Appendix C

Public Health Assessment
For
Illinois Beach State Park

May 23, 2000

www.atsdr.cdc.gov/HAC/PHA/illinoisbeach/ibp_p1.html

PUBLIC HEALTH ASSESSMENT

Asbestos Contamination at Illinois Beach State Park

ILLINOIS BEACH PARK
ZION, LAKE COUNTY, ILLINOIS

SUMMARY

Construction materials containing asbestos were found scattered along the beach at Illinois Beach State Park (the Park), Zion, Lake County, Illinois, in 1997. Following that discovery, the Illinois Department of Natural Resources (IDNR) began an investigation into the source and extent of asbestos contamination at the popular recreation area. The Illinois Department of Public Health (IDPH) and the Illinois Environmental Protection Agency (Illinois EPA) were asked to assist in the investigation and to determine whether conditions at the beach are a health threat to visitors and workers at the Park.

Investigations and remedial work at the Park have included removal of asbestos-containing material (ACM), removal of debris suspected of containing asbestos, extensive sampling of the Park area, and investigations into the source of ACM. Sampling results showed no detectable quantities of asbestos fibers present in the air and water samples collected at the Park. In some sand samples, very small quantities of asbestos were found. The amount found never exceeded 1% asbestos, which is the definition the U.S. Environmental Protection Agency uses for asbestos-containing material.

Completed exposure pathways at the Park are incidental ingestion of contaminated sand and dermal exposure to contaminated sand. These pathways apply to workers at the Park and to people who visit the Park. IDPH would expect, based on the levels found and the minimal biological uptake through those exposure pathways, neither of those pathways to cause adverse health effects. Potential exposure pathways at the Park include ingestion of contaminated water, inhalation of contaminated sand, and dermal exposure to contaminated water. Water and air samples did not contain asbestos fibers, but the continued presence of ACM in sand on the beach indicates that people can be exposed to ACM in the future.

From the extensive sampling and the pathways evaluated, IDPH concludes that the asbestos at Illinois Beach State Park is not a public health hazard for visitors and workers. Recommendations are to continue the investigation to find the source of the asbestos, to remove ACM that appears on the beach, and to continue education and notification of the public.

PURPOSE AND HEALTH ISSUES

Asbestos-containing materials (ACM) were found scattered along the beach at Illinois Beach State Park (the Park) in 1997. Most ACM found on the beach has been construction materials, such as house siding, water and sewer pipe, floor tile, and roofing material. Following this discovery, the Illinois Department of Natural Resources (IDNR) began an investigation into the source and extent of asbestos contamination. The Illinois Department of Public Health (IDPH) and the Illinois Environmental Protection Agency (Illinois EPA) were asked to assist in this investigation and to determine whether conditions at the beach are a threat to visitors and workers at the Park. IDNR specifically asked IDPH to evaluate the data collected from the sand, water, and air at the Park and to determine whether asbestos was present at levels that posed a health hazard.

BACKGROUND

Illinois Beach State Park consists of 6.5 miles of Lake Michigan shoreline in the city of Zion, Lake County, Illinois (Figure 1). It is bordered by the Wisconsin state line to the north, Lake Michigan to the east, the town of Zion to the west, and the Johns-Manville National Priorities List (NPL) hazardous waste site to the south (Figure 2). The Park encompasses 4,160 acres of shoreline and received approximately 2.75 million visitors in 1998. Recreational activities available include camping, swimming, fishing, hiking, bicycling, and picnicking. Structures within the Park boundaries include the North Point Marina, a 244-unit campground, two major public swimming areas, several inland fishing ponds, a visitor center, the Commonwealth Edison Power Plant, and the Illinois Beach Resort and Conference Center (Figure 3). Besides seasonal tourism, the Park holds special events that draw visitors, including the In-Campground Camper Show in May and the National Jet Ski Championships in July.

The Park is considered a natural resource with the only remaining Lake Michigan beach ridge shoreline left in the state. Glacial advance and retreat created the area that left dunes, swales, marshes, and a variety of wildlife and vegetation in the area. Before becoming a state park, the area was used for military training. In 1948, the state of Illinois acquired the first parcels of what is now Illinois Beach State Park.

In late 1997, pieces of transite pipe, siding, and roofing materials suspected of containing asbestos were found scattered along the beach. In February 1998, IDNR collected two bulk samples of the material and found they contained asbestos fibers. Following this discovery, IDNR began an investigation to determine the extent and possible source of asbestos contamination. Hanson Engineers Incorporated (Hanson), under contract with IDNR, developed a sampling strategy for the Park. This strategy was presented to IDPH and Illinois EPA for approval before sampling began.

The approved plan included sampling the beach sand, the ancient dune area for a background comparison, and water from Lake Michigan. If asbestos were found in

samples of beach sand, air samples would be taken to assess the potential for exposure to airborne asbestos fibers. The response was considered time-critical because the spring tourist season was approaching and extensive media coverage generated concerns in the community.

Besides sampling at the Park, Illinois EPA began investigating potential sources of the ACM. One possible source is former beachfront homes that have since washed into Lake Michigan. Much of the material found at the Park is common construction material used in the past. According to historical maps, the present lakeshore contained about 232 homes that wave action destroyed and washed into the lake. Recent excavations also uncovered an old transite sewer line near the lodge.

Other potential sources include:

- The Johns-Manville site immediately south of the Park. This plant has manufactured a variety of roofing, flooring, wall covering, and insulating materials since 1922. The raw materials used at Johns-Manville include Portland cement, asphalt, paper, and asbestos. A 120-acre parcel of the property was used for disposal of ACM and was placed on the NPL in 1982.

- Fill sand used at the Park. Commonwealth Edison performed dredging operations at its Waukegan Generating Station, and the dredged material, mainly sand, was used for beach nourishment at the Park and the Commonwealth Edison Zion Station. This material may have been contaminated with ACM.

- A former rifle range in the Camp Logan area. The rifle range was built for the 1959 Pan American games and contained a large berm built with factory waste material donated by Johns-Manville. Wave action may have destroyed this berm that also potentially contained ACM.

The source of the asbestos has not been determined. Illinois EPA and the Illinois Attorney General are still investigating. For this public health assessment, knowledge of the source is not necessary for evaluating conditions at the Park.

SAMPLING AND REMEDIAL ACTIVITIES

The first activity completed at the Park was removal of potential ACM, which began in early March 1998. Hanson contractors conducted these early removal operations and picked up suspicious materials. Besides removing ACM from the beach, they flagged areas where ACM was found. These locations were then mapped using a global positioning system to target geographic areas for subsequent sand sampling. Hanson disposed of all ACM according to Illinois EPA regulations.

To assess asbestos exposure to the contractors during removal activities, personal air sampling was conducted according to Occupational Safety and Health Administration (OSHA) regulations. The results showed that the very low levels of asbestos in the air during removal activities were less than the OSHA permissible exposure limit (PEL) of 0.1 fibers per cubic centimeter. Upon receiving those results, IDPH wrote a letter authorizing the downgrade of personal protective equipment worn by workers because respirators were not necessary, and their use contributes greatly to worker fatigue and to public concern.

Extensive sampling of the Park began following removal activities. A total of 191 sand samples, most along the shoreline of the Park near areas flagged during the pick-up of ACM, were collected during the investigation. Of those, 98 samples were collected from public swimming beaches, 81 samples were collected from infrequently used shoreline, and four samples were collected from the Van Patten Woods nature preserve. Public swimming beaches were the area of focus because they attract the most visitors. The areas classified as "infrequently used shoreline" are accessible to the public but are not as heavily used as are the public beaches. The Van Patten Woods nature preserve is closed to the public.

Air samples were also collected, eight from the public beaches and four at the infrequently used shoreline. The sand was disturbed by leaf blowers for 30 minutes before sample collection to assess the worst-case scenario for air exposure. Four surface-water samples were also collected from Lake Michigan near the public beaches.

DISCUSSION

Asbestos is the only contaminant of interest under investigation at the Park. It is a mineral consisting of fibers that vary in length and shape and can be found naturally in soil and rocks. Asbestos fibers are classified into six different types, and some are considered more hazardous than others. These fibers are resistant to heat and have been used to make insulation, ceiling tiles, floor tiles, roof shingles, drainage pipes, and automotive brakes and clutches. Because of concerns about potential health effects, the U.S. Environmental Protection Agency (USEPA) developed an asbestos ban and phase-out rule in 1989. Detecting asbestos in air and water samples is not uncommon because asbestos is naturally occurring and once was used in many commercial products, such as brake pads, that wear.

Exposure Potential and Toxicity

ACM is considered "friable" when it can be easily crushed by hand. Friable asbestos can release fibers into the air, creating a potential health hazard. When asbestos fibers are intact, such as in an asbestos-containing cement pipe, they are considered "non-friable." This means that the individual fibers are contained and are not readily released into the surrounding air. From a public health and regulatory standpoint, "friable" asbestos is the

greatest health concern. People can be exposed to asbestos by swallowing contaminated water, swallowing ACM, or by breathing fibers in the air. Asbestos fibers are poorly absorbed through the skin.

The greatest concern about asbestos is inhalation of fibers. The toxicity of asbestos is related to the fiber size. Smaller fibers are more easily cleared from the lung. They are less likely to remain in the lung and cause health effects. Shipbuilders and other workers who have inhaled high levels of asbestos over long periods have developed asbestosis and cancer. Asbestosis, the build-up of scar-like tissue in the lungs that causes breathing difficulties, is an irreversible condition that develops over many years. Studies of those workers have also shown increased chances of getting lung cancer or mesothelioma. Mesothelioma is a cancer of the membrane that surrounds the lung. USEPA classifies asbestos as a human carcinogen. However, asbestos is commonly found at very low levels in urban air, and no evidence has shown an increased cancer risk in people exposed to those very low levels.

Laboratory Analysis

Attention was focused on the type of laboratory analysis to use. Unlike other chemical contaminants, no standard laboratory analytic method exists to test for asbestos in sand and soil. Because asbestos is a fiber, all methods involve some sort of identification and quantification under a microscope. The two most common microscopic procedures used are light microscopy and electron microscopy.

The standard method for determining asbestos fibers in air of a workplace is phase contrast microscopy (PCM), a type of light microscopy. This method defines a fiber as anything with a length greater than 5 microns (m) with a length-to-diameter ratio of 3:1 or greater. This method is relatively fast and inexpensive, but it cannot distinguish between asbestos and non-asbestos fibers or detect fibers shorter than 5 m. Another type of light microscopy is polarized light microscopy (PLM), which is frequently used to determine the asbestos content of bulk samples of building materials. This method is useful when samples are composed mainly of asbestos and when most of the fibers are large enough to be counted. Electron microscopy allows detection of much smaller fibers than does light microscopy. Transmission electron microscopy (TEM) is the most common method used for analyzing samples collected from ambient air and air inside schools or other buildings. TEM allows distinction between asbestos and non-asbestos fibers and allows differentiation of fiber classes. TEM is relatively slow and expensive compared with light microscopy methods.

All air samples and water samples were tested using TEM, which is the standard method used in analyzing air and public water supply samples under the Asbestos Hazard Emergency Response Act (AHERA). The method for water samples was modified to be more precise and to include all fibers greater than 0.5 microns in length. The main concern was about the method used to analyze the sand samples. The contract laboratory, TEM Incorporated, used PLM, a USEPA method that detects friable asbestos in building materials, for most sand samples. Some sand samples were also analyzed by a refined,

point-counting method, also in accordance with USEPA methods. Selected sand samples were analyzed using a hybrid method based on an American Society for Testing and Materials (ASTM) method for detecting asbestos structures in dust. To test the accuracy of this method, TEM Incorporated spiked samples of clean sand. Results of those tests showed that the method has an excellent recovery rate.

IDPH reviewed the laboratory report presented by TEM Incorporated, an accredited laboratory, and believes that the most feasible methods of analyses were used. Although electron microscopy can more precisely detect small quantities and types of fibers, use of PLM was sufficient to determine that the asbestos content of the sand was below a level of health concern.

Evaluation of Sampling Results

Results of the Hanson sampling are shown in Table 1. When evaluating data, IDPH uses comparison values to screen results. A comparison value is not meant to predict health effects but helps investigators decide which results and contaminants should be evaluated further. For water samples, a comparison value of 70 million fibers per liter was used. That is the USEPA-enforced maximum contaminant level allowed in public water supplies. For air samples, a comparison value of 0.01 fibers per cubic centimeter was used. This value was obtained by adding a safety factor of 10 to the OSHA PEL of 0.1 fibers per cubic centimeter. Asbestos fibers were not detected in any air or water samples. Although fibers might exist at levels less than the detection limits of the analytic methods, the detection limits were well below the comparison values used. Therefore, exposure to any fibers that might be present would not be expected to cause health effects.

