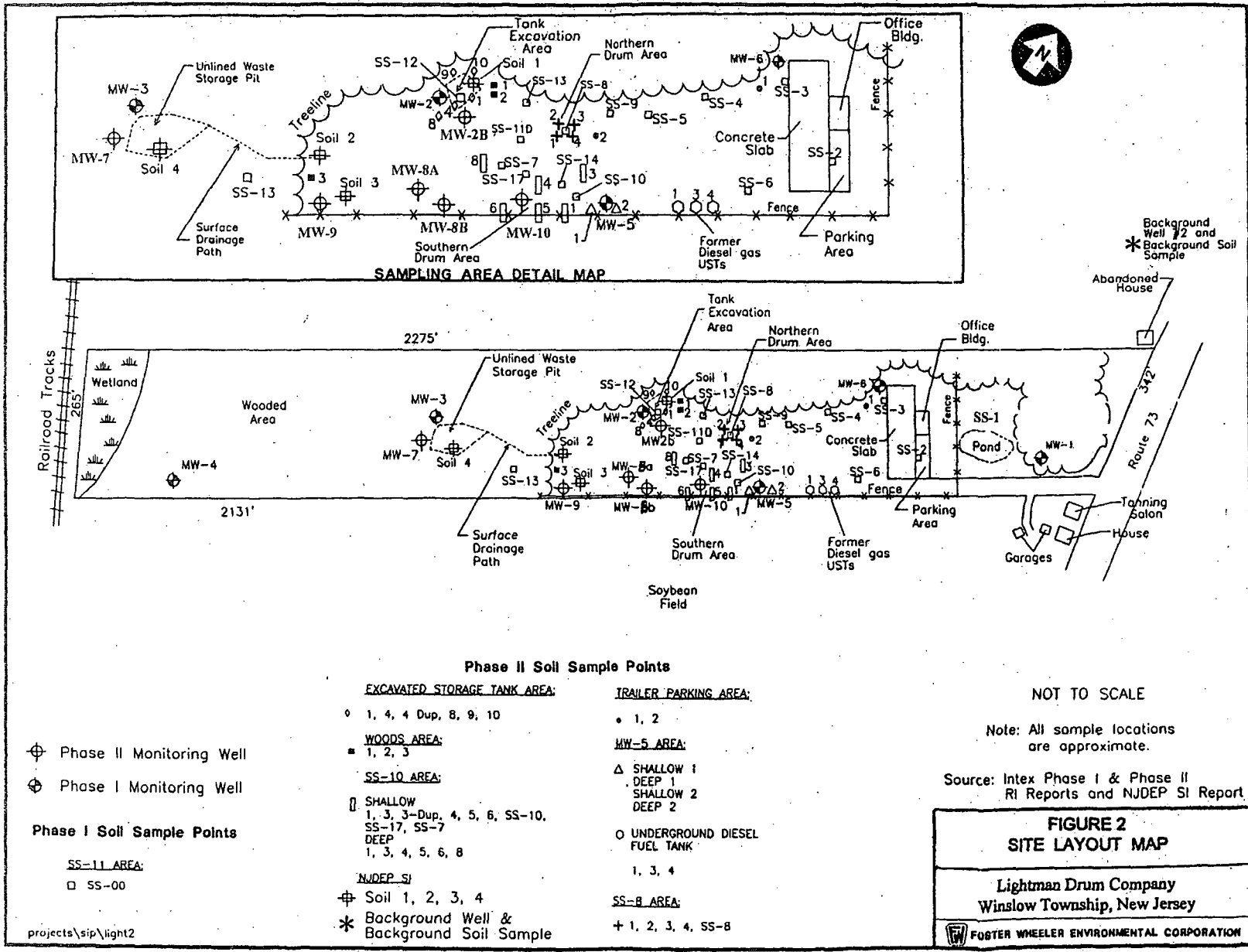
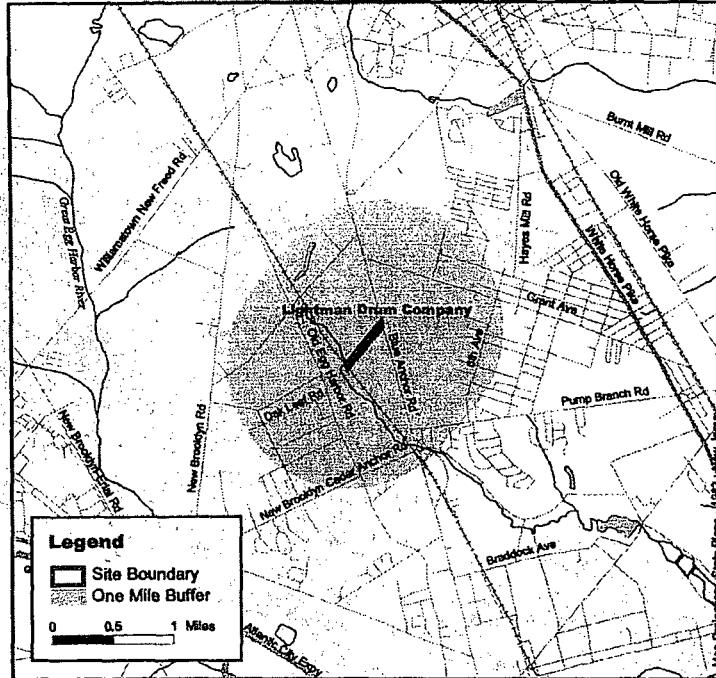


