



Public Health Assessment for

**ASHLAND/NORTHERN STATES POWER LAKEFRONT
ASHLAND, ASHLAND COUNTY, WISCONSIN
EPA FACILITY ID: WISFN0507952
SEPTEMBER 25, 2003**

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE**

Agency for Toxic Substances and Disease Registry

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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PUBLIC HEALTH ASSESSMENT

Coal Tar Contamination Associated with a Former Manufactured Gas Plant

ASHLAND/NORTHERN STATES POWER LAKEFRONT

ASHLAND, ASHLAND COUNTY, WISCONSIN

EPA FACILITY ID: WISFN0507952

Prepared by:

Wisconsin Department of Health and Family Services
Division of Public Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

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.

(The legal definition of a health assessment is included on the inside front cover.) 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, full-scale epidemiology studies, disease registries, surveillance studies or research on specific hazardous substances.

Interactive Process: The health assessment is an interactive process. ATSDR solicits and evaluates information from numerous city, state and federal agencies, the companies responsible for cleaning up the site, and the community. It then shares its conclusions with them. Agencies are asked to respond to an early version of the report to make sure that the data they have provided is accurate and current. When informed of ATSDR's conclusions and recommendations, sometimes the agencies will begin to act on them before the final release of the report.

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 (E60), Atlanta, GA 30333.

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Summary

The Ashland/Northern States Power (NSP) Lakefront site has extensive contamination of soils, groundwater, and offshore sediments associated with manufactured gas plant (MGP) operations historically conducted at the site. The primary contaminants are polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs). The following points are noteworthy:

- Exposure to contaminated sediments in Chequamegon Bay are a human health hazard. People should not swim or wade in contaminated areas. Warning signs and the no-anchor zone should remain.
- During the cleanup of the site, vapors can escape into air and pose a human health hazard. Stringent air management is crucial during cleanup.
- Contact with coal tar slicks may cause skin and eye irritation. People who get coal tar on their skin should immediately wash the area with soap and warm water. If coal tar gets into eyes, they should be flushed with water.
- The water from two artesian wells at Kreher Park is safe to drink, but the wells should continue to be regularly tested for site-related contaminants.
- Sport caught fish from Chequamegon Bay do not contain levels of site-related chemicals that are a health concern for eating. However, people who eat Lake Superior fish should follow the Department of Natural Resources (DNR) fish consumption advisory for other chemicals.
- The testing of the indoor air of homes close to site should be considered in order to evaluate the possibility of vapors that may enter basements.

I. Introduction

The purpose of this public health assessment is to evaluate contamination exposure concerns that are apparently associated with manufactured gas plant (MGP) operations historically conducted in Ashland, Wisconsin. The scope of the evaluation includes the human health implications of exposure to environmental contamination and the related community health issues. This document contains results of a review of three previous public health consultations and baseline sampling data of soil, groundwater, and offshore sediments related to the human health risk assessment. The prior public health consultations documented the evaluation of human health concerns associated with contamination in Chequamegon Bay sediments, the safety of sport fish caught from the bay, and air concerns during the investigation and cleanup of the site.

II. Background and Statement of Issues

A. Location and Population

The city of Ashland is in Northwestern Wisconsin on Chequamegon Bay, Lake Superior (Figure 1). It has a population of 8,620 and is the largest city in Ashland County. Ashland County has a population of 16,866; nearby communities include the Bad River Indian Reservation (1,400), and the towns of Sanborn (1,092), and White River (796). Across the Bay is the city of Washburn (2,303), in Bayfield County. Washburn is the largest city close to Ashland.¹

Census estimates show that the area's population has not changed much since 1990. Ashland County grew by 3.3 percent between 1990 to 1999 (16,307 to 16,866). The city of Ashland dropped in population by 0.86 percent (8,695 to 8,620) during the same time period. The entire

area has had limited population growth for the past 20 years. The population distribution for Ashland County shows that one-third (31%) is under 20 years of age; 53% is 20-64 years; 16% is 65 and older. Unemployment between 1990 to 1999 ranged between 6.5% and 8.5%. Ashland's ethnic profile shows that approximately 90% of the population is white; 10% is Native American. Females slightly outnumber males, 51% to 49%, respectively.^{2,3}

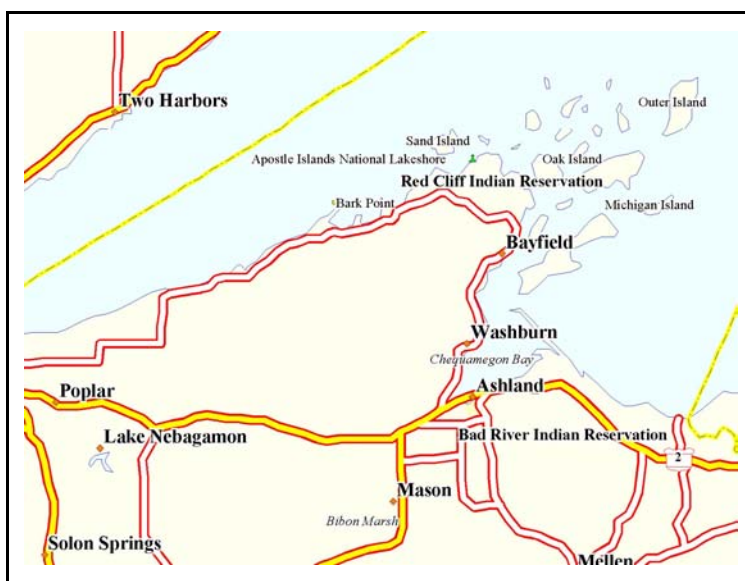


Figure 1: Chequamegon Bay, Western Lake Superior.

B. Site Description

The Ashland/Northern States Power (NSP) Lakefront site is located in Ashland, Wisconsin. The site is bordered by US Highway 2 to the south, Prentice Avenue to the east, Ellis Avenue to the west, and Chequamegon Bay to the north. The properties on which contamination is located encompass approximately 12 acres and from south to north includes Northern States Power Company (now referred to as Xcel Energy), Wisconsin Central Limited Railroad corridor, City of Ashland's old waste water treatment plant/Kreher Park, and contaminated sediments in Chequamegon Bay. The site encompasses contamination in two sources, sediments in Chequamegon Bay, and areas where contamination has migrated as a result of activities apparently associated with MGP operations historically conducted at the Xcel Energy property above the bluff.⁴

Currently, Kreher Park is owned by the City of Ashland. Kreher Park is used for a variety of recreation purposes. A lakefront bicycle path runs along the shoreline at the Park. A large portion of the Park is flat and is covered with grass. The shoreline immediately in front of Kreher Park consists mostly of large rocks, installed as riprap, to protect the integrity of the shoreline. Yellow warning signs are placed every 100 feet that warns the public about contaminated sediments. Along the northeastern shoreline of Kreher Park is the large brick building that housed Ashland's former waste water treatment plant. Large, privately owned boats are stored along the southwestern edge of the grassy area. Connected to the northwestern portion of Kreher Park is the Ashland Marina, which was developed in the 1980s.