In some instances, sand samples did contain small numbers of fibers, but no comparison value or "acceptable level" of asbestos is available for soil or sand. Therefore, other regulations regarding asbestos were examined. Under USEPA regulations, a material is considered ACM only if asbestos is present at greater than 1%. This standard is used for classifying ACM in schools under AHERA and for classifying ACM emissions under the National Emission Standards for Hazardous Air Pollutants. If the material is not classified as ACM, no removal or encapsulation of the material is required. None of the sand samples had more than 1% asbestos, and as such, would not be considered ACM under USEPA standards. IDPH considered this an acceptable comparison.

PATHWAYS ANALYSIS

A person must be exposed to a contaminant in sufficient quantity for it to cause an adverse health effect. A *completed* exposure pathway must have a source of contamination, a contaminated environmental medium, a point where people are exposed, a way for the contaminant to enter the body, and an exposed population. If any of these

situations is not present, the pathway is called a *potential* exposure pathway. The exposure pathways evaluated at the Park are shown in Table 2.

Completed Exposure Pathways

Completed pathways at the Park include the incidental ingestion of contaminated beach sand, and dermal exposure to contaminated beach sand. All people ingest small amounts of soil, or for those at the Park, sand, each day. The amount ingested can vary from 500 to 1,500 milligrams per day. Young children playing in the sand who exhibit excessive hand-to-mouth activity would ingest the most and be most at risk from this pathway.

Studies show that ingestion of asbestos causes little risk for non-cancer health effects. Some evidence exists, however, that ingestion of high levels of asbestos can cause lesions and tumors in the gastrointestinal tract that may lead to cancer. Most studies have been conducted on animals fed large doses of asbestos, but some studies of humans have shown small increases in gastrointestinal cancer in areas where asbestos in drinking water is elevated. These studies are not conclusive because cancer increases may be attributed to other factors such as smoking. This pathway at the site is not expected to cause adverse health effects because of the small quantities of asbestos detected, the lack of evidence to show that ingestion is a health threat, and the fact that most children would only visit the Park occasionally.

Dermal exposure is also possible, but the only health effects ever observed from this route are the development of warts and corns. This skin irritation has been observed in persons handling asbestos-containing insulation. Although fibers can penetrate the skin, they are not absorbed into the blood and would not be expected to cause any adverse health effects. Thus, the dermal route of exposure is considered insignificant.

Potential Exposure Pathways

The potential exposure pathway of greatest concern at the Park is inhalation of asbestos fibers from air. As stated previously, inhaling high levels of asbestos fibers in air can lead to serious health effects, but asbestos fibers were not found in the air. Additional potential pathways are the ingestion of contaminated water and dermal contact with contaminated water. Water samples at the Park did not contain asbestos fibers.

COMMUNITY CONCERNS

The community was very concerned about the Park, and Chicago-area media publicized the issue. Two public availability sessions were held on May 26, 1998, to address the public's questions. In addition, an area schoolteacher and her class wrote IDPH a letter asking questions about Park conditions. IDPH responded to that letter. Because of this exchange, a meeting with the class and state government officials occurred on July 2, 1998. Most concerns were about past, present, and future exposures to people who visited

the park and about the potential for developing adverse health effects. Some concerns were also posed about drinking Lake Michigan water. The public was informed that Illinois EPA regulates and requires testing of public water supplies for asbestos. Parents also expressed concerns about their children who might inadvertently pick up a piece of ACM mistaking it for a rock.

IDPH, IDNR, and Illinois EPA jointly developed a fact sheet to communicate information regarding ACM at the Park. The fact sheet is available in kiosks at heavily used areas in the Park, such as the lodge, the marina, and the public swimming beaches. The kiosks also have display boxes with examples of what ACM might look like. In addition, signs printed in both English and Spanish were placed throughout the Park to warn people about potential asbestos contamination. The signs were intended to discourage people from picking up suspected ACM and to have them notify the Park Office if suspected ACM was found.

This public health assessment was made available for public comment from March 2 to April 3, 2000, at the Zion Public Library and on the IDPH home page. No public comments were received.

CHILD HEALTH INITIATIVE

IDPH recognizes that children are especially vulnerable to the effects of many contaminants in the environment. When exposure pathways are evaluated, children are taken into consideration. At Illinois Beach State Park, children would be expected to be part of the exposed population. The exposures evaluated could be especially important for young children with excessive hand-to-mouth activity that would lead to greater ingestion of asbestos in soil. This was taken into consideration when evaluating the completed pathways. No adverse health effects are expected to occur for any children exposed to the very low levels of asbestos found at the Park.

CONCLUSIONS

The information available indicates that no apparent public health hazard exists related to asbestos contamination at Illinois Beach State Park. Completed exposure pathways at the Park include ingestion of and dermal contact with asbestos-contaminated sand/soil. Because of the low asbestos levels found, the fact that most of the ACM is non-friable, the limited absorption into the body, and results of current toxicological information reviews, exposures would not be expected to cause adverse health effects in Park workers or visitors. A potential exposure pathway to Park workers and visitors exists through airborne exposure to contaminated sand, but sampling has not shown that this exposure is occurring.

RECOMMENDATIONS AND PUBLIC HEALTH ACTION PLAN

IDPH recommends:

1. Continued investigation of the source of ACM. Illinois EPA plans to continue the investigation.

2. Continued removal of suspected ACM found at the Park. Illinois EPA plans to arrange removal of any suspected ACM found.

3. Continued provision of educational pamphlets for the public visiting the Park. IDPH will have fact sheets available at the kiosks until ACM is no longer found at the Park.

4. Maintaining signs warning of asbestos contamination at the Park. Illinois EPA and IDPH will work with Park officials to be sure signs are maintained until they are no longer needed.

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DOCUMENTS REVIEWED

Analysis of Environmental Samples for Asbestos Fibers, TEM Incorporated, 1998

"Combing the Sands for Asbestos Clues," Casey Bukro, Chicago Tribune, June 10, 1999

Illinois Beach State Park Pamphlet, Illinois Department of Natural Resources, June 1996

Sampling for Asbestos Material, Oversight of Asbestos Removal Activities, Hanson Engineers, May 1998

Toxicological Profile for Asbestos, Update, Agency for Toxic Substances and Disease Registry August 1995

Reconnaissance of Environmental Conditions of Illinois Beach State Park (Draft), Illinois Department of Natural Resources, February 4, 1998

TABLES

Table 1. Sampling Results from Illinois Beach State Park

Area Sampled	Number of Detections	Range Found	Detection Limit	Comparison Used
Air Samples				
Public Beach	**0 /8**	**ND**	**0.005 structures/cc**	**0.01 fibers/cc**
Infrequently Used Shoreline	**0/4**	**ND**	**0.005 structures/cc**	**0.01 fibers/cc**
Background [1]	**0/1**	**ND**	**0.005 structures/cc**	**0.01 fibers/cc**
Water Samples				
Public Beach	**0/4**	**ND**	**0.8 mf/L**	**70 mf/L**
Background [2]	**0/1**	**ND**	**0.8 mf/L**	**70 mf/L**

Sand Samples by Polarized Light Microscopy (PLM)				
Public Beach	**4/90** [3]	**ND - <1%**	**1%**	**1%**
Infrequently Used Shoreline	**6/71** [4]	**ND - <1%**	**1%**	**1%**
Forest Preserve	**0/4**	**ND**	**1%**	**1%**
Nutrient Sand Stockpile	**0/2**	**ND**	**1%**	**1%**
Ancient Dunes	**0/5**	**ND**	**1%**	**1%**
Sand Samples by Transmission Electron Microscopy (TEM)				
Public Beach	**4/8**	**ND - <1%**	**1%** [5]	**1%**
Infrequently Used Shoreline	**9/10**	**ND - <1%**	**1%** [5]	**1%**
Ancient Dunes	**0/1**	**ND**	**1%** [5]	**1%**

[1] Sample taken at the intersection of Wadsworth and Sheridan Roads at the entrance of the Park
[2] Sample taken in Wisconsin at Prairie Harbor Yacht Club
[3] Twenty-four were also analyzed by Point Counting Method EPA
[4] Fourteen were also analyzed by Point Counting Method EPA
[5] reporting limit of hybrid method
ND - not detected
cc - cubic centimeter
mf/L - million fibers per liter

Table 2. Exposure Pathways

Completed Pathways

Pathway Name	Source	Media	Exposure Point	Exposure Route	Receptor Population	Time of Exposure	Exposure Activities	Estimated Number Exposed	Chemicals
Ingestion of contaminated sand	ACM from unknown source	Sand Soil	Beaches	Ingestion	Park workers Park visitors	Past Present Future	Working at or visiting the Park. Sunbathing, swimming, running along beach	2.75 million	Asbestos
Dermal contact with contaminated sand	ACM from unknown source	Sand Soil	Beaches	Dermal	Park workers Park visitors	Past Present Future	Playing in sand, sunbathing	2.75 million	Asbestos

Potential Pathways

Pathway	Source	Media	Exposure	Exposure	Receptor	Time of	Exposure	Estimated	Chemicals

Name			Point	Route	Population	Exposure	Activities	Number Exposed	
Ingestion of contaminated water	ACM from unknown source	Lake Michigan water	Swimming Beaches	Ingestion	Park visitors	Future	Swimming in Lake Michigan at the Park	2.75 million	Asbestos
Inhalation of asbestos fibers	ACM from unknown source	Sand Soil Water	Beaches	Inhalation	Park workers Park visitors	Future	Working at or visiting the beach, playing in sand, sunbathing, swimming	2.75 million	Asbestos

FIGURES

Figure 1. Location of Illinois Beach State Park

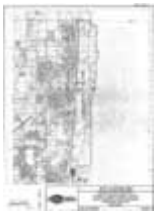

Figure 2. Site Location Map

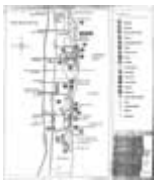

Figure 3. Site Location Map

CERTIFICATION

This Illinois Beach State Park public health assessment was prepared by the Illinois Department of Public Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. It is in accordance with approved methodology and procedures existing at the time the public health assessment was begun.

Gail D. Godfrey
Technical Project Officer
SPS, SSAB, DHAC, ATSDR

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

Lisa C. Hayes
for Chief, SPS, SSAB, DHAC, ATSDR

Appendix D

Joint Press Release
By
Illinois Attorney General,
Illinois EPA,
Illinois Department of Public Health,
Illinois Department of Natural Resource

Regarding Asbestos
At
Illinois Beach State Park

June 2005


For Immediate Release
Contact: Melissa Merz
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June 16, 2005

AGENCIES: REPORT RELEASED TODAY ON ILLINOIS BEACH STATE PARK

Chicago -- The University of Illinois at Chicago School of Public Health today released the Interim Report of Findings on Illinois Beach State Park (IBSP): Determination of Asbestos Contamination in Beach Nourishment Sand.

An environmental consulting firm obtained sand samples from seven locations and analyzed them for asbestos. UIC environmental health professionals reviewed these results and conducted a Screening Risk Assessment of proposed sources of beach nourishment sand for IBSP (i.e., North Point Marina and the Approach Channel to Waukegan Harbor) and the North and South Unit beaches at IBSP to determine whether they pose an unacceptable risk to the visitors per U.S. Environmental Protection Agency (U.S. EPA) standards. The U.S. EPA acceptable risk levels for excess cancer risks are generally less than one in 10,000 (1.0×10^{-4}) to one in 1,000,000 (1.0×10^{-6}).

UIC noted that the asbestos level in samples from the IBSP - South Unit (the most popular beach) is statistically similar to the beaches that were used as a baseline. As a result, UIC concluded that IBSP - South Unit was not an area of concern. Conversely, IBSP - North Unit, and the two sand nourishment source areas - North Point Marina and the Approach Channel to Waukegan Harbor, have asbestos levels statistically higher than the baseline. UIC focused its Screening Risk Assessment on these three areas. UIC concluded:

> "This screening risk estimate, using conservative (protective) worst-case assumptions, indicates risk levels that are lower than the USEPA level of one in one million excess cancer risk. This indicates that the true cancer risks to beach users at IBSP are less than the standard range of acceptable risk. It also indicates that nourishment sand from the North Point Marina and the Approach Channel to Waukegan Harbor, if applied to the beach, would not raise the risk above the U.S. EPA level of one in one million excess cancer risk". (Page 44)

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The Interim Report is consistent with three separate previous studies, which have all found no significant public health threat at IBSP due to asbestos exposure.