FIGURE 2
SITE LAYOUT MAP
Lightman Drum Company
Winslow Township, New Jersey
FOSTER WHEELER ENVIRONMENTAL CORPORATION

Lightman Drum Company

Cedarbrook, New Jersey

CERCLIS No. NJD014743678



| Demographic Statistics Within One Mile of Site* | |
|--|------|
| Total Population | 1126 |
| White | 819 |
| Black | 286 |
| American Indian, Eskimo, Aleut | 10 |
| Asian or Pacific Islander | 1 |
| Other Race | 4 |
| Hispanic Origin | 19 |
| Children Aged 6 and Younger | 123 |
| Adults Aged 65 and Older | 136 |
| Females Aged 15 - 44 | 245 |
| Total Housing Units | 356 |

Demographics Statistics Source: 1990 US Census
*Calculated using an area-proportion spatial analysis technique

Figure 3 - Site Demographics

Tables

Table 1. Maximum Concentrations of Selected Contaminants Detected in On-Site Soils at Levels Approaching or Exceeding Comparison Values, Lightman Drum Company Site, October 1990.

| Volatile Organic Compounds | Maximum (mg/kg) | Comparison Values(mg/kg)* | Soil Depth (ft) |
|--|------------------------|--|------------------------|
| Ethylbenzene | 1,210 | 5,000 RMEG child | 8-17 |
| Tetrachloroethylene | 83.1 | 500 RMEG child | 8-17 |
| Toluene | 221 | 1000 EMEG child | 8-17 |
| Trichloroethylene | 73 | 54 (NJ non-residential soil clean-up criteria) | 8-17 |
| Xylenes (total) | 8,190 | 10,000 EMEG child | 8-17 |
| Semi-volatile Organic Compounds | | | |
| Bis (2-Ethylhexyl) Phthalate | 18 | 50 CREG | 0.5-2 |
| 1,2-Diphenylhydrazine | 1.94 | 0.9 CREG | 8-17 |
| Metals | | | |
| Antimony | 10 | 20 RMEG child | 0.5-2 |
| Arsenic | 14 | 0.5 CREG | 0.5-2 |
| Cadmium | 8.5 | 10 EMEG child | 0.5-2 |
| Silver | 70 | 300 RMEG child | 0.5-2 |
| Pesticides/PCBs | | | |
| Beta-BHC | 0.083 | - | 0.5-2 |
| Gamma chlordane | 1.23 | 30 EMEG child | 0.5-2 |