Along the eastern boundary of Kreher Park is a boat ramp, public swimming beach, and a campground. The waters of Chequamegon Bay that are directly in front of Kreher Park, are bounded to the northeast and southwest by a number of old docks, which partially protect the park shoreline. The strongest onshore winds in the Ashland area come from the northeast.

Approximately one-quarter mile northeast of Kreher Park is a very large, historic ore dock. The ore dock serves as a significant outer breakwater for the marina, including Kreher park, the boat ramp and swimming beach. The ore dock protects this area from northeasterly wind and wave action.

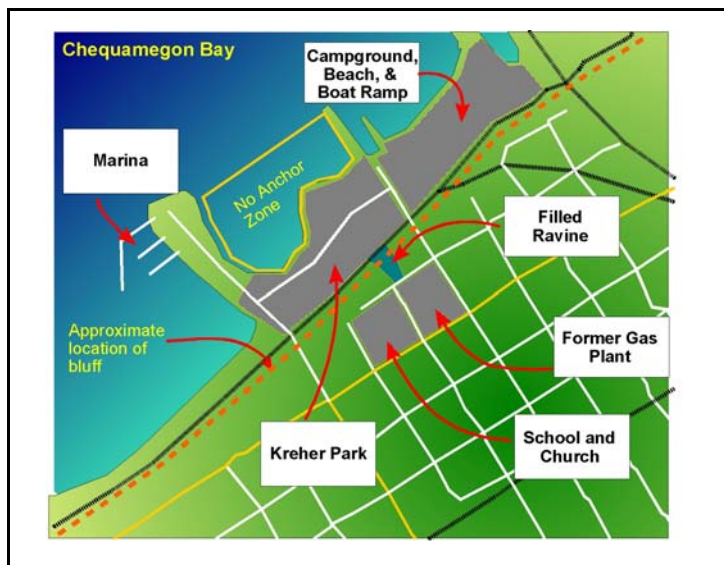


Figure 2: Ashland/NSP Lakefront Site, Wisconsin.

C. What is a Manufactured Gas Plant?

Starting in the late 1800s, towns and cities across the U.S. made their own fuel for cooking and lighting. The facilities where the fuel was produced were known as manufactured gas plants (MGPs). To manufacture the fuel, coal and other ingredients were heated in large brick ovens. As the coal was heated, it produced gases which were filtered from the ovens and stored in tanks. The gas was then used as fuel throughout a community. By the early 1900s, Wisconsin had MGPs in at least 70 communities across the state.

MGP production declined in the U.S. as electricity replaced coal gas for lighting. MGPs started closing as a network of natural gas pipelines was built across the country in the 1950s. Many MGPs were abandoned and eventually demolished. However, waste and contamination left behind at MGPs can still pose an environmental and public health concern.

For more information about MGPs, visit the Division of Public Health Internet address below: www.dhfs.state.wi.us/eh/HlthHaz/fs/MGP.HTM

D. Site History

Prior to about 1880, the Ashland shoreline at Kreher Park was at the base of the bluff, approximately along the current Wisconsin Central Ltd. railroad corridor. Significant commercial and industrial activities began at that time. The land where Kreher Park is now located was created during the late 1800s and early 1900s when various fill materials were placed in Chequamegon Bay. Fill material that comprises the eastern portion of Kreher Park, consists of mainly sawdust and wood waste that came from a series of sawmills which operated on the site from the early 1880s until about 1932. The uncontrolled filling of the rest of this area occurred during and after the operation of the sawmills, with the western portion of Kreher Park filled in with primarily demolition waste material.

From the 1880s through 1947, a manufactured gas plant operated on the property now owned by Xcel Energy. A ravine ran north-south through the property, emptying into Chequamegon Bay. Historical maps show that the ravine was mostly open in the late 1800s, and was filled by the early 1900s. Investigations have shown that the fill material includes cinders ash, boiler slag, demolition debris, household waste, and soil¹.

¹ The major contaminant components found at the Ashland/Northern States Power Lakefront site are typical of other former manufactured gas plants in Wisconsin and the country. However, this contamination has also been found at other, non-MGP sites where there were different types of industrial processes, such as a wood treatment operations or petroleum facilities. Xcel Energy currently contends that contamination currently found below the bluff (beneath Kreher Park and lake sediments) is not solely from the former MGP site, but currently DNR reports they do not necessarily agree. Also, DHFS defers to DNR and U.S. EPA on this issue. However, to address this overall concept, the general description of contaminants in this public health assessment report are referred to as “MGP-related” or “MGP-associated” contaminants or waste.

E. Environmental Investigations

Local officials notified the Wisconsin Department of Natural Resources (DNR) of contamination found in excavations around the wastewater treatment plant in the late 1980s. Subsequent investigations determined widespread VOC and PAH contamination on their property.

In 1993, DNR staff began investigating the contamination found on the city property using money from the state's Environmental Fund. These investigations concluded that at least some of the contamination detected on city property was residuals from the historic manufactured gas plant that operated on the adjacent property.

In 1995, NSP was notified by the DNR as a Potentially Responsible Party (PRP) for that contamination (The City of Ashland and the Wisconsin Central Limited Railroad were also notified as potential PRPs). From 1995 until now, NSP and DNR have carried out investigations of the site, and through these investigations, the degree and extent of soil, groundwater and sediment contamination have largely been determined. A Human Health Risk Assessment has been completed for the site and an Ecological Risk Assessment for the sediments by DNR contractors.⁶

In 1999, a citizen's petition requested that the U.S. Environmental Protection Agency (U.S. EPA) assess the site and determine if it should be listed on the Federal Superfund National Priorities List (NPL). At U.S. EPA's request, DNR prepared a preliminary assessment, which showed enough evidence for U.S. EPA officials to take the next step and do a more rigorous evaluation using Superfund's Hazard Ranking System (HRS). Based on the HRS, the U.S. EPA proposed listing the Ashland site on December, 2000. The U.S. EPA also agreed that the Wisconsin DNR would be the lead agency supervising the cleanup of the Ashland site.

F. Contaminated Media

Environmental sampling data for the Ashland site (groundwater, soil, and sediments) that was collected between 1994-1996 was compiled in the 1997 report *Comprehensive Environmental Investigation Report* by Short Elliott Hendrickson, Inc.⁷ Selected data from this report is summarized in the tables that appear in **Appendix A**. Additional environmental investigations have been conducted at the Ashland/NSP lakefront site. However these reports have not resulted in significant changes to the original baseline human health risk assessment.

The subsurface soil, groundwater, lake sediments and surface waters at the Ashland/NSP lakefront site is contaminated by varying concentrations of complex mixtures of organic chemicals that are typical of a former MGP site. The largest group of MGP-related contaminants are commonly grouped into two categories: 1) polycyclic aromatic hydrocarbons (PAHs); and, 2) volatile organic compounds (VOCs). When these MGP associated contaminants are found in the environment at very high concentrations or in pure forms, they are not very soluble in water and often appear as coal tars and oils. When pure coal tars or oils are found in the environment they are referred to as “free product” or, more technically, a non-aqueous phase liquid (NAPL). Sometimes a NAPL is heavier or more dense than water and sinks, sometimes a NAPL is lighter than water and floats. The presence of NAPLs provides insight into determining the scope and nature of coal tar contamination.