On May 15, 1998, Illinois Department of Public Health Director John Lumpkin, M.D., concluded that IBSP "is safe for public use" after asbestos sampling of the water, sand and air was conducted by an environmental contractor.

On June 16, 2000, the IDPH, along with the U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry (ATSDR) issued a Public Health Assessment for IBSP, which concluded that the "information available indicates that no apparent public health hazard exists related to asbestos contamination at Illinois Beach State Park".

On August 1, 2003, scientists at ATSDR and IDPH reviewed extensive data from air monitoring for asbestos conducted during June and July, 2003, in two areas near the Midwest Generation fishing pier located near the South end of IBSP, and concluded that, "[b]ased on the sampling results, there does not appear to be a public health hazard from asbestos containing material (ACM) at these two sites."

On July 2, 2003, Madigan created a task force to coordinate the efforts of the various federal, state, county and municipal governments and agencies that may be involved in ensuring public safety at IBSP and in reviewing charges of unsafe asbestos levels at Illinois Beach State Park. ACM has been encountered along the 6.5 miles of IBSP since at least 1998.

Task force members include the Attorney General's Office, the U.S. EPA, the U.S. Army Corps of Engineers, the Illinois Department of Natural Resources (IDNR), the Illinois Environmental Protection Agency (IEPA), the Illinois Department of Public Health (IDPH), the City of Waukegan, the Waukegan Park District and the Lake County State's Attorney's Office.

The Interim Report provides four recommendations to assist in continuing to minimize potential human exposure to ACM:

1) A continuation and expansion of beach surveillance for, and pick-up of, ACM at IBSP that would include additional surveillance after inclement high wind and wave events and detailed record keeping of ACM findings and descriptions.
2) A review of IBSP visitor education efforts about ACM to determine effectiveness.
3) An ACM survey of areas that are impacted by erosion for the remains of housing infrastructure. If infrastructure that includes ACM is found, it should be remediated in accordance with applicable rules and regulations for asbestos abatement.
4) Exploration of other options for long-term beach nourishment and erosion management.

UIC has requested accelerated review of the Interim Report from ATSDR relative to the screening risk assessment, conclusions and recommendations. UIC is also seeking a full peer review by federal environmental and public health agencies.

All of the state and federal agencies involved in the task force support the recommendations.

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Appendix E

Press Release
By Illinois Department of Public Health

Regarding Asbestos
At
Illinois Beach State Park

May 1998

NEWS RELEASE

Illinois Department of Public Health

May 15, 1998

ILLINOIS BEACH STATE PARK SAFE FOR PUBLIC USE

SPRINGFIELD, IL — Dr. John R. Lumpkin, state public health director, today announced that, after a thorough analysis of Illinois Beach State Park air, water and sand for possible asbestos contamination, it has been determined the popular recreation area is safe for public use.

"We believe people can safely visit and enjoy this treasured natural resource," Dr. Lumpkin said. "Asbestos was not detected in the air or water and extremely low levels of asbestos, well below any human health concern, were found in only a handful of the sand samples."

The Illinois Department of Natural Resources (DNR) will continue to closely patrol the six-mile beach for any asbestos-containing material that may wash up on shore, and signs and brochures at the park will advise visitors to report any such materials to the park office. Examples of what the asbestos-containing materials look like also will be available at the park.

Efforts by the U.S. Environmental Protection Agency (USEPA) and others to identify the source of the asbestos-containing materials are continuing.

About 200 air, water and sand samples were collected in March by an independent contractor, Hanson Engineers of Springfield, hired by DNR. The samples were analyzed by TEM Inc. of Glen Ellyn and the results were reviewed by representatives of IDPH, DNR and the Illinois Environmental Protection Agency.

Since no standards have been established for outdoor exposure to asbestos, strict federal indoor standards for schools were applied to the sand samples that were positive for asbestos. The asbestos content of the positive samples was less than 1 percent, the level of concern for asbestos in an enclosed classroom. The USEPA states that only material containing greater than 1 percent asbestos is considered asbestos-containing material.

Air samples were collected aggressively, which means that blowers were used to stir the sand and air for 30 minutes immediately before collecting the sample. This method assured that any asbestos fibers that might have settled to the ground would be reintroduced into the air, resulting in a greater likelihood that they would be captured in the sample.

The air samples and 10 percent of the sand samples were analyzed by transmission electron microscopy (TEM), which utilizes an electron microscope capable of 20,000 magnification for detecting extremely small fibers or parts of fibers. The remainder of the sand samples were analyzed by polarized light microscopy, a more common method that uses less magnification but is still able to detect very small fibers.

Although it unlikely a child would eat an appreciable amount of sand, the asbestos levels in the few sand samples from the beach and shoreline that were positive for asbestos (23 of 179 samples) were so low that they would not be considered a health risk.

The health risks of asbestos exposure depend primarily on how much is inhaled and over what period of time. Studies first identified health problems associated with asbestos in ship workers during World War II. These workers, who used no respiratory protection, routinely handled asbestos insulation that was utilized to wrap ship boilers. Their long-term exposures to high concentrations of asbestos in the air led to asbestosis (a hardening of the lungs that makes breathing difficult), mesothelioma (a cancer of the chest lining) and lung cancer.

Exposure to small amounts of asbestos for short time periods has not been found to be associated with human disease.

Low levels of asbestos are commonly found in the environment, such as in high traffic areas due to the wearing of automobile brakes or in drinking water taken from a large body of water.

The “Camplin Report”

Review of Current Asbestos Contamination Concerns

At

Illinois Beach State Park

June 13, 2003

Authored by

Jeffery C. Camplin, CSP, CPEA

Review of Current Asbestos Contamination Concerns

Illinois Beach State Park
State Dedicated Nature Preserve and Federal Critical Habitat
Johns-Manville Superfund Site #2
Midwest Generation Fishing Pier Area
Proposed Waukegan Outdoor Sports Complex Site
Lake Michigan

Waukegan, Zion, and Winthrop Harbor Illinois

Prepared in response to a request from
The Illinois Dunesland Preservation Society

June 13, 2003

Conducted by:

Jeffery C. Camplin CSP, CPEA

Introduction/Background

The following report was prepared in response to an initial investigation of suspected-asbestos containing materials found in the Midwest Generation Pier public fishing area and parking lot at the Greenwood Ave and the lakefront commonly referred to as Johns-Manville Superfund Site #2. The investigation was initiated by a call from Mr. Paul Kakuris, President of the Illinois Dunesland Preservation Society[1] located in Zion, IL to investigate and obtain a bulk sample of suspected asbestos containing materials. The Johns-Manville Superfund Site #2 area is located at the end of Greenwood Ave and the Lakefront in northeast Waukegan. The site was surrounded on the south side by a Midwest Generation electrical plant and warm water discharge, on the east by Lake Michigan, and on the north and west by the former Johns-Manville manufacturing plant and current Superfund Site. A visual inspection of the area conducted on April 24, 2003 revealed multiple pieces of friable asbestos in the fishing area and also in adjacent Johns-Manville U.S.EPA Superfund Site #2 areas that had undergone recent remediation (summer 2002). Friable is a regulatory term that means an asbestos containing material can crumble or be reduced to powder by hand pressure and easily release asbestos fibers into the air. Asbestos is predominately an airborne hazard and can cause health hazards including lung cancer, mesothelioma, and asbestosis. A bulk sample of the suspected asbestos-containing material was obtained at Johns-Manville Superfund Site #2 near the Midwest Generation Fishing Pier public beach and was subsequently found to have 50% chrysotile asbestos in it.[2]

The majority of the asbestos containing materials visible on the surface of the Johns-Manville Superfund Site #2 which includes the Midwest Generation Pier public fishing area) and elsewhere on Illinois Beach State Park and State Dedicated Nature Preserve and Federal Critical Habitat were originally manufactured as non-friable materials. These cement, roofing, and friction products do not readily release asbestos fibers unless mechanical actions or other forces act upon them. The asbestos materials found at these sites have been exposed to these forces. Asbestos is a health hazard when asbestos fibers become airborne. The U.S. EPA found that the asbestos contamination located in and around the Johns-Manville Waukegan Superfund Site have become deteriorated from exposure to the outdoor elements and are no longer a non-friable material. The U.S. EPA stated in response to a Johns-Manville claim that the asbestos chunks on the surface of the Johns-Manville Superfund Site in Waukegan are non-friable, "THE PRIMARY BONDING AGENTS USED AT THE SITE ARE SILICATES AND GYPSUM (CEMENT) AND ASPHALT. IT IS WELL-KNOWN THAT SUNLIGHT AND MOISTURE, AND PARTICULARLY FREEZING MOISTURE, DETERIORATE THESE MATERIALS. THE SILICATE AGENTS ARE ALSO HIGHLY ALKALINE AND SUSCEPTIBLE TO CHEMICAL ATTACK BY ACID RAIN AND GROUND WATER. THE PRODUCTS MANUFACTURED AT THE SITE WERE OF COURSE DESIGNED TO BE WEATHER-RESISTANT; NEVERTHELESS, THEY ARE NOT WEATHER-PROOF, AND DETERIORATION TO A FRIABLE CONDITION WILL EVENTUALLY OCCUR. AS FOR A "MEANINGFUL" TIME FRAME, THE WRITER HAS OBSERVED CEMENT-BONDED ASBESTOS BOARD LYING ON THE SURFACE AT OTHER SITES IN SUCH A ROTTED CONDITION THAT ANY DISTURBANCE WOULD CAUSE THE APPARENT

[1] Illinois Dunesland Preservation Society. P.O. Box 466, Zion, IL 60099, (312)-332-3377
[2] Camplin Environmental Services, Inc., "Asbestos Testing Report at Site #2", April 29, 2003.

STRUCTURE TO VANISH; YET THESE SCRAPS HAD BEEN EXPOSED ON THE SURFACE FOR NO MORE THAN 2 TO 5 YEARS. IT IS ALSO QUITE POSSIBLE THAT A SIGNIFICANT DEGREE OF THIS STRUCTURAL BREAKDOWN HAD OCCURRED DURING THE UPFREEZING PERIOD, EVEN BEFORE EXPOSURE TO AIR AND SUNLIGHT"[3] I have personally observed similar conditions of visible asbestos materials at these sites in walkthroughs conducted in April and May of 2003.

Asbestos debris that has started to breakdown on Illinois Beach. Photo by Jeff Camplin 2003

Mr. Kakuris provided additional documentation regarding the Johns-Manville Superfund Site, Army Corp of Engineers dredging activities, and Illinois Beach State Park asbestos cleanup activities from 1998. These reports indicated obvious gaps in how the asbestos contamination issues had been addressed by the U.S. EPA, Illinois EPA, Army Corp of Engineers, Illinois Department of Natural Resources, Illinois Department of Public Health, Johns-Manville, Midwest Generation (Commonwealth Edison), Waukegan Park District, and other state and local agencies. Investigation into other related site documents increase concern regarding the scope and magnitude of existing and ongoing visible and microscopic asbestos contamination to the Superfund Sites, public areas, and Lake Michigan. This report is by no means a complete or comprehensive final evaluation of the subject properties. A series of more in-depth reports are currently being worked on addressing analytical methods, demolition activities, remediation

[3] USEPA Superfund Record of Decision: Johns-Manville Corp., EPA/ROD/R05-87/048-1987 http://www.epa.gov/superfund/sites/rods/fulltext/r0587048.pdf.

techniques, and chemical contamination related to this area. An initial report on my findings and concerns at these sites is as follows.