* Comparison Values: ATSDR Soil Comparison Values, unless otherwise noted

EMEG: Environmental Media Evaluation Guide

CREG: Cancer Risk Evaluation Guide

RMEG: Reference Dose Media Evaluation Guide

Table 2. Maximum Concentration of Selected Contaminants Detected in On-Site Monitoring Wells at Levels Above Drinking Water Standards, Lightman Drum Company Site, October 1990.

| Volatile Organic Compounds | Maximum ($\mu\text{g/l}$) | Comp. Value (NJ MCL^{**}) ($\mu\text{g/l}$) |
|-----------------------------------|---|---|
| Methylene Chloride | 1,400 | 3 |
| Acetone | 1,020 | - |
| 1,2-trans-dichloroethylene | 390 | 100 |
| 1,1,1-trichloroethane | 454 | 30 |
| Trichloroethylene | 4,900 | 1 |
| Tetrachloroethylene | 2,010 | 1 |
| Chlorobenzene | 219 | 50 |
| 1,2-dichloroethane | 302 | 2 |
| Benzene | 10,100 | 1 |
| Toluene | 3,160 | 1,000 |
| Ethylbenzene | 4,800 | 700 |
| m-xylene | 19,000 | 1,000 |
| o,p-xylenes | 22,500 | 1,000 |
| Metals | | |
| Cadmium | 17 | 5 |
| Chromium | 1,110 | 100 |
| Iron | 77,500 | 300 ⁺ |
| Manganese | 340 | 50 ⁺ |

** New Jersey Maximum Contaminant Levels

⁺ Secondary drinking water standards (primarily aesthetic)

Table 3. Concentrations of Selected VOCs and Semi-VOCs Detected in Five On-Site Monitoring Wells, Lightman Drum Site, Collected November 5, 1999.

| Sample # | MW3 | MW 9 | MW 10 | MW 5 | MW 2 | Maximum | MCL* (NJ) |
|---|-----|---------|----------|---------|---------|---------|--------------|
| Volatile Organic Compounds ($\mu\text{g/l}$) | | | | | | | |
| Acetone | 38 | ND | 19 | ND | ND | 38 | |
| 1,1-Dichloroethylene | ND | ND | 8 | ND | ND | 8 | 2 |
| Chloroform | ND | ND | 4 | 2 | ND | 4 | |
| 1,1,1-Trichloroethane | 6 | ND | 110 | 2 | 190 | 190 | 30 |
| Trichloroethylene | 54 | ND | 2,300 | 37 | 3,500 | 3,500 | 1 |
| 1,1,2-Trichloroethane | ND | ND | 6 | ND | ND | 6 | 3 |
| Benzene | ND | ND | 120 | ND | ND | 120 | 1 |
| Tetrachloroethylene | 110 | ND | 1,500 | 130 | 2,800 | 2,800 | 1 |
| Toluene | 3 | ND | 400 | ND | 920 | 920 | 1,000 |
| Chlorobenzene | 6 | ND | 43 | ND | 87 | 87 | 50 |
| Ethylbenzene | ND | ND | 410 | ND | 3,900 | 3,900 | 700 |
| Xylene (total) | 6 | ND | 2,900 | ND | 43,000 | 43,000 | 1,000 |
| cis-1,2-Dichloroethylene | 270 | ND | 890 | ND | 590 | 890 | 70 |
| Semi-volatile Organic Compounds ($\mu\text{g/l}$) | | | | | | | |
| Phenol | ND | ND | 5 | ND | 5 | 5 | |
| 1,3-Dichlorobenzene | ND | ND | 4 | ND | 13 | 13 | 600 |
| 1,4-Dichlorobenzene | 3 | ND | 8 | ND | 44 | 44 | 75 |
| 1,2-Dichlorobenzene | ND | ND | 6 | ND | 28 | 28 | 600 |
| 2-Methylphenol | ND | ND | 5 | ND | 12 | 12 | |
| 4-Methylphenol | ND | ND | 14 | ND | 20 | 20 | |
| 2,4-Dimethylphenol | ND | ND | 10 | ND | 150 | 150 | |
| 1,2,4-Trichlorobenzene | 4 | ND | 13 | ND | 110 | 110 | 9 |
| Naphthalene | ND | ND | ND | ND | 4 | 4 | 300 |
| 2-Methylnaphthalene | ND | ND | ND | ND | 1 | 1 | |