The shallow groundwater in the vicinity of the former MGP site on the bluff and within the filled ravine tends to move in a northerly direction and is very contaminated with PAHs and VOCs. A deep aquifer (water bearing rock formation) beneath all portions of the site is referred to as the Copper Falls aquifer, which consists mainly of sand and gravel. This aquifer is separated from shallow groundwater by a very thick and impervious layer of clay, which is referred to as the Miller Creek Formation.

A brief narrative of the site contamination by media, is listed below:

1. Surface and Subsurface Soils

Environmental sampling found widespread PAH and VOC contamination in subsurface soils at the lakefront and bluff area. The VOCs detected, namely the BTEX compounds (benzene, toluene, ethylbenzene, and xylenes), were found at elevated concentrations (**Appendix A, Table 1**). The concentrations of VOCs in subsurface soils were significantly higher in samples collected at Kreher Park than at the upper bluff area, e.g. the highest benzene levels found in subsurface soils at the lakefront was 645 parts per million (ppm); whereas for the upper bluff area it was 19.8 ppm. Despite these high levels, VOCs in subsurface soils do not pose a direct contact health concern.

Initial Investigation of the Ashland/NSP Lakefront Site⁵

1980s - investigations by the City of Ashland revealed their property had widespread VOC and PAH contamination

1980s - local officials notify DNR about contamination at the lakefront

1993 - DNR begins investigating area; results reveal that some of the contamination comes from past activities at the MGP

1995 - DNR notify NSP/Xcel Energy that they are a Potentially Responsible Party (PRP) for the site

1995-2001 - DNR and NSP/Xcel Energy conduct numerous investigations, including ecological and health risk assessments. DNR concludes the results reveal the site poses significant risks to human health and environment, but Xcel Energy disagrees with DNR’s conclusion regarding the risk assessment.

Surface soils typically pose the greatest exposure threat at contaminated properties, but clean fill soils are on top of affected subsurface soils at both the lower and upper portions of the site. Soils at Kreher Park were brought from an unknown location, but do not have elevated levels of contaminants and are safe. However, the fill material and groundwater beneath Kreher Park is affected by MGP associated contaminants similar to the filled-in ravine.

2. Offshore Soil and Sediment

Chequamegon Bay sediments immediately off of Kreher Park contain MGP associated contamination (**Table 2**). Sediments in this area contain VOCs and PAHs, with high levels of contamination or coal tar/NAPL, that is consistent with the rest of the site. For example, benzene was detected at a high range of 55,000 ppm, and a low range of 57 ppm; total xylenes were detected at 590,000 ppm and a low of 43 ppm. One PAH, benzo(a)pyrene was found at a high of 49 ppm in offshore soil and sediment, 111 ppm at the upper bluff area, and 206 ppm in sediments along the shoreline. While contamination exists mainly within the sediments, if the sediments are agitated, coal tars/NAPLs bound within sediments are released to the water column, enabling a “slick” to form on the water surface.

3. Groundwater

Groundwater beneath the Ashland Lakefront/NSP site has a widespread variation in the levels of VOCs and PAHs detected in both the shallow and deep aquifers and beneath both the lakefront and bluff areas (**Table 3 and Table 4**). Portions of the Copper Falls aquifer that are situated directly beneath the site also contains significant MGP associated contamination. A column of MGP associated contamination moved with the groundwater flow to the north and towards Chequamegon Bay.

In many monitoring wells at the lakefront and upper bluff area VOC and PAH concentrations exceed Wisconsin’s Public Health Groundwater Quality Enforcement Standards (ES). At certain locations, concentrations of PAHs and VOCs in groundwater is very high and a “free product” has been found in some samples. This “free product” or NAPL consists of oil, tar and other wastes characteristic of former manufactured gas plants. Sampling for NAPLs in the groundwater column found free coal tar product ranging from 1 to 26 feet deep. NAPLs were found in soils far below the ground surface, ranging from 14 to 70 feet beneath the surface. The most extensive NAPL contamination in groundwater was at the upper bluff area; the least extensive areas of NAPL contamination was at the lakeshore.

Groundwater beneath the upper bluff area has a much higher VOC contamination than the lakefront, while the levels of PAHs is higher in groundwater at the lakefront. For example, benzene was detected at the highest level of 79,000 parts per billion (ppb) in the upper bluff area; whereas the highest benzene level at the lakefront was 4,100 ppb. In contrast, benzo(a)pyrene was detected at a high of 3,278 ppb at the lakefront; and 898 ppb at the upper bluff area. The Wisconsin DNR enforcement standard (ES) for benzo(a)pyrene is 0.2 ppb.

4. Surface Water Seep at Kreher Park

Near the point where the filled ravine previously emptied into the bay was an area where water, oils, and tars discharged to the surface, and where people could easily have contact with contamination. Water samples collected directly from this area, known as “the seep” showed elevated concentrations of VOC and PAHs (**Table 3 and Table 4**).

G. Summary of Public Health Consultations

1. Human Health Concerns Associated with Contaminated Sediments

The first public health consultation, written October 23 1995 by DPH, examined human health and exposure concerns related to contaminated sediments.⁸ The MGP associated contamination is found in several areas, including Chequamegon Bay, Kreher Park and the base of the bluff. The contaminants of concern found in the coal tar are polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs). The health consultation found that a public health hazard exists when coal tar slicks form on the surface of Chequamegon Bay. The slicks can form when sediments contaminated with coal tar are disturbed. Such disturbances can occur when boaters drop anchor in contaminated sediments or when large waves stir up the lake bed. People at risk for exposure include those who swim, wade, or play along the lakeshore near Kreher Park when tar slicks are present. Prolonged exposure to coal tar can irritate the skin and eyes and may induce photo-toxicity (a condition where the skin is overly sensitive to sunlight, resulting in an allergic skin reaction) resulting in rapid sunburning.

The recommendations from the October 23 1995, health consultation suggest that people be prevented from coming in contact with tar slicks and to reduce the extent of exposure among those who do. Steps include posting warning signs along the contaminated bay section, with instructions to immediately wash any tar off the skin with soapy water. Other recommendations include preventing tar slicks from appearing. Preventative action includes the establishment of a "no-anchor" zone in the area where sediments are contaminated with coal tar. Warning buoys are placed outside the perimeter to warn boaters about the hazard. Furthermore, Kreher Park beach, boat ramp pilings, and shoreline surfaces where the public has access should be inspected for any indications of past tar slicks. The information can be used to identify which areas along the shoreline are most likely to be affected by future tar slicks. Lastly, future remedial activities need to address air management issues. Remediation can release VOCs into the air, which can induce headaches, dizziness, and nausea in sensitive people near the site. So far, there have not been odor or ambient issues or complaints from prior investigative and interim remedial actions at the Ashland/NSP Lakefront site. During these actions, efforts have been made to ensure that ambient air releases are prevented or minimal. However, it is very important to continue these protective

steps during future remediation to monitor for and prevent excess odors and VOCs from being released and potentially affecting the health of the public.