Executive Summary

I have found the visible surface and emerging subsurface asbestos materials at the Midwest Generation Pier public fishing area of the Johns-Manville Superfund Site #2, the Illinois Beach State Park and State Dedicated Nature Preserve and Federal Critical Habitat, and Lake Michigan in a deteriorated, friable condition. Despite multiple investigations and millions of dollars in remediation activities by public and private entities, asbestos continues to reappear throughout the subject sites. ***It is my opinion that the visible asbestos in the above referenced areas is regulated asbestos material subject to enforcement under State of Illinois and Federal asbestos regulations. These asbestos-contaminated areas should be immediately isolated from the public. Only authorized personnel should be allowed into the areas to perform additional investigation. The locations and quantities of visible and microscopic asbestos contamination on the surface and subsurface of both land and water areas of the sites must be identified. The sources of this visible and microscopic asbestos contamination should be identified and included in the overall remediation plan for the sites.***

I have also found that the public access beach on Lake Michigan east of the Johns-Manville U.S.EPA Superfund Site #2 (including the public access fishing areas near the Midwest Generation warm water channel beach) have continually reoccurring visible and microscopic asbestos contamination. This microscopic asbestos surface contamination is of major concern to public health due to secondary asbestos exposures at home when beach patrons, their pets, and park staff bring microscopic contamination with them off-site. The U.S. EPA issued guidance information on May 21, 2003 regarding potential microscopic asbestos contamination of vermiculite insulation used in homes. The guidance recommends that homeowners avoid contact with the asbestos-contaminated material stating, "Any disturbance has the potential to release asbestos fibers into the air." The U.S. EPA further recommended, "Children should not be allowed to play in an attic with open areas of vermiculite insulation[4]." No such recommendations have been made to the public regarding the microscopic asbestos contamination on the beaches and in Lake Michigan water of Illinois Beach State Park. ***Multiple studies are being performed at other locations by the National Institute for Occupational Safety and Health (NIOSH)[5] and the Mine Safety and Health Administration (MSHA[6]) regarding a concern to public health related to asbestos contamination being brought home to families from off-site asbestos-contaminated areas. No evaluation of microscopic asbestos contamination to patrons, their pets, and park staff have been conducted by any agency involved with these sites. No recommendations or warnings have been made to the public regarding microscopic asbestos contamination found in the water and sand at Illinois Beach State Park.***

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[4] USEPA Newsroom," National Consumer Awareness Campaign Launched on Vermiculite Insulation Used in Some Home Attics.", May 21, 2003 www.epa.gov/newsroom/headline2_052103.htm.

[5] NIOSH. "Protect Your Family, Reduce Contamination at Home", DHHS (NIOSH) Publication number 97-125 www.cdc.gov/niosh/thttext.html.

[6] *Federal Register*, Volume 67, Number 61, 30 CFR Parts 58 and 72, Measuring and Controlling Asbestos Exposure, (March 29, 2002) p. 15134-15138.

The water of Lake Michigan has been polluted with excessive asbestos fibers and other toxic contaminants from the Johns-Manville Industrial Canal water discharges and other sources over the last 80 years. This documented asbestos pollution occurs adjacent to the public beach, public fishing area, and Waukegan drinking water intake. A report from as early as 1977 found elevated asbestos fibers in the waters of Lake Michigan.[7] This same report stated asbestos had been identified in the Chicago area Lake Michigan potable water intakes in the early 1960's. These tests followed the lake currents from the north near Zion, Illinois in a southerly direction down to Burns Harbor, Indiana. The current elevated asbestos fiber contaminations allowed to be discharged into Lake Michigan from the Johns-Manville industrial canal unfortunately does not evaluate all carcinogenic and disease-causing asbestos fibers. Only asbestos fibers at or above 10 microns are counted and allowed by U.S. EPA to be dumped into Lake Michigan at up to 7 million fibers per liter of water. A report from the U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR) state that asbestos has been found to cause disease at fiber lengths greater than or equal to 5 microns.[8] Carcinogenic and disease-causing asbestos fibers between 5 and 10 microns are not measured and allowed to be discharged into Lake Michigan at any amount. ***On opening week of the Illinois Beach in May, 2002, the U.S. EPA documented asbestos-contaminated water discharged from the Johns-Manville Industrial Canal into Lake Michigan at over 21 million asbestos fibers (over 10 microns in size only) per liter of water.[9] This violation measurement was over 3 times the maximum asbestos fiber levels allowed by an expired U.S. EPA discharge permit. Yet no violation was issued by U.S. EPA or Illinois EPA. There was no notification to the public and beach patrons were allowed to swim and sun in an area immediately adjacent to this violation measurement site. There have been no studies by any agency involved with these sites regarding the health risks of microscopic asbestos-contaminated water washing onshore resulting in continuous recontamination of the public beaches and fishing areas. No studies have been conducted on the fish living in the asbestos-contaminated water and whether eating these fish is a health threat to the public.***

Asbestos-contaminated sand has been dredged from Lake Michigan and dumped on the Illinois Beach State Park as beach replenishment material. In 1998, the Illinois EPA classified the dredged asbestos-contaminated sand as a special waste.[10] To date, the asbestos-contaminated sand piles remain just south of the North Point Marina on IDNR property at Illinois Beach State Park. No actions have been taken on this waste material and the area is currently open to the public. Dredging of the asbestos-contaminated lake bottom continues as of the writing of this report. ***The asbestos-contaminated dredge piles should be isolated from the public and properly disposed of as a special waste. Dredging the asbestos-contaminated lake bottom should cease until the sources, location, and quantities of off-shore asbestos contamination is identified.***

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[7] McMillan, Lilia, Roy Stout, and Benjamin Willey. "Asbestos in Raw and Treated Water: An Electron Microscopy Study", Envirnonmental Science and Technology, April 1977, vol. 11 pp.390-394

[8] ATSDR. "Public Health Statement for Asbestos." CAS# 1332-21-4. September, 2001 www.atsdr.cdc.gov/toxprofiles/phs61.html.

[9] U.S. EPA. "Water Discharge Permits Detailed Reports." NPDES Permit# IL0069809. http://oaspub.epa.gov/enviro/pcs_det_reports.pcs_tst?npdesid=IL0069809&npvalue=1&npvalue=2&npvalue=3&npvalue=4&npvalue=5&rvalue=13&npvalue=6&npvalue=7&npvalue=9&npvalue=10&npvalue=11.

[10] Illinois EPA letter from then Director Mary Gade to Brent Manning, Director of the Illinois DNR, November 13, 1998.

The risk assessment conducted for the Waukegan Park District at the proposed sports complex site did not evaluate all of the expected toxic exposures, expected conditions, or the representative population expected to use the site. Consider if the sports complex already existed. What scrutiny would be conducted by the public if a large electrical power plant and asbestos waste disposal site was proposed to be constructed immediately next to the sports complex? What type of evaluations and assurances would be demanded by the public? The risk assessment study excluded ozone and most carcinogenic and disease-causing asbestos fibers less than 10 microns. ***The risk assessment conducted at the proposed sports complex site only evaluated risks to a healthy, 90 pound child. A more thorough risk assessment of growing "at risk" children exposed to <u>all</u> possible toxic materials under representative conditions should be conducted.***

Site History

The subject site consists of the Illinois Beach State Park, State Dedicated Nature Preserve and Federal Critical Habitat, the former Johns-Manville Manufacturing site, the Johns-Manville Superfund Site (the original site and six additional locations), the Midwest Generation Pier public fishing area of Johns-Manville Superfund Site #2, leased by the Illinois Department of Natural Resources, and Lake Michigan. The site runs along the Lake Michigan shoreline from the northeastern boundary of the city of Waukegan extending approximately 6.5 miles north to the Illinois-Wisconsin state line.

<u>Former Johns-Manville Asbestos Plant and Superfund Area</u> – The former Johns-Manville manufacturing facility was located at 1871 Pershing Road, Waukegan IL. The Johns-Manville asbestos manufacturing facility was constructed in 1919. The Johns-Manville asbestos manufacturing operations began in 1923 and ceased in 1985 when they filed for Chapter 11 bankruptcy. Asbestos products manufactured at the site included low temperature pipe insulation, brake linings and pads, packings, insulation cements, roofing materials, rag felt and paper, magnesia products, floor tile, shingles and transite cement pipe and sheeting. The site covers approximately 300 acres of land. The site is bordered by Lake Michigan and the Illinois Beach State Park, both of which are used for recreation. Johns-Manville ceased operations onsite in 1998 and began demolition of the manufacturing buildings in 2000.
According to the U.S.EPA,[11] the Johns-Manville Superfund Site is an approximately 150-acre asbestos disposal area. Approximately 3 million cubic yards of off-specification products and wastewater sludge containing asbestos and, to a lesser degree, lead, chromium, and thiram, were disposed in the eastern area of the 300-acre Johns-Manville property. The disposal area is approximately 25 to 30 feet above grade. In 1988, the U.S. Environmental Protection Agency (U.S. EPA), Illinois Environmental Protection Agency (IEPA), and Manville Corporation entered into a Consent Decree (CD) to conduct the Remedial Design and Remedial Action (RD/RA) at the site. The cleanup activities that were implemented included placement of a 24-inch soil cover with vegetation over all dry waste areas, paving of two parking lot areas contaminated with asbestos, resurfacing site roadways with a 24-inch cover, and providing rip-rap along all operating wastewater treatment ponds. Construction activities began in November, 1988 and after two enforcement actions, including collection of a $38,000 stipulated penalty (for

[11] U.S. EPA Region 5 Superfund Division. NPL Fact Sheets for Illinois: Johns-Manville Corp. EPA ID#005443544, January 2003. www.epa.gov/R5Super/npl/illinois/IL005443544.htm.

late submission of documents) and a $165,000 civil penalty (for improper grading activities), the RA proceeded smoothly until its completion in August, 1991. Additional work was included in the RA when further contamination was discovered during site clearing activities. Ultimately, approximately 3 million cubic yards of asbestos-containing waste that was spread over approximately 150 acres was provided with a cover which was supposed to eliminate the potential for releases of asbestos to the air. The total cost of the RA was approximately $20,000,000, including the additional work. Currently, Operation and Maintenance (O & M) activities, such as soil cover maintenance and groundwater monitoring, continue at the site. Contingency plans are in place in case the soil cover fails or the groundwater or surface water become contaminated with levels that exceed applicable standards. The first Five-Year Review for the site was completed on January 21, 1999.

Since 1998, six additional areas, all of which contained asbestos-containing material (ACM) were discovered outside of the Johns-Manville fence line. In 2002, the largest of the six sites was cleaned up under an EPA-funded removal action after concerns were raised by the Illinois Dunesland Preservation Society. Plans have been made to clean up the five additional sites, but actual cleanup work has not yet begun.

U.S. EPA issued an Explanation of Significant Differences in September, 2000 which requires the closure of the former wastewater treatment ponds (put out of service in 1998) by January 1, 2004. The lagoon system is still connected to Lake Michigan through an effluence pipe.

Illinois Beach State Park and Nature Preserve - Illinois Beach stretches for six and a half miles along the sandy shore of Lake Michigan in Northern Illinois. The Illinois Department of Natural Resources states the 4,160-acre site provides the public with an opportunity for swimming, boating, picnicking, hiking, fishing, and camping[12]. In 2002 over 2.6 million people visited the park. It is the most visited State Park in Illinois and the 11th most visited park in the United States.

In 1948, the state acquired the first parcels of what is now Illinois Beach State Park. In 1950, the Illinois Dunesland Preservation Society was established to protect the natural qualities of the area, and through its efforts and the efforts of the Department of Conservation the area south of Beach Road was dedicated in 1964 as the first Illinois nature preserve. The northern unit, from the Commonwealth Edison power plant to the Wisconsin border, was acquired between 1971 and 1982.

Illinois Beach State Park encompasses the only remaining beach ridge shoreline left in the state. A portion of the south unit of the park was dedicated in 1964 as the first Illinois nature preserve. The nature preserve contains more than 650 species of plants, including a multitude of colorful wildflowers. The Dead River winds through the preserve creating a unique wetland habitat for many endangered species. The Dead River is a stream that is blocked by sandbars much of the year forming an elongated pond. When the water finally rises high enough, it breaks through the sandbar and drains the surrounding marshes.

In 1998, friable asbestos washed up on the beach area of the park. A remediation project was initiated to remove visible asbestos. Air testing performed upon completion of the remediation activity indicated the beach area was safe to reopen to the public. A memo issued by an EPA toxicologist in August of 1999 was critical of air testing as not being sufficient for a public

[12] Illinois Department of Natural Resources. Website information http://dnr.state.il.us/lands/landmgt/PARKS/R2/ILBEACH.HTM.

health risk assessment[13]. The beach is currently open and under an ongoing maintenance program where asbestos trained park personnel perform periodic surveillance of the beach and remove visible asbestos as it washes onshore. Due to recent budget constraints there is only one Park employee who has part-time responsibility for the surveillance of the 6.5 miles of asbestos-contaminated beach.