* New Jersey Maximum Contaminant Levels

- MCL not available

ND: Not detected

Table 4. Compounds detected from monitoring well samples exceeding New Jersey Maximum Concentration Levels (NJ MCL) at the Lightman Drum Site (USEPA, July 2000).

| Compounds | Maximum Concentration Levels ($\mu\text{g/L}$) and Well Number | New Jersey Maximum Contaminant Level ($\mu\text{g/L}$) |
|----------------------------|--|--|
| Benzene | 1800 (MW-08A) | 0.2 |
| cis-1,2-Dichloroethene | 2400 (MW-02) | 10 |
| Trichloroethene | 2500 (MW-02) | 1 |
| Tetrachloroethene | 3700 (MW-02) | 0.4 |
| Toluene | 1400J (MW-02) | 1000 |
| Ethylbenzene | 4600 (MW-02) | 700 |
| Xylenes (total) | 60000 (MW-02) | 40 |
| bis(2-Chloroethyl)ether | 130 (MW-02) | 0.03 |
| 2,4-Dimethylphenol | 250 (MW-02) | 100 |
| bis(2-Ethylhexyl)phthalate | 5 (MW-08A and MW-08B) | 3 |
| Aluminum | 3340J (MW-09) | 200 |
| Beryllium | 0.37J (MW-09 and MW-10) | 0.008 |
| Cadmium | 37.1 (MW-03) | 4 |
| Manganese | 270J (MW-02) | 50 |
| Thallium | 5.3J (MW-02) | 0.5 |

J = estimated value.

ATSDR Plain Language Glossary of Environmental Health Terms

- Absorption:** How a chemical enters a person's blood after the chemical has been swallowed, has come into contact with the skin, or has been breathed in.
- Acute Exposure:** Contact with a chemical that happens once or only for a limited period of time. ATSDR defines acute exposures as those that might last up to 14 days.
- Additive Effect:** A response to a chemical mixture, or combination of substances, that might be expected if the known effects of individual chemicals, seen at specific doses, were added together.
- Adverse Health Effect:** A change in body function or the structures of cells that can lead to disease or health problems.
- Antagonistic Effect:** A response to a mixture of chemicals or combination of substances that is less than might be expected if the known effects of individual chemicals, seen at specific doses, were added together.
- ATSDR:** The Agency for Toxic Substances and Disease Registry. ATSDR is a federal health agency in Atlanta, Georgia that deals with hazardous substance and waste site issues. ATSDR gives people information about harmful chemicals in their environment and tells people how to protect themselves from coming into contact with chemicals.
- Background Level:** An average or expected amount of a chemical in a specific environment. Or, amounts of chemicals that occur naturally in a specific environment.
- Biota:** Used in public health, things that humans would eat – including animals, fish and plants.
- CAP:** See Community Assistance Panel.
- Cancer:** A group of diseases which occur when cells in the body become abnormal and grow, or multiply, out of control.
- Carcinogen:** Any substance shown to cause tumors or cancer in experimental studies.

CERCLA: See Comprehensive Environmental Response, Compensation, and Liability Act.

Chronic Exposure: A contact with a substance or chemical that happens over a long period of time. ATSDR considers exposures of more than one year to be *chronic*.

Completed Exposure Pathway: See Exposure Pathway.

Community Assistance Panel (CAP): A group of people from the community and health and environmental agencies who work together on issues and problems at hazardous waste sites.

Comparison Value: (CVs) Concentrations or the amount of substances in air, water, food, and soil that are unlikely, upon exposure, to cause adverse health effects. Comparison values are used by health assessors to select which substances and environmental media (air, water, food and soil) need additional evaluation while health concerns or effects are investigated.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): CERCLA was put into place in 1980. It is also known as **Superfund**. This act concerns releases of hazardous substances into the environment, and the cleanup of these substances and hazardous waste sites. ATSDR was created by this act and is responsible for looking into the health issues related to hazardous waste sites.