2. Eating Sportfish from Kreher Park

As previously noted, sediments in the contamination zone of Chequamegon Bay contain elevated concentrations of PAHs. Nonetheless, people catch and eat fish from Lake Superior near Kreher Park. The second consultation by the DPH, written October 15 1999, provides conclusions and recommendations which state that PAHs measured in fish from the Ashland lakefront do not pose a health concern for people who eat fish every day.⁹ Fish consumption advisories for Lake Superior fish do exist for mercury and polychlorinated biphenyls (PCBs) chemicals. The chemicals are probably not related to PAH contaminated Chequamegon Bay sediments at Kreher Park. However, PAHs in sediments of Chequamegon at Bay Kreher Park remain a public health hazard.

People should continue to follow advice about fish consumption advisories for Lake Superior, as described in the DNR booklet, *Important Health Information for People Eating Fish from Wisconsin Waters*. Further investigations of Chequamegon Bay sediments at Kreher Park should consider testing for mercury and PCBs. Lastly, people should avoid touching or disturbing tar slicks and contaminated sediments at or near Kreher Park.

3. Air Management Issues During Remediation

Cleaning up a former MGP site may release odors that can adversely affect human health. The Ashland MGP site is within one-hundred yards of homes and an elementary school. Thus the third consultation, written by DPH in September 2001, addresses the air management issues of MGP remediation.¹⁰ The conclusions and recommendations show that air management and action levels at the Ashland MGP site should focus on the potential that benzene vapors are released. As well, preliminary action levels should be set for managing the release of VOCs and particulates. The breathing zone of worker's involved during remediation must also be monitored. Air monitoring for human safety must include lower-explosive limit, carbon monoxide, percent oxygen, hydrogen sulfide, and hydrogen cyanide levels. Quantitative air sampling should be considered when the worst contamination is encountered. Remediation contractors should have a planned public outreach, including a 24-hour telephone hotline for the public if they have questions.

H. Community and Agency Involvement

The Sigurd Olson Institute and the Ashland-Bayfield County League of Women Voters are the primary community groups involved with the site. They are holding public education meetings to help inform the public about the neighborhood and environmental impacts of the site. The organizations are working with local officials, the DNR and Xcel Energy (formally NSP) to keep

the public involved and informed about the investigation and clean-up options for the Ashland/NSP Lakefront Site.

III. Discussion

Contaminated sediments in Chequamegon Bay remain a human health hazard. Disturbing affected Chequamegon Bay sediments that are adjacent to Kreher Park can result in the release of coal tar slicks. Regular skin contact with PAHs that are typically present in coal tars/NAPLs can increase a person's lifetime risk for certain skin cancers, but people are unlikely to regularly allow their skin to become coated with coal tars. However, coal tars/NAPLs are strong skin irritants that can be readily absorbed. A single instance of direct contact with coal tars/NAPLs can cause dermal inflammation and heighten a person's sensitivity to sunburn. A person with coal tars on their hands can easily rub their eyes, resulting in severe eye irritation.

The Agency on Toxic Substances and Disease Registry (ATSDR) toxicological profile for coal tars states that it "exerts its acute toxic effects in humans primarily via dermal contact, causing structural damage to the tissues that it comes in contact with, such as the skin and eyes," and that "animal studies corroborate these observations."¹¹ Studies of worker exposures to PAHs have shown that they "experienced chronic [skin irritation, such as] dermatitis and hyperkeratosis."¹²

Also the coal tar toxicological profile reported that "longer periods of dermal exposure to coal tar products seem to be associated with dermal irritation and noncancerous lesions, and skin cancer in both humans and animals."¹³ Evidence shows that mixtures of PAHs are carcinogenic in humans. The evidence in humans comes primarily from "occupational studies of workers exposed to mixtures containing PAHs as a result of their involvement in such processes as ... coal gasification. Cancer associated with exposure to PAH-containing mixtures in humans occurs predominantly in the lung and skin following inhalation and dermal exposure, respectively."¹⁴

The contaminated portion of Chequamegon Bay, adjacent to Kreher Park, should remain closed to swimming, wading and boating. People should avoid swimming and wading in the restricted area. If people get the oily substance on their skin, they should wash their skin right away with soap and warm water. If their eyes are affected, they should flush their eyes with water. Boats that enter the no-anchor zone can also become contaminated with coal tars if an anchor is dropped and disturbs affected sediments. Maintenance should continue of the existing no-swimming warning signs and no-anchor zone buoys. When at Kreher Park, agency staff should continue to observe the lake and inspect the shoreline for signs of tar slicks. The public should be encouraged to report tar slicks to staff of the Ashland County Health Department and the DNR. Oil slicks may appear after heavy wave action or if a boat enters the exclusion zone and drops an anchor.

Some people have asked whether the designated swimming beach, east of the boat ramp at Kreher Park, is safe. Site-related contamination does not extend to the beach or offshore

sediments. The beach is safe for swimming. Moreover, coal tar/NAPL slicks released from affected sediments in Kreher Park are not likely to drift away from the contaminated bay area and reach the swimming beach. Oil slick drift would be prevented by the natural geography of the area, including wave and wind action. If people notice oily substances floating on the water near the swimming beach area, it is most likely discharged from boats using the adjacent boat ramp, and not from the contaminated sediments.

While there is significant groundwater contamination at the Ashland Lakefront/NSP site, the City of Ashland obtains its municipal drinking water from an intake out in Chequamegon Bay, well beyond areas that may be potentially affected. Furthermore, Ashland municipal water is regularly tested for a wide range of contaminants, including a number of chemicals associated with MGP-associated wastes. These drinking water tests have not found any such contaminants in water collected from Lake Superior.

There are two artesian wells in Kreher Park that draw clean groundwater and are safe to drink. People are regularly observed collecting drinking water in containers from these two naturally flowing wells. The artesian wells, which draw groundwater from the deeper Copper Falls aquifer, are very close to contaminated areas, yet appear to be beyond the extent of contaminant plumes. Several rounds of water sample tests from the artesian wells have not found any elevated levels of site-related contamination. It is possible that contaminated groundwater could eventually spread to these two adjacent artesian wells. For this reason, the artesian well waters should be regularly tested for VOCs and PAHs.

In 1996, public access to the seep was restricted by installing a six-foot tall chain-linked fence around the entire seep area. Prior to fencing this seep, it posed a health hazard because people could come in contact with coal tars/NAPL. The fenced area was extended several times in order to prevent contact with the seep that moved beyond the existing fence. Early in 2001, contaminated soils in this area were excavated and removed. This area was then filled with clean soils and seeded.