Johns-Manville Superfund Site #2 including the Midwest Generation Pier Public Fishing Area – In 1991, the Illinois Department of Conservation began a process to lease a popular fishing pier and beach area known as Midwest Generation Pier. The fishing area is located at Lake Michigan shoreline at the end of Greenwood Ave. in northeast Waukegan. The leased area consists of the Greenwood Ave. access road, parking area, beach, pier, Midwest Generation high velocity warm water discharge, and Lake Michigan shoreline. The area is sandwiched between the Johns-Manville Superfund Site to the north and Midwest Generation power plant warm water discharge to the south and west, and Lake Michigan to the east.
Prior to leasing the property from Johns-Manville and Midwest Generation (Commonwealth Edison) the property had visible friable asbestos removed. In 2002, the Greenwood Ave road entrance and parking area were included in Superfund remediation activities due to the presence of visible surface and subsurface asbestos contamination. This is the site where visible friable asbestos has currently resurfaced prompting this more expanded report.

Photo by Jeff Camplin 2003

[13] U.S. EPA memo from EPA Toxicologist Arunas K. Draugelis to Brad Bradley, Region 5 Superfund Project Manager, March 21, 2000.

Would you place your beach towel here? If the piece of asbestos was picked up would you ignore the microscopic asbestos contamination and still place a towel down here? Should children play here?

Summary of Asbestos Contamination Concerns

There are several concerns that arise regarding asbestos contamination at the Johns-Manville Superfund Site and adjacent public areas. There are many agencies and private entities involved with the sites; each with there own concerns and agenda. **This fragmented approach has resulted in an inadequate identification of the scope of asbestos contamination as it relates to public health.** The Inspector General for the U.S. EPA found that a similar fragmented approach taken by the U.S. EPA, State and local agencies at an asbestos Superfund Site in Libby, Montana. This U.S. EPA Inspector General's report from 2001 stated "*These barriers prevent EPA from sufficiently addressing asbestos-contaminated vermiculite in Libby. EPA's efforts were hampered by fragmented authority and jurisdiction within EPA and between it and other agencie*"[14]." The Libby Montana site is now being addressed with public health and safety as the number one goal. A similar approach is needed for the Johns-Manville Superfund Sites, Illinois Beach State Park beaches, State Dedicated Nature Preserve and Federal Critical Habitat areas. These asbestos contamination concerns are further heightened due to the uniqueness of the areas involved in this report. The combination of a former asbestos manufacturing complex, an existing industrial area, multiple Superfund Sites, public fishing areas, public beaches and swimming areas, endangered species nature preserve, Lake Michigan watershed, potable water supply, and proposed outdoor park district sports complex requires a more comprehensive evaluation of existing and reoccurring asbestos contamination and other toxic exposures in the area to protect public health. A summary of concerns is as follows:

- **Friable asbestos continues to re-contaminate the Superfund site #2 including the Midwest Generation Pier fishing area, State Park beach area, and Federal dedicated nature preserve, and Superfund Site #2 that has recently undergone remediation designed to last for several decades**.
    - Visible friable and microscopic asbestos continues to contaminate the public areas from existing surface and subsurface contamination, old Johns-Manville asbestos dump areas, dredging activities, and asbestos-contaminated water discharges from the Superfund Sites.
        - On June 6, 1987 a Record of Decision (ROD) was issued on the Johns-Manville Superfund Site. The ROD stated "Dikes will be constructed at the depressed area along the north side of the industrial canal to prevent industrial canal water from migrating offsite."[15] The dike was not constructed and asbestos-contaminated water from the industrial canal continues to migrate offsite into the Illinois Beach State Park nature preserve, Dead River, and eventually Lake Michigan. This was visually confirmed and photographed on May 19, 2003. The dike was not constructed at the request of the Illinois Department of Natural Resource.

[14] U.S. EPA Office of Inspector General. "Report – EPA's Action's Concerning Asbestos-Contaminated Vermiculite in Libby, Montana.". 2001-S-7, March 31, 2001. www.epa.gov/region8/superfund/libby/lbbyig.html.
[15] USEPA Superfund Record of Decision: Johns-Manville Corp., EPA/ROD/R05-87/048-1987 http://www.epa.gov/superfund/sites/rods/fulltext/r0587048.pdf

However, an alternate plan to prevent asbestos-contaminated water from migrating out of the industrial canal of the Johns-Manville Superfund Site has not been addressed for over 15 years. The industrial canal remains in operation in violation of the NPDES permit and Federal Consent Decree.

- In May, 1988, the U.S. EPA toured the Midwest Generation Pier fishing area and discovered asbestos-containing transite pipe, roof shingles, and corrugated siding protruding from the ground.[16]
- On October 1, 1990, an asbestos complaint was filed with the Illinois EPA at the Greenwood Ave fishing pier where friable asbestos was found.[17] An investigation by the IEPA revealed 70% asbestos containing materials in the fishing area. The resulting report from December 27, 1990 states that Commonwealth Edison had been aware of the friable asbestos contamination since 8/9/90. The report states that the Johns-Manville investigation of the site recorded pieces of asbestos pipe being pulled out of the water by a swimmer at the park. The report went on to state that Johns-Manville had previously had the area cleaned prior to the complaint being filed. The report commented on the clean-up initiated by Johns-Manville by stating, "It apparently was not successful, since a lot of the material was visible along the shore lines…"[18] Follow up inspections by the EPA and State agencies found asbestos contamination still existed.
- In 1991, the Illinois Department of Conservation was investigating leasing the Greenwood Avenue Pier fishing area (now called the Midwest Generation Fishing Pier) from Commonwealth Edison. A December 23, 1991 walkover of the site by the Illinois Department of Conservation and Illinois EPA reported, "We found the site surprisingly clean and did not find any transite pipe or other asbestos containing materials."[19] Asbestos contamination currently exists in this area as of early June, 2003.
- In February, 1998 the Illinois Department of Natural Resources reported suspected asbestos on the beach of Illinois Beach State Park and Midwest Generation Pier fishing area. A sweep of the beach uncovered an 18" asbestos pipe and concrete with asbestos floor tile adhered to it. A total of 2 cubic yards of asbestos contamination weighing one to two tons was removed from the Illinois Beach State Park and Midwest Generation Pier shore line.[20] Visible friable and microscopic asbestos contamination is still present in Illinois Beach State Park beaches, State Dedicated Nature Preserve and Federal Critical Habitat, and Johns-Manville Superfund Site #2 which includes the Midwest Generation Pier fishing area as of May, 2003.

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[16] Newspaper article in The NewsSun (Lake County Illinois), "Dunesland Society Blasts EPA Work at Fishing Pier." July 6-7, 2002, p.A1.
[17] IEPA Complaint Receipt & Report Form filed by Tim Gackle, Industrial Hygienist, GLNTC on October 1, 1990.
[18] Illinois EPA memo from Chris Kallis to Johns-Manville on December 21, 1990 regarding complaint #3094.
[19] Illinois Department of Conservation memorandum from Covey Campbell to Gary McCandless on December 26, 1991.
[20] Hansen Engineering report to Illinois Department of Natural Resources, "Sampling for Asbestos Material Oversight of asbestos removal activities – Illinois Beach State Park." Volume I, May 1998.

- In November of 1998, the Illinois Department of Natural Resources requested an interpretation as to whether asbestos-contaminated sand dredged locally offshore should continue to be dumped on the Illinois Beach State Park beaches as beach nourishment.[21] The Illinois EPA Director responded stating, "It would appear that the sand containing asbestos materials would be a waste as an "industrial process waste" or "pollution control waste" when removed from its original location, and would require proper management and disposal."[22] No actions have been taken by any agency to address the previous dumping of asbestos-contaminated sand waste on the public beaches. A large, dredged pile of asbestos-contaminated sand has been abandoned at the north end of the park for over 5 years. The area is not secured and open to the public. A sign warns the public that visible asbestos should not be disturbed. The sign however does not warn the public not to breathe the microscopic asbestos fibers present in the sand. There is no documentation indicating whether the visible and microscopic asbestos-contaminated dredging waste will ever be addressed.
- On August 24, 1999, a U.S. EPA toxicologist identified and documented friable and non-friable asbestos contamination near the Johns-Manville Superfund Site #2 Midwest Generation pier fishing area. A March 21, 2000 memo issued by U.S. EPA Region 5 Toxicologist Arunas K. Draugelis to Brad Bradley, the U.S. EPA Superfund Site project manager stated, "In this area by Lake Michigan with strong winds and undisturbed conditions, you would expect not to find any asbestos fibers in the air samples but the material is still there and the risk associated with asbestos is still there." The asbestos air testing of the beach areas in 1998 was during March under windy and damp conditions. Mr. Draugelis concluded his memo by stating, "In conclusion, after inspecting Site 2 and with my knowledge of asbestos-related health hazards, I feel that the draft Risk-Assessment of the Johns-Manville Site #2 has not properly assessed the risk to people who would use the area." No adjustments to the asbestos air testing methods or risk assessment protocol have occurred since this statement was made by the U.S. EPA toxicologist. It is my opinion that none of the airborne asbestos testing is representative of a small child's exposure building a sand castle or being burying in asbestos-contaminated sand on a hot, dry summer day at the beach.
- A March, 2002 risk assessment report conducted by the Waukegan Park District for the proposed sports complex on the site of the old Johns-Manville asbestos manufacturing plant identified visible asbestos contamination on Greenwood Ave., the Midwest Generation Pier parking area, adjacent Midwest Generation property, the Illinois Beach State Park shoreline, and contaminated sand piles dredged by Midwest Generation currently stored on their site. Remediation of some of the site was

[21] Illinois Department of Natural Resources letter to IEPA Director Mary Gade, August 17, 1998.
[22] Illinois EPA letter from then Director Mary Gade to Brent Manning, Director of the Illinois DNR, November 13, 1998.

conducted in May to September, 2002. Significantly, more asbestos was identified during the remediation. Upon completion of the remediation, the site was stated to be clean and safe to reopen by the U.S. EPA and State agencies. An October 9, 2002 letter from the U.S. EPA regarding the Johns-Manville Superfund Site 2 cleanup of asbestos (Midwest Generation Pier area) states, "The U.S. EPA believes the removal action has eliminated the asbestos hazard and that the subsequent placement of clean fill over the site has significantly reduced the imminent and substantial threat to public health from residual contamination on the site."[23] A June 10, 2003 letter from William Muno, Director of Region 5 Superfund Division to Mr. William Child, Chief of Bureau of Lands, Illinois Environmental Protection Agency Mr. Muno stated, "As all the asbestos material exceeding our action level of 1% have been removed from Site 2, we consider our removal actions complete."[24] There is currently visible, friable asbestos heaving out of this area from below the surface as identified by a site inspection conducted on April 24, 2003 by Camplin Environmental Services, Inc.

- Surface water testing of Lake Michigan water off the shore of Illinois Beach State Park by an Illinois Department of Natural Resources consultant (Hansen Engineering) identified asbestos fibers below detection limits in 1998.[25] Yet the U.S. EPA continues to allow asbestos-contaminated water to be released from the Johns-Manville Superfund Sites industrial canal through a discharge pipe into Lake Michigan at up to 7 million asbestos fibers **(not counting carcinogenic and disease-causing asbestos fibers below 10 microns)** per liter of water. This is well above existing measured asbestos fiber contamination levels in the lake and adjacent beach swimming areas as identified in U.S. EPA test reports. Why are carcinogenic and disease-causing asbestos fibers allowed to be dumped into Lake Michigan near a public beach, public fishing area, and City of Waukegan drinking water intake at any level?
- On May 30, 2002, waste water from the Johns-Manville Superfund Sites industrial canal discharge pipe exceeded asbestos fiber concentrations allowed by an expired discharge permit at over 21 million fibers per liter. This violation measurement exceeds the permit by over 14 million fibers per liter of water.[26] This occurred during the opening week of the Illinois Beach State Park beach which is immediately adjacent to the Lake Michigan discharge pipe from the Johns-Manville Superfund Site industrial canal. The Waukegan public beach is in close proximity to the south of the violation measurement. **No violation** was issued by the

[23] U.S. EPA letter from William E. Muno, Director, Region 5 Superfund to Mr. Paul Kakuris, President of the Illinois Dunesland Preservation Society on October 9, 2002.
[24] Letter from William Muno, Director of Region 5 Superfund to Bill Child, Chief of IEPA Bureau of Land
[25] Hansen Engineering report to Illinois Department of Natural Resources, "Sampling for Asbestos Material Oversight of Asbestos Removal Activities – Illinois Beach State Park." Volume I, May 1998.
[26] U.S. EPA. "Water Discharge Permits Detailed Reports." NPDES Permit# IL0069809. http://oaspub.epa.gov/enviro/pcs_det_reports.pcs_tst?npdesid=IL0069809&npvalue=1&npvalue=2&npvalue=3&npvalue=4&npvalue=5&rvalue=13&npvalue=6&npvalue=7&npvalue=9&npvalue=10&npvalue=11

Illinois EPA or U.S. EPA. No follow-up investigation for asbestos contamination was conducted by any agency on the public beach areas. The beach and lake areas were not closed and the public was not notified of the violation measurement.