Concern: A belief or worry that chemicals in the environment might cause harm to people.

Concentration: How much or the amount of a substance present in a certain amount of soil, water, air, or food.

Contaminant: See Environmental Contaminant.

Delayed Health Effect: A disease or injury that happens as a result of exposures that may have occurred far in the past.

Dermal Contact: A chemical getting onto your skin. (see **Route of Exposure**).

Dose: The amount of a substance to which a person may be exposed, usually on a daily basis. Dose is often explained as "amount of substance(s) per body weight per day".

Dose / Response: The relationship between the amount of exposure (dose) and the change in body function or health that result.

Duration: The amount of time (days, months, years) that a person is exposed to a chemical.

Environmental Contaminant: A substance (chemical) that gets into a system (person, animal, or the environment) in amounts higher than that found in **Background Level**, or what would be expected.

Environmental Media: Usually refers to the air, water, and soil in which chemicals of interest are found. Sometimes refers to the plants and animals that are eaten by humans. **Environmental Media** is the second part of an **Exposure Pathway**.

U.S. Environmental Protection Agency (EPA): The federal agency that develops and enforces environmental laws to protect the environment and the public's health.

Epidemiology: The study of the different factors that determine how often, in how many people, and in which people will disease occur.

Exposure: Coming into contact with a chemical substance. (For the three ways people can come in contact with substances, see **Route of Exposure**.)

Exposure Assessment: The process of finding the ways people come in contact with chemicals, how often and how long they come in contact with chemicals, and the amounts of chemicals with which they come in contact.

Exposure Pathway: A description of the way that a chemical moves from its source (where it began) to where and how people can come into contact with (or get exposed to) the chemical.

ATSDR defines an exposure pathway as having 5 parts:

1. Source of Contamination,
2. Environmental Media and Transport Mechanism,
3. Point of Exposure,
4. Route of Exposure, and
5. Receptor Population.

When all 5 parts of an exposure pathway are present, it is called a **Completed Exposure Pathway**. Each of these 5 terms is defined in this Glossary.

Frequency: How often a person is exposed to a chemical over time; for example, every day, once a week, twice a month.

Hazardous Waste: Substances that have been released or thrown away into the environment and, under certain conditions, could be harmful to people who come into contact with them.

Health Effect: ATSDR deals only with **Adverse Health Effects** (see definition in this Glossary).

Indeterminate Public

Health Hazard: The category is used in Public Health Assessment documents for sites where important information is lacking (missing or has not yet been gathered) about site-related chemical exposures.

Ingestion: Swallowing something, as in eating or drinking. It is a way a chemical can enter your body (See **Route of Exposure**).

Inhalation: Breathing. It is a way a chemical can enter your body (See **Route of Exposure**).

LOAEL: **Lowest Observed Adverse Effect Level.** The lowest dose of a chemical in a study, or group of studies, that has caused harmful health effects in people or animals.

Malignancy: See **Cancer**.

MRL: **Minimal Risk Level.** An estimate of daily human exposure -- by a specified route and length of time -- to a dose of chemical that is likely to be without a measurable risk of adverse, noncancerous effects. An MRL should not be used as a predictor of adverse health effects.

- NPL:** The National Priorities List. (Which is part of **Superfund**.) A list kept by the U.S. Environmental Protection Agency (EPA) of the most serious, uncontrolled or abandoned hazardous waste sites in the country. An NPL site needs to be cleaned up or is being looked at to see if people can be exposed to chemicals from the site.
- NOAEL:** No Observed Adverse Effect Level. The highest dose of a chemical in a study, or group of studies, that did not cause harmful health effects in people or animals.
- No Apparent Public Health Hazard:** The category is used in ATSDR's Public Health Assessment documents for sites where exposure to site-related chemicals may have occurred in the past or is still occurring but the exposures are not at levels expected to cause adverse health effects.
- No Public Health Hazard:** The category is used in ATSDR's Public Health Assessment documents for sites where there is evidence of an absence of exposure to site-related chemicals.
- PHA:** Public Health Assessment. A report or document that looks at chemicals at a hazardous waste site and tells if people could be harmed from coming into contact with those chemicals. The PHA also tells if possible further public health actions are needed.
- Plume:** A line or column of air or water containing chemicals moving from the source to areas further away. A plume can be a column or clouds of smoke from a chimney or contaminated underground water sources or contaminated surface water (such as lakes, ponds and streams).
- Point of Exposure:** The place where someone can come into contact with a contaminated environmental medium (air, water, food or soil). For examples: the area of a playground that has contaminated dirt, a contaminated spring used for drinking water, the location where fruits or vegetables are grown in contaminated soil, or the backyard area where someone might breathe contaminated air.
- Population:** A group of people living in a certain area; or the number of people in a certain area.