The VOCs in MGP-associated contamination can also be a health concern. The health concern arises when people breathe air that has high levels of VOCs. During cleanup of MGP-associated waste, VOCs can escape as vapors and pose a human health hazard to workers or people nearby. The Ashland MGP site is very close to homes and an elementary school. Environmental actions at other former manufactured gas plants resulted in airborne releases that were significant and adversely affected human health.¹⁵ Coal tar can have an unusually strong moth-ball like smell. Additionally, there are health concerns of VOC compounds which can affect sensitive people, such as children or asthmatics, who may experience difficulty breathing, headaches, dizziness or nausea if exposed to MGP associated vapors for significant lengths of time. Air releases of VOCs during exploratory site investigations at Ashland, including the excavation of the seep area have released minimal to zero levels of VOCs. However, during full remediation and clean up of the site, airborne releases of VOCs could be significant. Therefore, air management during cleanup at the Ashland Lakefront site should consider DPH's recommendations in the public health consultation of October 15, 2001.¹⁶

The VOC vapor intrusion at the upper bluff area into residential homes is also a potential health concern. These vapors can escape from highly contaminated groundwater, rise up through soils and seep into nearby basements. Since very high concentrations of VOCs are present in groundwater in the vicinity of the former Ashland MGP facility, it is possible that nearby homes may have VOC vapors coming inside. While such conditions and a vapor migration an intrusion threat is probably unlikely, testing the indoor air quality of the basement is a prudent measure. Residential homes located adjacent to the contamination area should be sampled during the winter months to rule out the potential for possible vapor intrusion.

A. Community Health Concerns

1. Public meetings

Since 1995, more than ten public information meetings have occurred regarding the Ashland site. During the meetings held between 1999-2000, four key community issues were identified:

- i) Health concerns - Short and long term effects of exposure to youths and adults, including wildlife and aquatics; possible affects to drinking water supply; exposure to vapors; potential future problems if nothing is done.
- ii) Cleanup/Remediation - Issues raised include the dust, noise, and odors of cleanup; will recreation be limited, such as access to the marina and boat ramp?; need to maintain access to the lakefront while limiting access to the contamination areas; avoid offensive sign language, and work on using a positive message about cleanup.
- iii) Cost - What are the costs of cleanup, who will pay?
- iv) Overall lake health - How is the community affected by this contamination; what defines a healthy lake?¹⁷

During one public meeting during the fall of 2000, community concerns were raised about the safety of swimming at the Kreher Park beach. The issue was whether or not the beach could get an oil slick by drifting from the contaminated bay area. However, oil slick drift would be prevented by the natural geography of the area, including wave and wind action. If an oil slick does appear near the swimming beach area, it is most likely from boats using the adjacent boat ramp, and not from the contaminated sediments.

Additionally at the fall 2000 meeting, a group of participants volunteered for a photo-documentary project, called photo-voice. Participants received cameras and told their story in photographs regarding their concerns about the Ashland site. The participants felt that because Ashland is a tourism dependent area, a cleanup should occur, and be done right the first time. Participants also expressed concerns for children because a school and playground are located adjacent to the site.

Representatives from DNR and DHFS have also met with residents who live near the site, including visiting with teachers and parents from the school to discuss their health concerns.

2. Other Questions

People have asked other health-related questions about contamination at the Ashland/NSP Lakefront Site. The questions and answers are provided below:

i) What is in a tar or oil slick?

A coal tar slick contains high concentrations of pure coal tar or non-aqueous phase liquid (NAPL). Coal tar is a complex mixture of hundreds to thousands of different chemicals. The chemicals found in coal tar/NAPL are mostly polycyclic aromatic hydrocarbons (PAHs), but also include aromatic volatile organic compounds (VOCs), phenols, heterocyclic oxygen, sulfur, and nitrogen compounds.¹⁸ When pure forms of contaminants, such as coal tar/NAPL, occur in the environment, they are often referred to as “product.” While most of the chemicals in coal tar/NAPL can be harmful at high concentrations, certain PAHs and VOCs can pose the greatest health risk for people who come in contact with coal tar/NAPL.

ii) Several employees from the city of Ashland waste water treatment plant have expressed concerns about exposure to contamination. The employees felt they were potentially exposed to contamination while working at the former waste water treatment plant (WWTP) located adjacent to the lakeshore. Thus, were workers of Ashland’s WWTP at Kreher Park exposed to coal tar contamination?

DHFS staff have met and talked with workers of the former WWTP. Based on these conversations it is evident that some workers had direct contact with site-related environmental contamination at Kreher Park. Some workers reported direct contact with coal tar/NAPL in trenches when they worked on pipes that carried waste water and other liquids to the former WWTP. These workers described oily sheens floating on groundwater that seeped into the trenches. Some workers also reported getting these tars on their skin and several commented on a tar-like odor in the trenches.

Workers may also have breathed vapors released from coal tar contaminated soils and groundwater. After the former WWTP stopped receiving waste water, an employee who assisted with the decommission of the facility smelled coal tar-like odors. The tar smells indicate that vapors from contaminated soils and groundwater had filtered into the former WWTP building. It is possible that coal tar odors were previously masked by stronger odors of sewage waste water. It is difficult to determine when the vapors entered the buildings. DNR staff who inspected the building also reported strong coal tar odors. They also observed evidence of contaminated water during a past visit to the building. However, the presence of coal tar odors inside the building may not indicate that breathing the air is unsafe. Some chemicals in coal tar/NAPL, such as naphthalene, have an extremely low odor threshold, and people can notice naphthalene odors in air at levels that are not a health concern. However, some of the other chemicals in MGP wastes, such as benzene, can pose a health risk at very low levels.

Health officials do not know the type or amount of site-related contaminants that workers once breathed at the former WWTP. Conducting an indoor air test may provide clues to the type and amount of chemicals present. However, testing is difficult for a number of reasons. DHFS believes it would be difficult to reconstruct the indoor air conditions of a facility that has been closed for ten years. Additionally, when the WWTP was in operation, a complex mixture of chemicals from processed sewage probably had a major impact on the indoor air conditions at the facility.

iii) What are the health concerns for former WWTP workers?

Some former WWTP workers appear to have come in contact with MGP-related contamination. These exposures were probably greatest when workers were in trenches, handling pipes that carried waste water and other liquids to the former WWTP. The workers described seeing oily sheens floating on groundwater that seeped into the trenches. Some workers also reported getting tars on their skin and several commented about tar-like odors.

As previously mentioned, the chemicals in coal tars/NAPLs are strong skin irritants; and may cause a rash on sensitive people. It is also known that people who get coal tars/NAPL on their skin can have an increased sensitivity to becoming sunburned. Regular skin exposure to the PAHs in coal tar can increase the risk of developing certain non-melanoma skin cancers.

One individual who worked at the former WWTP expressed concern that his skin exposure to coal tars/NAPLs caused non-melanoma skin cancer. Regular skin contact with coal tar/NAPL can increase a person's risk of developing skin cancer, but it is difficult to conclude that regular exposure actually caused this case of cancer. Non-melanoma skin cancers (squamous cell carcinoma and basal cell carcinoma) are the most common forms of cancer throughout the United States, with an estimated 9,800 cases in Wisconsin each year. The most common risk factors for developing skin cancer are: 1) increased exposure to the sun, and 2) genetic disposition.