- On April 24, 2003, visible, friable materials containing 50% asbestos were identified in the recently remediated Johns-Manville Superfund Site #2. Friable, fractured and weathered asbestos waste products were identified in the Midwest Generation Pier warm water channel public fishing area which had been previously evaluated in 1991 and 2002 and stated to be clear of visible asbestos by U.S. EPA, Region 5 Superfund Division Director William Muno.
- In early May, 2003, a major brush fire in the Illinois Beach State Park exposed several acres of contamination by friable,fractured, and weathered asbestos waste debris which was previously unidentified. This area is in close proximity to the public beach, fishing pier area, and proposed sports complex site.

Warning signs advise that park headquarters should be contacted if asbestos is found. Could you recognize asbestos? Could you see the microscopic asbestos that is present? Photo by Jeff Camplin 2003

- Warning signs at the Illinois Beach State Park alert the public that the beach may contain visible asbestos. The visitors are advised not to pick

up asbestos and contact the park staff for cleanup. There is, however, no advisory near the sign describing what the asbestos looks like. Many visible pieces of asbestos have become ground, abraded and rounded by the surf causing the asbestos to appear similar to other rocks on the shoreline. A typical park patron would not be able to identify visible asbestos from other beach rocks. There is no warning that decontamination of microscopic asbestos fibers may be necessary. There is no warning regarding microscopic asbestos contamination of the beaches or lake water. This surf action also generates microscopic asbestos fibers to be released on the beaches and in the waters of Lake Michigan. There are no recommendations for how beach patrons should decontaminate themselves, their belongings, or pets to avoid potential secondary asbestos contamination and exposure from beach sand brought into their vehicles or homes.

Which are rocks and which are asbestos? Photo by Jeff Camplin 2003

- Park staff has been reduced due to state budget shortfalls. One employee is now responsible for visually inspecting over 6.5 miles of beach for visible asbestos. This is only one of many duties the employee performs. A review of the ongoing beach cleanup program is necessary due to the large amount of existing friable asbestos continually washing up on the beach and fishing pier areas. This program does not address microscopic asbestos cleanup of the beaches.

- Visible, friable asbestos recently picked up by IDNR staff is stored at a maintenance facility onsite. **Amounts of regulated asbestos collected on the beach have exceeded the National Emissions Standard for Hazardous Air Pollutants (NESHAP) quantities under the Clean Air Act. Violations of the NESHAP can result in significant fines and prison. There is no current documentation on enforcement of the Clean Air Act for the existing amounts of asbestos contamination currently found in public areas of Illinois Beach State Park or the Johns-Manville Superfund Site #2 which includes the Midwest Generation Pier public fishing area.**

- The modes of constant, ongoing, visible and microscopic asbestos contamination to public areas and the Johns-Manville Superfund Site have not been fully identified or addressed in an asbestos closure plan for these sites.
  - There is no study on the location and quantity of underwater asbestos wastes which continue to wash upon the shore of Lake Michigan.
  - There is no study to determine the extent of asbestos contamination to water and the shoreline caused by dredging the asbestos-contaminated bottom of Lake Michigan.
  - There are no comprehensive studies regarding the public health hazards posed by visual and microscopic asbestos-contaminated dredging waste from Lake Michigan, which is used as beach replenishment at the Illinois Beach State Park. The Illinois Department of Natural Resources, Illinois EPA and Illinois Department of Public Health have stated that 1% or less asbestos contamination in the beach sand is acceptable[27]. Is this also considered to be a "safe asbestos exposure level" to the public utilizing the beach from microscopic airborne contamination?
  - There are no comprehensive studies identifying the full extent of asbestos contamination to the Illinois Beach State Park or State Dedicated Nature Preserve and Federal Critical Habitat as demonstrated by the continuous reappearance of visible, friable asbestos. This includes areas where asbestos remediation had previously occurred, as well as the new discovery of new asbestos waste contamination in the south end of the State Dedicated Nature Preserve and Federal Critical Habitat area uncovered by a recent prairie fire.
  - The asbestos in the Johns-Manville Superfund Site #2 originated from berms and backdrops for the shooting competition at the 1959 Pan Am Games. These berms were constructed out of asbestos tailings waste supplied by Johns-Manville. These berms were later graded flat and account for the widespread distribution of asbestos at Site #2. Remediation in this area was conducted in 2002 with the intent to remove 12,000 cubic yards of asbestos contaminated soil. The remediation uncovered more extensive contamination resulting in a total of 32,000 cubic feet of asbestos contaminated soil being removed. In June, 2003,

[27] The greater than 1% asbestos applies to manufactured materials not to items or materials that are contaminated with asbestos. The Occupational Safety and Health Administration (OSHA) for worker protection requires that carcinogenic "cancer causing" materials are regulated at 0.1% under their Hazard Communication Standard.

the U.S. EPA stated Site #2 was clean. In June, 2003 asbestos is still visible in and around Site #2. When will the full scope of asbestos contamination be investigated in this public access area?

- On October 9, 2002, Mr. William E. Muno, Director of the USEPA Region 5 Superfund Division stated in a letter to Mr. Paul Kakuris, President of the Illinois Dunesland Preservation Society that, "Removal actions are intended to be flexible and able to adjust to changing site condition, therefore U.S. EPA does not consider the management or cleanup of this site to be haphazard or inappropriate." Mr. Muno was speaking about the remediation of asbestos contamination at Site #2. Apparently more flexibility will be required for the future asbestos contamination removal actions in and around Site #2.
- There are no studies of the amounts of microscopic carcinogenic and disease-causing asbestos fibers that have washed upon on the beach from the lake water contamination or that were dumped on the beach or near shore as beach replenishment with asbestos-contaminated dredge material. **The conversion of microscopic asbestos fibers from the contaminated Lake Michigan water to the beach as a health risk has not fully been addressed by any study**.
- There are no studies regarding secondary asbestos exposures to beach visitors when microscopic carcinogenic and disease-causing asbestos fibers is taken home with them from beach contamination on clothes and belongings.
- There is no studies to indicate why asbestos-contaminated water from the Johns-Manville effluence pipe continues to have the potential to dump asbestos fibers above NPDES violation measurements of an expired waste water discharge permit (NPDES) from the Johns-Manville Superfund Site Industrial Canal.
- There are no studies to determine alternate dike requirements for preventing the asbestos-contaminated water from the Johns-Manville Superfund Site industrial canal from migrating off-site into the State Dedicated Nature Preserve and Federal Critical Habitat and Lake Michigan. **The dike that is required by the Federal Consent Decree was never constructed and is also in violation of the NPDES permit**.
- There have been no adjustments to the asbestos risk assessment air sampling methodologies which were found by a Region 5 U.S. EPA toxicologist to be insufficient for using in an asbestos public health risk assessment at the sites.
- There have been no studies into the damage caused to the nature preserve from contamination migrating from the Johns-Manville Superfund Site into the Illinois Beach State Park State Dedicated Nature Preserve and Federal Critical Habitat. An oily sheen can be observed in the Nature Preserve water that connects directly with the Johns-Manville Industrial Canal in violation of the Consent Decree and NPDES permit. Trees have been observed dying immediately north of the Johns-Manville Superfund

Site Industrial Canal breach in the State Dedicated Nature Preserve and Federal Critical Habitat.

Fish swim near shore in the Midwest Generation Fishing Pier Beach. Photo by Jeff Camplin 2003.

- No current studies have been conducted of the potential damage to the fish and vegetation in Lake Michigan due to microscopic asbestos contamination of the water. A study of fish in Lake Michigan in 1982 found that asbestos waste disposal in Lake Michigan from the Johns-Manville site decimated the commercial whitefish industry in Waukegan as early as the 1920's.[28] An Illinois Department of Conservation funded study by the University of Wisconsin contained a statement of a commercial fisherman interviewed for the study in 1978 who stated "We stopped fishing pound nets when John Manville came into Waukegan…" "That was about 1920 and 1922. Up until then we were catching a lot of nice white fish in the summer, but when John Manville came in, they dumped all their excess asbestos in the lake. We'd be swimming, wading in 6-12 inches of asbestos waste. The white fish would get it in their gills."

[28] University of Wisconsin Institute for Environmental Studies, Marine Studies Center. "A Strategy for Re-establishing Self-sustaining Lake Trout Stocks in Illinois Waters of Lake Michigan." Report Number 42, March 1982.

Asbestos debris at Site #2 near Midwest Generation Fishing Pier Beach Area. Photo by Jeff Camplin 2003

- A 1981 U.S. EPA study of fish in Lake Superior asbestos-contaminated water indicate asbestos fibers in the flesh of the fish[29]. No such studies have been conducted on the fish of Lake Michigan.

- **Asbestos-contaminated water continues to enter the Nature Preserve and Lake Michigan in violation of the expired NPDES discharge permit from the industrial canal of the Johns-Manville Superfund Site.**
  - The asbestos-contaminated water can currently be discharged legally into the lake at levels well above current measured levels of asbestos fibers found in Lake Michigan.
  - The U.S. Geological Survey does not identify naturally occurring serpentine asbestos mineral deposits in or around the shores of Lake Michigan. Naturally occurring asbestos contributing to asbestos background levels found in Lake Michigan would be expected to be below detection levels of the laboratory analytical methods.
  - The EPA NPDES permit for this asbestos-contaminated water discharge expired in 1996 and has yet to be reissued. If a new NPDES permit is issued the Johns-Manville Industrial Canal would have to undergo comprehensive testing for toxic

[29] Batterman, A. R., and P.M. Cook. 1981. " Determination of Mineral Fiber Concentration in Fish Tissue." Can. J. Fish. Aquat. Sci. 38: 952-959.

contamination. Why has there been such a long delay in issuing a new permit for a water pollution discharge into Lake Michigan adjacent to a public beach, public fishing area, and City of Waukegan drinking water intake?

- Asbestos and other potential chemical water contaminants have been found to enter the State Dedicated Nature Preserve and Federal Critical Habitat in violation of the U.S. EPA Record of Decision (ROC), Federal Consent Decree, and NPDES permit. This pollution release travels down the Dead River in the State Dedicated Nature Preserve and Federal Critical Habitat areas of the Illinois Beach State Park and eventually enters the waters of Lake Michigan. There is no documentation addressing the lack of enforcement of alternatives to constructing the required dike/berm separating the Illinois Beach State Park from the Johns-Manville industrial canal.

Photo by Paul Kakuris 2003

The Johns-Manville Industrial Canal connects directly with the State Dedicated Nature Preserve and Federal Critical Habitat. Why wasn't the Berm/Dike constructed to prevent this breach?

- The industrial canal water discharge from the Superfund Site has recently exceeded the allowable asbestos fiber discharge level stated in the expired discharge permit in May of 2002 (during opening week at the adjacent public beach) by over 14 million asbestos fibers per liter of water. No violation or subsequent enforcement action was issued by Illinois EPA or U.S. EPA, even though the City of Waukegan intake for drinking water, the Illinois Beach State Park public beach and the Waukegan public beach is in close proximity to the Johns-Manville Superfund industrial canal water discharge pipe.