PRP: Potentially Responsible Party. A company, government or person that is responsible for causing the pollution at a hazardous waste site. PRP's are expected to help pay for the clean up of a site.

Public Health Assessment(s): See PHA.

Public Health Hazard: The category is used in PHAs for sites that have certain physical features or evidence of chronic, site-related chemical exposure that could result in adverse health effects.

Public Health Hazard Criteria: PHA categories given to a site which tell whether people could be harmed by conditions present at the site. Each are defined in the Glossary. The categories are:

1. Urgent Public Health Hazard
2. Public Health Hazard
3. Indeterminate Public Health Hazard
4. No Apparent Public Health Hazard
5. No Public Health Hazard

Receptor Population: People who live or work in the path of one or more chemicals, and who could come into contact with them (See **Exposure Pathway**).

Reference Dose (RfD): An estimate, with safety factors (see **safety factor**) built in, of the daily, life-time exposure of human populations to a possible hazard that is not likely to cause harm to the person.

Route of Exposure: The way a chemical can get into a person's body. There are three exposure routes:

- breathing (also called inhalation),
- eating or drinking (also called ingestion), and
- or getting something on the skin (also called dermal contact).

Safety Factor: Also called **Uncertainty Factor**. When scientists don't have enough information to decide if an exposure will cause harm to people, they use "safety factors" and formulas in place of the information that is not known. These factors and formulas can help determine the amount of a chemical that is not likely to cause harm to people.

SARA: The Superfund Amendments and Reauthorization Act in 1986 amended CERCLA and expanded the health-related responsibilities of ATSDR. CERCLA and SARA direct ATSDR to look into the health effects from chemical exposures at hazardous waste sites.

Sample Size: The number of people that are needed for a health study.

Sample: A small number of people chosen from a larger population (See **Population**).

Source (of Contamination): The place where a chemical comes from, such as a landfill, pond, creek, incinerator, tank, or drum. Contaminant source is the first part of an **Exposure Pathway**.

Special Populations: People who may be more sensitive to chemical exposures because of certain factors such as age, a disease they already have, occupation, sex, or certain behaviors (like cigarette smoking). Children, pregnant women, and older people are often considered special populations.

Statistics: A branch of the math process of collecting, looking at, and summarizing data or information.

Superfund Site: See **NPL**.

Survey: A way to collect information or data from a group of people (**population**). Surveys can be done by phone, mail, or in person. ATSDR cannot do surveys of more than nine people without approval from the U.S. Department of Health and Human Services.

Synergistic effect: A health effect from an exposure to more than one chemical, where one of the chemicals worsens the effect of another chemical. The combined effect of the chemicals acting together are greater than the effects of the chemicals acting by themselves.

Toxic: Harmful. Any substance or chemical can be toxic at a certain dose (amount). The dose is what determines the potential harm of a chemical and whether it would cause someone to get sick.

Toxicology: The study of the harmful effects of chemicals on humans or animals.

Tumor: Abnormal growth of tissue or cells that have formed a lump or mass.

**Uncertainty
Factor:** See Safety Factor.

**Urgent Public
Health Hazard:** This category is used in ATSDR's Public Health Assessment documents for sites that have certain physical features or evidence of short-term (less than 1 year), site-related chemical exposure that could result in adverse health effects and require quick intervention to stop people from being exposed.