B. Child Health Issues

Due to the proximity of an elementary school to the Ashland MGP site, including Kreher Park at the lakefront, child health concerns must be considered. The media of concern is the offshore sediments and air emissions during remediation. Soil and groundwater contamination do not pose an immediate health threat to children. The recommendations for preventing contact with offshore sediments and oil slicks should actively remain. Children and adults who eat fish from Chequamegon Bay should follow the DNR booklet *Important Health Information for People Eating Fish from Wisconsin Waters* for Lake Superior fish. During remediation activities, air emissions must be strictly controlled since children are a sub-population sensitive to irritation from MGP air emissions.

IV. Conclusions

1. Contaminated sediments in Chequamegon Bay at the Ashland Lakefront/NSP site remain a human health hazard, due to contact of oil slicks. Human contact with oil slicks may cause skin irritation. Eye irritation may also occur if the oil is accidentally rubbed into the eyes. Skin contact may also cause photosensitivity, which could result in an increased risk of sunburn. However, the beach at Kreher Park is safe for swimming.
2. Other health concerns surround the potential use of groundwater. Although the city of Ashland does not use the groundwater from the contamination zone (the Ashland municipal water supply is drawn from much farther out in Chequamegon Bay), a number of people drink water from two artesian wells adjacent to the contamination zone. One well is located next to the marina; the other is in Kreher Park. The artesian water comes from deep in the ground, but should be regularly tested for VOCs and PAHs.
3. Recent fish sampling from Chequamegon Bay indicates that fish do not contain levels of site-related chemicals that are a health concern. However, people should continue to follow fish consumption advice for Lake Superior. Recommendations are found in the Wisconsin Department of Natural Resources (DNR) booklet *Important Health Information for People Eating Fish from Wisconsin Waters* which is available from the Ashland County Health Department, or the Internet at: <http://www.dnr.state.wi.us/org/water/fhp/fish/advisories/>
4. During the cleanup of MGP associated waste, VOCs can escape as vapors and pose a human health hazard to workers or people nearby. When sensitive people breathe coal tar waste chemicals they may experience health effects.
5. MGP-related vapors that move through soils at the upper bluff area may enter homes and be a health concern. While the chance of this occurrence is not likely, DHFS regards indoor air sampling as a precautionary measure.

V. Recommendations

1. The contaminated portion of Chequamegon Bay at the Ashland Lakefront/NSP site should remain closed to swimming, wading and boating. Warning signs and buoys should remain posted. The area should continue to remain off limits to boating and swimming. People who get the coal tar/NAPL on their skin should wash their skin right away with soap and warm water. If their eyes are affected, they should flush their eyes with water. Additionally, the contaminated portion of Chequamegon Bay should be monitored for oil slicks.
2. If coal tar/NAPL gets on skin, it should be washed immediately with plenty of warm, soapy water and people should avoid exposure of affected skin to sunlight.
3. The two artesian drinking water wells at Kreher Park should be regularly tested for site-related contaminants.
4. People who eat Lake Superior fish should follow the DNR fish consumption advisory for other contaminants, such as mercury.
5. Since homes and a school are very close to the Ashland Lakefront/NSP site, the stringent management of VOC air emissions is crucial during remediation activities. Air management during cleanup needs to consider recommendations in the public health consultation of October 15, 2001.
6. The indoor air sampling of homes adjacent to the contamination area should be considered possible VOC air intrusion.

VI. Public Health Action Plan

1. DPH will continue to work with the Wisconsin DNR remediation and redevelopment team to ensure that the site recommendations are implemented for the Ashland site.
2. DPH will work with the development of air monitoring and air quality control plans to ensure that public health is protected during remediation.
3. DPH will continue to conduct public health outreach of community stakeholders, involving them in the decision making, and informing them of health risks posed during cleanup of the Ashland site.
4. DPH will coordinate public health outreach and community involvement activities with the Ashland County Health Department, local citizen groups, and other involved parties.

VII. Selected References

1. - Wisconsin Department of Natural Resources. Draft Community Involvement Plan, Ashland/NSP Lakefront Site, Ashland, Wisconsin (April 2001).
2. - *Ibid.*
3. - The Source Book of ZIP Code Demographics (Census Edition, Vol. 1). CACI Marketing Systems, 1991.
4. - U.S. EPA. HRS Documentation Record for Ashland/Northern States Power Lakefront. EPA ID No. WISFN0507952. NPL-U34-2-4-R5. October 30, 2000.
5. - Wisconsin Department of Natural Resources. Draft Community Involvement Plan, Ashland/NSP Lakefront Site, Ashland, Wisconsin (April 2001).
6. - Wisconsin Department of Natural Resources. Fact Sheet, A History of the Ashland/Northern States Power Lakefront Site, RR-645 (June 2001).
7. - Short Elliott Hendrickson, Inc. (SEH). Comprehensive Environmental Investigation Report (May 1997). SEH No. WIDNR9401.00
8. - Wisconsin Division of Public Health. Health Consultation on Exposure to Coal Tar Associated with the Manufactured Gas Plant Site in the City of Ashland (October 23, 1995).
9. - Wisconsin Division of Public Health. Health Consultation on Fish Tissue Exposure Investigation of Contaminated Chequamegon Bay Sediments at Kreher Park, Ashland, Ashland County, Wisconsin (October 25, 1999).
10. - Wisconsin Division of Public Health. Draft Health Consultation on Air Effects and Human Health Concerns Associated with the Remediation of Former Manufactured Gas Plant Sites (September 2001).
11. - Agency for Toxic Substances and Disease Registry. Toxicological Profile for Wood Creosote, Coal Tar Creosote, Coal Tar, Coal Tar Pitch, and Coal Tar Pitch Volatiles. Update - Public Comment Draft. Atlanta, GA: ATSDR. September 2000.
12. - Agency for Toxic Substances and Disease Registry. Toxicological Profile for Polycyclic Aromatic Hydrocarbons. (Update). Atlanta, GA: ATSDR. August 1995.
13. - *Ibid.*
- 14.- *Ibid.*
- 15.- Wisconsin DPH. Draft Health Consultation on Air Effects, 2001.
16. - *Ibid.*
17. - Wisconsin DNR. Draft Community Involvement Plan, 2001.
18. - Agency for Toxic Substances and Disease Registry. Toxicological Profile for Polycyclic Aromatic Hydrocarbons. (Update). Atlanta, GA: ATSDR. August 1995.

VIII. Report Preparers

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CERTIFICATION

This Coal Tar Contamination Associated with a Former Manufactured Gas Plant Ashland/Northern States Power Lakefront Public Health Assessment was prepared by the Wisconsin Department of Health and Social 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 begun.

Technical Project Officer, SPS, SSAB, DHAC

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health assessment and concurs with the findings.