- **No studies have evaluated the transfer of microscopic asbestos fibers in water as a contaminant to public beach and fishing areas. This elevated asbestos contamination of Lake Michigan water is not naturally occurring. The lake water contains microscopic asbestos contamination from several local sources including local dumping of asbestos wastes near the shoreline and continuous asbestos-contaminated water discharges from the Johns-Manville Industrial Canal NPDES effluence pipe.**

- Asbestos contamination in water is only measured at or above 10 microns in length. Carcinogenic and disease-causing asbestos fibers below 10 microns are not addressed in water. U.S. EPA water testing in Lake Michigan indicated that extremely elevated levels of asbestos fibers below 5 microns were not considered in an evaluation of public health. These smaller asbestos fibers are ignored in water measurements. **However, when the fibers in the water are transferred to the beach sand, these undetected asbestos fibers can become airborne or contaminate the beach area with little disturbance. No actions have been taken to evaluate the transfer of unmeasured smaller carcinogenic and disease-causing asbestos fibers from the water onto the beach and potentially into the air.**
- The public beach incurs ongoing recontamination by microscopic carcinogenic and disease-causing asbestos fibers as contaminated water continually washes up on the beach. Additional asbestos fibers are released when asbestos pieces tumble in the surf of Lake Michigan. The asbestos debris pieces, which are ground, abraded, worn and rounded, thereby releasing microscopic asbestos into the surf zone and the beach area in the process. **This microscopic asbestos contamination can reenter the air as water dries on the shore causing new airborne asbestos concerns on a daily basis.**

Can you identify the two pieces of asbestos near the shoreline? Photo by Jeff Camplin 2003

- The asbestos-contaminated water can also result in microscopic asbestos-contaminated sand on the beach. **Recreation activities in the asbestos-contaminated sand can result in the transfer of asbestos contamination to park visitors, their pets, park staff, and their belongings. This provides secondary exposures to carcinogenic and disease-causing asbestos fibers when asbestos-contaminated sand travels with park patrons and staff in their vehicles to their residences offsite. No studies have been conducted on this secondary asbestos exposure to Park staff and patrons.**

- Post remediation clearance testing of the beach area by Hansen Engineering in 1998 identified the presence of microscopic asbestos in several sand samples.[30] The beach was reopened because the sand did not contain over 1% asbestos. Are asbestos-contaminated public areas safe to the health of the public if the microscopic asbestos contamination is no more than 1%? If so, why did the U.S. EPA recommend that trace amounts of asbestos contamination found in vermiculite home insulation are a concern to public health? Vermiculite contaminated with trace amounts of microscopic asbestos are recommended to be left alone and isolated from children[31]. **Can children safely disturb asbestos-contaminated sand on the beaches of Illinois Beach State Park? These questions have never been directly addressed by any agency**.
- Air testing for asbestos conducted by Hansen Engineering for the Illinois Department of Natural Resources, IEPA and U.S. EPA at the beach found asbestos fibers below detection levels of the analytical equipment. However, the air testing was performed in March, 1998 during damp and windy conditions. Project logs notes and photographs document the wet conditions.[32] The air tests do not evaluate expected airborne asbestos exposures by the public using the beach. The air tests should be performed during hot, dry summer months with the air testing cassettes close to the ground to simulate asbestos airborne fiber exposures to park patrons lying and playing on the beach.

Microscopic asbestos contaminations from water to land transfers are not addressed by any agencies involved.

- **The risk assessment conducted for the Waukegan Park District (Berman report March 7, 2002)[33] at the proposed outdoor sports complex on the former Johns-Manville asbestos product manufacturing site does not adequately evaluate types or sources of asbestos or other toxic exposures to children anticipated to use the site.**
  - One example is a statement in the Berman report which indicates that although asbestos may be found in the adjacent State Dedicated Nature Preserve and Federal Critical Habitat, it would not be considered in the risk assessment due to the area being covered with vegetation and being almost continually wet. The assumption was made that this asbestos contamination would not contribute any significant asbestos exposure to children using the sports complex. In early May, 2003 the Nature Preserve was dry enough to burn. The charred ground revealed visible, friable asbestos waste contamination drying on the surface in close proximity to the proposed sports complex. This new possible asbestos exposure condition was never anticipated by the risk assessment.

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[30] Hansen Engineering report to Illinois Department of Natural Resources, "Sampling for Asbestos Material Oversight of Asbestos Removal Activities – Illinois Beach State Park." Volume II, May 1998

[31] USEPA Newsroom, "National Consumer Awareness Campaign Launched on Vermiculite Insulation Used in Some Home Attics." May 21, 2003. www.epa.gov/newsroom/headline2_052103.htm

[32] Hansen Engineering report to Illinois Department of Natural Resources, "Sampling for Asbestos Material Oversight of Asbestos Removal Activities – Illinois Beach State Park." Volume II, May 1998.

[33] D. Wayne Berman, Ph.D., Aeolus Inc. "Waukegan Park District: An Evaluation of Offsite Asbestos and Air Pollutants and Their Potential Effect on Visitors to the Proposed Sports Complex in Waukegan, Illinois." March 7, 2002.

- The risk assessment also considered carcinogenic and disease-causing asbestos fibers under 10 microns to be insignificant for evaluating asbestos exposure to children using the sports complex. The airborne asbestos modeling studies heavily weighted asbestos at 10 microns and above (99.997%) while only accounting for an insignificant amount of carcinogenic and disease-causing asbestos fibers below 10 microns (0.003%). Testing indicates that carcinogenic and disease-causing asbestos structures below 10 microns are many times more abundant than the larger asbestos structures at 10 microns or greater. There was no justification in the risk assessment report for failing to consider and evaluate airborne carcinogenic and disease-causing asbestos fewer than 10 microns. Air testing performed in schools after asbestos abatement projects measures asbestos fibers down to 0.5 microns in size.
- The risk assessment calculated a child's exposure to asbestos and other toxic substances based upon a 90 pound child using the sports complex 2 hours a day for 50 days a year, for a period of 10 years. It is highly unlikely that a child using the proposed sports complex would start at and remain at 90 pounds during the 10 year exposure period used in the risk assessment. The risk assessment did not evaluate risks to larger or smaller children anticipated to use the site. The risk assessment did not consider that all children will be growing over the 10 year anticipated exposure period resulting in a range of exposures. The American Lung Association states smaller children are more susceptible to air pollution.[34]
- The risk assessment used the EPA's recommended child's inhalation rate when determining potential exposure risks. Children using the sports complex will be very active increasing their breathing rate and potential exposure to toxic air pollutants by several fold. The Park District should consider other studies which estimate children's breathing rates at much higher volumes.[35] Due to the greater respiratory rates, children breathe a proportionately greater volume of air than the generic category of adults.
- Children will inhale more pollutants per pound of body weight. A child's height and play habits will more likely expose them to pollutants and aerosols that are heavier than air since their breathing zone is much closer to the ground.[36] The risk assessment did not evaluate these anticipated exposures.
- Adults and children with pre-existing cardiovascular, respiratory diseases, and asthma represent a special high risk group more susceptible to air pollution. The risk assessment did not evaluate this "at risk" group.
- Electric utilities are a major source of air pollutants that affect lung health, including sulfur dioxide, a powerful asthma trigger, and nitrogen oxide, which is a component of ozone smog.[37]

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[34] American Lung Association. "Danger Zones: Ozone Air Pollution and Our Children." March 1995.
[35] U.S. EPA. 2002 Child-Specific Exposure Factors Handbook. NCEA; EPA/600/P-00/002B. www.epa.gov/ncea.
[36] Natural Resources Defense Council. "Our Children at Risk – The 5 Worst Environmental Threats to Their Health." www.nrdc.org/health/kids/ocar/chap4.asp.
[37] American Lung Association. "Power Plants and Air Pollution, Health Impact of Power Plant Emissions." April 2000. www.lungusa.org/air/airout00_electric.html.

The Midwest Generation Power Plant is adjacent to the Fishing Pier Beach and the proposed Waukegan Park District Sports Complex. Photo by Jeff Camplin 2003

- Studies have shown ozone is strongly implicated in the premature aging of the lungs. Ozone has also been shown to increase asthma attacks on hot summer days by as much as 40%.[38] The Midwest Generation power plant contributes ozone into the environment. **The report specifically omitted ozone in the risk assessment.**
- The risk assessment did not identify when field measurements were performed for the study. Field measurements should be taken during the summer months of June through August which represent the majority of high use activity anticipated at the proposed site.

The risk assessment was not representative of ozone, asbestos, or several other toxic exposures or the range of children and activities anticipated at the proposed sports complex.

- **Testing and investigation used to determine health risks and remediation actions by agencies involved is either insufficient and/or outdated based upon new regulatory requirements and/or ongoing studies on asbestos contamination as it relates to public health, or more stringent State of Illinois regulations.**
  - Since the initial Record of Decision (ROD) signed on June 30, 1987 there have been several new and revised asbestos regulations and waste disposal and landfill

[38] Weitzman, M., "Recent Trends in the Prevalence and Severity of Childhood Asthma." JAMA, vol. 268, no. 19, November 18, 1992, pp. 2673-2677.

requirements on the federal, state and local levels. These include the enactment of the federal Asbestos Hazard Emergency Response Act (AHERA), revisions to the Clean Air Act's National Emission Standard for Hazardous Air Pollutants (NESHAP), Occupational Safety and Health Administration (OSHA) revisions to their general industry and construction asbestos standards, two revisions to the Illinois Asbestos in Schools Rule, the creation of the Illinois asbestos Commercial and Public Buildings Act, and the creation of the Illinois Asbestos Abatement Act.

- Recent asbestos contamination issues have resulted in new evaluation and testing approaches which exceed asbestos regulatory requirements in the interest of public safety. New approaches have been developed and used in California where naturally occurring asbestos was used to construct roadways and parking lots. Additional testing methods and medical investigations have been developed and initiated in Libby, Montana where vermiculite mining operations resulted in asbestos contamination to miners, their families, the surrounding community (now a Superfund Site), and secondary asbestos contamination through distribution of asbestos-contaminated vermiculite products to the general public. The U.S. EPA has issued safety recommendations and precautions to homeowners regarding the contaminated vermiculite insulation found in their homes. The collapse of the World Trade Center has resulted in new and revised approaches by the U.S. EPA to analyzing and responding to asbestos contamination and the related health effects to the public. These sites have initially utilized some analytical techniques similarly performed at the Illinois Beach State Park beaches, State Dedicated Nature Preserve and Federal Critical Habitat, and Johns-Manville Superfund Site #2 (including the warm water channel fishing area/beach) and Waukegan sites. Some of the World Trade Center asbestos contamination testing has subsequently been found to be insufficient or require modification over the past 18 months due to public safety concerns[39]. New approaches need to be taken at the Illinois Beach State Park and Johns-Manville Superfund Site due to the unique characteristics of the site.
- The Mine Safety and Health Administration (MSHA) and the National Institute of Occupational Safety and Health (NIOSH) are currently concerned with and investigating secondary asbestos exposures from workers bringing asbestos contamination home with them. This should be a concern at the Waukegan site involving beach patrons, their pets and park staff bringing carcinogenic and disease-causing asbestos contamination home with them from asbestos contamination and exposures from the asbestos-contaminated park grounds and lake water.
- No studies have been conducted on the microscopic asbestos-contaminated water continually causing asbestos recontamination to the public beach areas. Asbestos-contaminated water washes up and dries on the beach on a daily basis. These constantly changing asbestos contamination levels from water to the beach are not addressed or monitored by any state or federal agency.

[39] New York City Department of Health and Mental Hygiene, et al,. "Final Report of the Public Health Investigation to Assess Potential Exposures to Airborne and Settled Surface Dust in Residential Areas of Lower Manhattan." September 2002. Available at www.epa.gov/wtc/factsheets/index.html.

- Testing of the sand on the public beaches applies a greater than 1% threshold for initiating any response actions. This allows for significant dilution of contamination by continually adding new sand to the beach so that remediation is not necessary. This 1% level has no correlation to asbestos contamination of non-asbestos containing sand and its relationship to public safety.
- **The analytical method utilized to determine the 1% threshold for asbestos in beach sand was invented for the Hansen study and did not follow USEPA Superfund protocol. Additionally, the sampling methodology for obtaining sand samples allowed for the dilution of microscopic surface asbestos contamination by coring down 6" into the beach. Subsequent testing following EPA Superfund protocol in 2002 found microscopic asbestos contamination in areas the Hansen report stated were "non-detected" for asbestos.**
- The Berman study conducted for the Waukegan Park District found the sand samples that were indicated to be "non-detectable" for asbestos in the Hansen IDNR studies "exhibit among the highest concentrations (of asbestos) when measured by the modified elutriator method" (which was the analytical method used by Berman). This statement indicates that sampling to identify asbestos contamination is highly dependent upon the analytical method selected. **The state and federal agencies continue to use analytical methods that fail to detect the carcinogenic and disease-causing asbestos fibers in sand, air and water**.
- The EPA has continually stated that there is no lower safe level of asbestos exposure. *Example: If there are 100 tons of sand on the beach, there could be 1 ton of asbestos fibers contaminating the sand and testing would find the beach to be 1% or less asbestos requiring no actions. Obviously, there is much more than 100 tons of sand on the 6.5 miles of beach in the park. How many tons of asbestos contamination are acceptable on the beach if the EPA states there is no safe level of asbestos exposure*?
- **The U.S. EPA had evaluated and concluded that it will not use more stringent State of Illinois regulations for remediation of asbestos-contaminated landfills found on the site. The EPA stated that the "desire to apply more stringent regulations is not, in and of itself, a legitimate reason for pursuing a [Record of Decision] amendment" (EPA/ESD/R05-00/521 page 5). The EPA has recently stated that the remedy for the site remains protective of human health and the environment based upon the less stringent federal regulations**.