Chief, State Program Section, DHAC, ATSDR

Appendix A

Table 1: Soil Sample Results¹
Ashland, Wisconsin

Table 1a - Volatile Organic Compound (VOC) Concentrations

Analyte	WDNR Soil RCL ²	Lakefront			Upper Bluff Area		
		Frequency of Detection	Range		Frequency of Detection	Range	
Benzene	0.0055	13/28	645	0.005	6/8	19.8	0.016
Toluene	1.5	4/28	2,007	0.027	6/8	43.2	0.004
Ethylbenzene	2.9	11/28	2,973	0.147	4/8	75.8	0.014
Xylenes (total)	4.1	11/28	4,981	0.232	4/8	94.1	0.046
Naphthalene	n/a	25/28	28,469	0.008	3/8	863	0.016

1 - SEH No. WIDNR9401.00 (May, 1997)

2 - WDNR Soil Residual Contaminant Level (RCL)

Note: All concentrations are expressed in parts per million (ppm)

Table 1b - Polycyclic Aromatic Hydrocarbon (PAH) Concentrations

Analyte	Lakefront			Upper Bluff Area		
	Frequency of Detection	Range		Frequency of Detection	Range	
Benzo(a)anthracene	20/28	323	0.203	5/8	106	2.1
Benzo(a)pyrene	20/28	206	0.172	6/8	111	0.13
Benzo(b)fluoranthene	20/28	191	0.247	5/8	89.6	2.8
Benzo(k)fluoranthene	15/28	74	0.188	5/8	42.8	0.28
Indeno(1,2,3-cd)pyrene	14/28	65.6	1.05	4/8	56	1.1
Chrysene	21/28	313	0.449	5/8	101	2.3
Dibenzo(a,h)anthracene	3/28	10.8	0.513	2/8	10.6	4.27

1 - SEH No. WIDNR9401.00 (May, 1997)

Note: All concentrations are expressed in parts per million (ppm)

Table 2: Offshore Soil and Sediment Sample Results¹
Ashland, Wisconsin

Table 2a - Volatile Organic Compound (VOC) Concentrations

Analyte	Frequency of Detection	Range	
Benzene	22/107	55,000	57
Toluene	36/107	220,000	54
Ethylbenzene	38/107	510,000	35
Xylenes (total)	37/107	590,000	43
Naphthalene	42/107	160,000	43,000

1 - SEH No. WIDNR9401.00 (May, 1997)

Note: All concentrations are expressed in parts per million (ppm)

Table 2b -Polycyclic Aromatic Hydrocarbon (PAH) Concentrations

Analyte	Frequency of Detection	Range	
Benzo(a)anthracene	22/106	67	0.42
Benzo(a)pyrene	17/106	49	0.33
Benzo(b)fluoranthene	13/106	36	0.36
Indeno(1,2,3-cd)pyrene	3/106	8.77	0.82
Chrysene	22/106	36	0.41

1 - SEH No. WIDNR9401.00 (May, 1997)

Note: All concentrations are expressed in parts per million (ppm)

Table 3: Groundwater Sample Results¹
Volatile Organic Compound Concentrations
Ashland, Wisconsin

Volatile Organic Compound (VOC) Concentrations									
Analyte	WDNR Ground- water Enforce- ment Standard (ES)	Lakefront			Upper Bluff Area			Seep Area	
		Frequency of Detection	Range		Frequency of Detection	Range		Range	
Benzene	5	41/54	4,100	0.08	26/28	79,000	0.03	3,500	3,250
Toluene	343	7/48	651	29	24/26	36,000	0.45	650	650
Ethylbenzene	700	29/48	2,300	5	16/23	3,180	0.36	670	378
Xylenes (total)	620	21/48	2,430	52	22/24	11,500	0.61	483	390
Naphthalene	40	40/49	18,600	1.15	25/28	21,000	0.86	6,700	1,300

1 - SEH No. WIDNR9401.00 (May, 1997)

Note: All concentrations are expressed in parts per billion (ppb)

Table 4: Groundwater Sample Results¹
Polycyclic Aromatic Hydrocarbon Concentrations
Ashland, Wisconsin

Polycyclic Aromatic Hydrocarbon (PAH) Concentrations								
Analyte	Lakefront			Upper Bluff Area			Seep Area	
	Frequency of Detection	Range		Frequency of Detection	Range		Range	
Benzo(a)anthracene	33/46	3,465	0.522	8/23	921	3.1	6,800	4,800
Benzo(a)pyrene*	33/46	3,278	0.539	7/23	898	3.4	7,754	5,866
Benzo(b)fluoranthene	32/43	2,136	2.69	8/23	715	3.7	6,260	4,300
Benzo(k)fluoranthene	24/43	1,272	1.53	2/6	339	5.2	3,066	1,300
Indeno(1,2,3-cd)pyrene	27/43	1,044	2.75	2/7	362	4.1	3,578	1,600
Chrysene	29/43	2,597	1.75	8/23	843	3	7,298	4,600
Dibenzo(a,h)anthracene	3/43	26	1.45	n/a	n/a	n/a	624	624

1 - SEH No. WIDNR9401.00 (May, 1997)

* - WDNR Groundwater Enforcement Standard (ES) – 0.2 ppb; no ES for other chemicals in this table

Note: All concentrations are expressed in parts per billion (ppb)

Appendix B - Public Comment

The response to each comment is followed by a bulleted and italicized notation.

1. “Throughout the Public Health Assessment, the Department assigns responsibility for all impacts at the site to the former manufactured gas plant (“MGP”). The Assessment identifies -- from the document title forward -- the MGP as the sole source of coal tar/creosote contamination at the site. A review of the public record for this site, as well as conclusions offered by WDNR’s consultant Short, Elliott and Hendrickson, reveal that multiple sources of contaminants exist in the Ashland Lakefront Project area and that other sources, such as the existence of historic waste disposal practices at Kreher Park and wood treatment practices utilizing tar and/or creosote products conducted by the John Schroeder Lumber Company, caused or contributed to a portion of the impacts in the environment. The Assessment is at minimum incomplete and nearly misleading when it fails to apprise the public of all of the sources contributing to the problem.”

“We [Xcel Energy] requests that the Department revise ... either remove the specific reference to the MGP as the sole cause of contaminants or add references to wastes resulting from the former wood treatment operation and waste disposal practices at the Lakefront.”

- *In response and to address this comment, the following text was added on page 4 of this public health assessment:*

“The major contaminant components found at the Ashland/Northern States Power Lakefront site are typical of other former manufactured gas plants in Wisconsin and the country. However, this contamination has also been found at other, non-MGP sites where there were different types of industrial processes, such as a wood treatment operations or petroleum facilities. Xcel Energy currently contends that contamination currently found below the bluff (beneath Kreher Park and lake sediments) is not solely from the former MGP site, but currently DNR reports they do not necessarily agree. Also, DHFS defers to DNR and U.S. EPA on this issue. However, to address this overall concept, the general description of contaminants in this public health assessment are referred to as “MGP-related” or “MGP-associated” contaminants.”