- **<u>Dredging activities just off shore of the Waukegan Harbor approach channel and from the Midwest Generation fishing pier and public beach disturb asbestos waste on the bottom of Lake Michigan causing asbestos contamination to public areas.</u>**
  - Dredging operations disturb regulated asbestos waste that was previously dumped into Lake Michigan causing asbestos-contaminated plumes to re-contaminate lake water.
  - The dredged material has had visible and microscopic asbestos contamination identified in it. In previous years, this material was dumped on the Illinois Beach State Park public beach as a replenishment material.

- A large pile of asbestos-contaminated dredged material has been located at the north end of the park for over 5 years while state and federal agencies determine what to do with it. An Illinois EPA memo from former Director Mary Gade indicates the dredged material should be handled as a regulated waste since it was disturbed from an original disposal site at the bottom of Lake Michigan. Once it is disturbed, it was the Illinois EPA's opinion that it is a regulated waste and recommends not disturbing this material in the future. The IEPA continues to issue dredging permits to the Corps of Engineers allowing the asbestos-contaminated lake bottom to be disturbed contrary to former IEPA Director Mary Gade's ruling on pollution control regulations. These asbestos-contaminated piles were previously dumped on the Illinois Beach State Park shoreline as beach replenishment and are currently either dumped farther out in Lake Michigan or are allowed to dry onshore and were taken offsite for use in the construction industry. **The asbestos-contaminated material has been officially classified by the Illinois EPA in 1998 as an industrial process waste or pollution control waste, but has not been handled as such once it was dredged and placed on land.**

Recommendations

Based upon the above concerns, I am making the following recommendations:

- Restrict access to all public sites that have documented asbestos contamination.
  - The Illinois Beach State Park beaches and all Illinois Department of Natural Resources public areas including the Johns-Manville Superfund Site #2 (which includes the public fishing area) should be closed to the public until an evaluation can be made of the health risks associated with the continuous visual and microscopic asbestos contamination.
  - Employees should be restricted from contaminated areas unless they have proper training and protective equipment.
  - Public areas contaminated with microscopic asbestos fibers should have U.S. EPA recommendations for the public similar to the asbestos-contaminated vermiculite home insulation. It should be recommended that the asbestos-contaminated beach materials not be disturbed and that children should not play in these asbestos-contaminated beach areas. Procedures for decontaminating beach patrons, their pets and their belongings should be established and enforced at the Illinois Beach State Park, the Johns-Manville Superfund Site #2 (which includes the Midwest Generation Pier public fishing area) to minimize potential secondary asbestos exposures caused by microscopic asbestos contamination from the beach to their personal belongings.
- Define the full scope of subsurface asbestos contamination on the land and offshore and integrate the findings into the overall site remediation plan.
  - The previous testing and investigations by all agencies have obviously missed significant quantities of asbestos as it is currently visible in the warm water channel, Lake Michigan water, Johns-Manville Superfund Site #2 (including the fishing pier area and in recent asbestos remediation areas), in the State Dedicated

Nature Preserve and Federal Critical Habitat, and on the Illinois Beach State Park beaches.

- Evaluate sources of microscopic asbestos contamination contributing to increased levels in the lake and what the effect is to public health as the contamination is transferred to the shore and beaches.
    - **Drinking water standards should not be used for waste water discharge**. Asbestos-contaminated water from asbestos abatement projects in public and private schools is required to be filtered below 5 microns before entering the sewers for treatment. Minimally, the asbestos-contaminated waste water from the Johns-Manville Industrial Canal should not be allowed to discharge carcinogenic and disease-causing asbestos fibers above 5 microns into Lake Michigan.
    - Consider the water of Lake Michigan to be a significant contributor of asbestos contamination to the shoreline with visible and microscopic asbestos.
    - Evaluate how dredging activities disturb asbestos contamination on the bottom of the lake contaminating the lake water and potentially the shoreline.
    - Eliminate discharges from the Johns-Manville industrial canal that has recently released microscopic asbestos fibers into Lake Michigan well above previously measured Lake Michigan levels and NPDES permit requirements. Minimally, no detectable asbestos fibers above 5 microns should be allowed into Lake Michigan near swimming areas and the Waukegan public drinking water intake.
    - Water tests do not consider carcinogenic and disease-causing asbestos fibers under 10 microns. These smaller asbestos fibers sizes are potentially hazardous and carcinogenic and disease-causing to beach patrons when they wash ashore and have the potential to become airborne. Again, no detectable asbestos fibers above 5 microns should be allowed into Lake Michigan near swimming areas and the public drinking water intake.
    - Conduct airborne evaluations of asbestos fibers during dry summer months at various levels off the ground to simulate more accurate exposures to the public. Previous air tests conducted by Hansen Engineering were performed on damp, windy days in March which did not represent typical summer conditions.
    - Evaluate the potential health effects of microscopic asbestos fibers traveling home with beach patrons and their pets frequenting the asbestos-contaminated beaches causing potential secondary exposures at home. Park staff should also be included in this study.
    - Study the amount of asbestos fibers in fish flesh inhabiting the waters near the Johns-Manville industrial canal water discharge where asbestos fiber contamination has exceeded 21,000,000 fibers per liter of water. Determine if the fish are safe for children and adults to eat? Also test fish that may have entered the Johns-Manville Industrial Canal through the effluence pipe.
- Re-evaluate the Waukegan Park District risk assessment report for the proposed sports complex.
    - Determine what toxic and hazardous materials require evaluation more comprehensive evaluation.
    - Determine the at risk population that will frequent the site and include this population in the risk assessment.

- Evaluate "worst-case" exposures for the public to evaluate. Average exposures of a limited study group do not present an accurate reflection of exposures to the population expected to use the site.
- Use a full range of age groups, at risk populations, and expected activities for the risk assessment. Let the public determine what an acceptable risk is to their children based on all known data.

Conclusion

The asbestos contamination found at Illinois Beach State Park beaches, State Dedicated Nature Preserve and Federal Critical Habitat, Midwest Generation Pier warm water channel public fishing and beach area, former Johns-Manville manufacturing site, the Johns-Manville Waukegan Superfund Sites, and Lake Michigan pose a potential health risk to anyone visiting these sites. Despite the tens of millions of dollars of private and taxpayer money spent in studies, testing and remediation, the sites continue to show visible and microscopic asbestos contamination. Much of the asbestos originated from the Johns-Manville asbestos manufacturing plant over its 60 plus years of operation. Some of the asbestos containing waste tailings were used by the U.S. Army to construct a berm for a shooting range used at the 1959 Pan Am games. This asbestos berm was bulldozed and spread contamination throughout the area. The extent of the asbestos contamination continues to grow in these areas.
It is obvious to anyone reviewing the site documentation that a fragmented approach has failed to solve the asbestos contamination concerns at these sites. New studies conducted by the U.S. EPA at Libby, Montana and the World Trade Center sites have developed new strategies for addressing asbestos contamination where the public has exposure. The sites discussed in this report are more unique than either the asbestos-contaminated Libby site or World Trade Center site. ***A fresh approach to the multifaceted asbestos contamination issue is necessary to address the existing complex conditions and future community uses of this highly accessible and popular public area.***

Pictures taken by Jeffery C. Camplin during May 2003 at Illinois Beach State Park

Some asbestos contamination is easier to see than in other instances. Would you swim or fish here?

APPENDIX 1
Footnote Citation Documents

The following section contains some of the documents cited in the footnotes throughout the report. Those that are not included in this section can generally be obtained through the website address listed in the specific footnote. Most documents are in their entirety. However, some of the references used are from reports that are several hundred pages in length. Only the front cover and specific pages referenced are included for these larger documents. The reader should contact the appropriate party listed on the cover for the complete document.

About the Author:

Jeffery C. Camplin CSP, CPEA is President of Camplin Environmental Services, Inc., a safety and environmental consulting firm located in Rosemont, Illinois. In his role, he provides asbestos consulting services including teaching USEPA accredited asbestos courses at several training centers in the Chicago area since 1988. Camplin has a degree in Safety from Northern Illinois University and has been an Illinois licensed asbestos professional since 1986. He is a professional member of ASSE and is currently serving a second term as the Assistant Administrator of the Society's Environmental Practice Specialty. Mr. Camplin has just been selected out of ASSE's 30,000 members to receive their Presidents Award for outstanding service (June 2003).

His article entitled "It's Back – Asbestos gets a second wind" will be published in the American Society of Safety Engineers peer reviewed Professional Safety Journal in August, 2003. Jeff has previously written several asbestos and safety articles which have been published in Compliance Magazine, Maintenance Solutions Magazine, Facility Care Magazine, and the Enviromentor Newsletter. His first asbestos article was published in 1987 by the Joint Commission on Accreditation of Healthcare Organizations which was titled "Managing Asbestos in Healthcare Facilities."

Appendix G

Press Release
By Illinois Attorney General

Regarding Formation
Of
Asbestos Task Force

July 2, 2003

ILLINOIS ATTORNEY GENERAL LISA MADIGAN

PRESS RELEASE

www.IllinoisAttorneyGeneral.gov

For Immediate Release
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July 02, 2003

ATTORNEY GENERAL'S OFFICE CALLS FOR IEPA, IDNR, IDPH, U.S. EPA AND WAUKEGAN TO JOIN TASK FORCE TO INVESTIGATE ASBESTOS AT ILLINOIS BEACH STATE PARK

Chicago – Attorney General Lisa Madigan today announced her office, working with State Sen. Susan Garrett, is calling for the creation of a task force with the Illinois Environmental Protection Agency (IEPA), the Illinois Department of Natural Resources (IDNR), the Illinois Department of Public Health (IDPH), the U.S. Environmental Protection Agency (U.S. EPA) and the City of Waukegan to investigate whether asbestos found around the Johns Manville Superfund site in Waukegan creates a public health threat.

Madigan decided to call for the creation of the task force after being contacted by Garrett and local citizens.

Madigan said concerns regarding asbestos contamination and its possible public health impacts have been raised by a local citizens group in a report prepared on its behalf and made public on June 18, 2003. On June 20, Madigan's office contacted the Great Lakes Center for Occupational and Environmental Safety and Health at the University of Illinois-Chicago, School of Public Health, to request its assistance in reviewing the report and recommending any needed action to protect the health of the public in the area.

Madigan said specific areas of concern are the Illinois Beach State Park, located along a 6.5-mile stretch of Lake Michigan starting immediately north of the Johns Manville site, and a parking lot, foot path and fishing pier, located south of the Johns Manville site. Should the agencies agree to join Madigan's office in forming a task force, Madigan said the group's first priority will be to coordinate the review of the public health questions by the Great Lakes Center. The Great Lakes Center is directed by Dr. Dan Hryhorczuk, M.D., MPH, who has agreed to oversee the work of his staff in this review.

“Serious public health and environmental law enforcement questions have been raised and these questions need to be answered,” Madigan said. “The job of this task force is to obtain answers concerning whether public health is threatened by asbestos found at the state park and nearby areas and to identify any necessary enforcement steps that must be taken.”

“The most recent findings of asbestos in Lake Michigan are very troubling from many perspectives. We are concerned that the asbestos is still in the water. We are concerned that there may be a public safety issue that needs immediate attention. For those reasons, we must come together and determine what went wrong and what we can do to ensure safe water and beaches,” Garrett said.

The Attorney General’s office sued Johns Manville International, Inc., in June 2001, for alleged violations of the Illinois Environmental Protection Act at its Waukegan facility relating to wastewater discharges, the improper disposal of waste, the improper closure of an on-site landfill and the modification of its onsite WWTP without an IEPA permit.

The plant is a federal Superfund site and underwent significant remediation in the early 1990s. The new areas of concern are on property near the former plant.

“The involvement of medical doctors dedicated to the protection of public health allows us to ensure that any public health issues raised are appropriately evaluated and that all of the enforcement and regulatory agencies take the necessary steps to protect the public,” Madigan said.

The Great Lakes Center will augment the scientific resources within state and federal government already involved with the review.