2. “Given the foregoing, it would be more appropriate to retitile the Public Health Assessment to read ‘Contamination Associated with Historic Lakefront Activities’.”
- *The Agency for Toxic Substances and Disease Registry requires that the title of this public health assessment include the official name of the site, which is the “Ashland/Northern States Power Lakefront.”*

3. “In the Summary section on page 1, the first bullet, the sentence ‘[c]ontaminated sediments in Chequamegon Bay are a human health hazard’ is misleading. The contaminated sediments are a human health hazard only to the extent that (i) the sediments are exposed, or (ii) contaminants affect the food chain to the extent of human uptake. The Department has determined that the latter exposure risk is not present. With respect to the exposure risk, the sediments are currently entombed and a navigation safety zone designation is in place. So, only to the extent the sediments are disturbed or directly contacted are they a human health risk.”
 - *DHFS does not concur that contaminants in sediments, in high concentrations or product, at Kreher Park are “entombed”, which implies that they are unlikely to be easily disturbed by natural and human factors. Sufficient site-specific information indicates that contaminated sediments at Kreher Park are be exposed and released to the environment. These releases appear to occur as a result of natural forces, such as wave action, as well as man-made physical action. Furthermore, despite warning signs and navigational warning buoys, agencies continue to receive reports of park users and boaters who fail to notice these warning markers and then enter the area with affected sediments. These individuals are then likely to come in contact with contaminants released from affected sediments, particularly if sediments are physically disturbed by wading or the dropping of anchors. Until a more restrictive physical barrier is installed that prevents people from entering this area and having direct contact with contaminants, DHFS views that this area is a human health hazard.*
4. “In the Summary section on page 1, the last bullet, the Department recommends that the homes close to the site be tested for the presence of vapors entering basements. However conclusion #5 on page 13 states that the chance of vapors entering the homes and becoming a health concern is unlikely. This appears to be an inconsistency, unless the Department is suggesting that sampling be performed to confirm the lack of vapor reception. We [Xcel Energy] ask that this recommendation be more fully explained and put into better context so as to not unnecessarily alarm residents.”
 - *As mentioned in the text on page 12 , the threat of vapor intrusion to the indoor air of nearby homes is a low possibility. However, given close proximity of homes to high levels of subsurface contamination, DHFS regards indoor air sampling as a precautionary and reasonable measure to rule out the potential for vapor migration and intrusion to the indoor inhalation pathway of nearby homes.*
5. “The sentence in the Introduction on page 2 stating that new sampling data of soil, groundwater and offshore sediments were reviewed in preparation of the Public Health Assessment appears incorrect. In preparation of the Public Health Assessment the Department appears to not have considered any of the data generated by environmental investigations conducted since the 1997 SEH report. For example, the Department states that additional environmental reports since the 1997 SEH Report “were not available” at the time of preparing the Public Health Assessment (page 5). The official Administrative Record,

maintained by WDNR, contains complete copies of all environmental reports generated subsequent to the 1997 SEH Report and prior to the Public Health Assessment.”

- *This is noted and a rewriting of the sentence was done within the document. The PHA report has been modified to acknowledge that additional environmental investigations have been conducted at the Ashland/NSP lakefront site since the 1997 SEH report. However these subsequent reports have not resulted in significant changes to the original conclusions of the initial public health consultation released in 1995 by DHFS.*
6. “In the box on page 4, the Department refers to studies conducted from 1995-2001, including an ecological risk assessment, that perpetually conclude that ‘ . . . the site poses significant risks to human health and environment.’ The Ecological Risk Assessment (‘ERA’) conducted by WDNR’s consultant is not yet final and prior versions have come under heavy criticism by both NSP and USEPA. The study was fatally flawed and it is not possible to draw the conclusion the Department makes from this study in its current form. The less controversial human health risk assessment concluded the site posed risks under a very limited set of circumstances, such as utility worker exposure and the like. We [Xcel Energy] believe the Department’s language is an oversimplification of a complex site.”
 - *The text box on page 4 was modified to incorporate Exel Energy’s disagreement with DNR’s findings of the ERA. However, it should be noted that this modification to the PHA report should not be interpreted that DHFS endorses Xcel Energy’s opinion on this specific issue. DHFS defers to DNR and U.S. EPA regarding such matters.*
 7. “On November 20, 1997 both the City of Ashland and Wisconsin Central Limited Railroad were notified by WDNR as a Potentially Responsible Parties for the contamination at the Lakefront. This is a factual reference that should be added to paragraph 2 on page 5 for completeness.”
 - *As requested, the document was modified.*
 8. “The sentence, ‘This free product or NAPL consists of oil, tar and other wastes characteristic of former manufactured gas plants’ in the Groundwater section of page 6, may be correct, but it is incomplete. As noted above, the makeup of the NAPL waste is also consistent with or characteristic of wood treatment residues. In fact, ratios of certain chemical compounds have been documented in samples retrieved from the site in proportions consistent with U.S. EPA’s reference for classic wood treatment compounds. See ‘Comparative Analysis of Sediment Samples from the Chequamegon Bay Near the Kreher Park Shoreline, Ashland Wisconsin’ prepared by the Gas Technology Institute, March 2000.”
 - *Refer to the response to public comment No. 1*

9. “In Section II G – Summary of Public Health Consultations, the sentence ‘[l]astly, future remedial activities need to address air management issues’ suggests that past remedial activities have not addressed these issues. Indeed, past response and investigation activities at the site have consider air management issues. Examples of this include, air monitoring performed coincident with the operation of the interim tar recovery system operating on the NSP site to ensure compliance with administrative codes concerning air emissions and permitting, as well as the recent property boundary ambient air monitoring assessment performed during investigatory trenching activities conducted last fall at the site.”

- *Appropriate modifications were added to this section.*

10. “In Section III, Paragraphs 3 on page 9, the Department recommends that ‘...the contaminated portion of Chequamegon Bay should be monitored for tar slicks’. We [Xcel Energy] do not understand toward what end the monitoring of tar slicks on Chequamegon Bay is recommended. The Department has clarified that the navigation safety zone should be maintained while remedial action options are under consideration and implementation. It is unclear to us what benefit can be derived from focusing resources on an effort to monitor Chequamegon Bay for the presence of tar slicks. To the extent that such slicks result from the natural disturbance of sediments via wave action or otherwise (and not from a human violation of the navigation safety zone), we do not understand what further can be done with respect to the concern for tar slicks until the remedy is implemented at the site.”

- *Continued attention to the occurrence of tar slicks is important in determining whether there are changing conditions that are affecting contaminated sediments at Kreher Park. For example, reports of an increase in the apparent frequency or size of tar slick would trigger an evaluation of whether the existing site-restrictions should be adjusted. In response to this issue and the above comment, text was modified on page 10.*

11. “In the first full paragraph on page 10, the last four sentences should be stricken. The seep area was not remediated in 2001, and the fence remains in place.”

- *Sentence removal is noted and changes, as appropriate, were made.*