

## Executive Summary

### Background

The Adeline Jay Geo-Karis Illinois Beach State Park (IBSP) consists of 6.5 miles of Lake Michigan shoreline in the city of Zion, Lake County, Illinois. 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. The Park encompasses 4,160 acres and receives an average of approximately 1.7 million visitors per year. Recreational activities available include camping, swimming, fishing, hiking, bicycling, and picnicking. The Park is a unique natural resource with the only remaining Lake Michigan beach ridge shoreline left in the state

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### Asbestos and IBSP

In late 1997, pieces of transite pipe, siding, and roofing materials suspected of containing asbestos were found scattered along the beach. In February 1998, Illinois Department of Natural Resources collected two bulk samples of the material and found they contained asbestos fibers. Following this discovery, Illinois Department of Natural Resources began an investigation to determine the extent and possible source of contamination of asbestos-containing material (ACM). Potential sources include:

- 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. One estimate indicated that 129 homes were ultimately destroyed by erosion. Building materials and infrastructure materials from that erosion may be contributing to ACM on the beach.
- The Johns-Manville site immediately south of the Park. This plant manufactured a variety of roofing, flooring, wall covering, and insulating materials from 1922 - 1988. The raw materials used at Johns-Manville include Portland cement, asphalt, paper, and asbestos. A 150-acre parcel of the property was used for disposal of asbestos containing material (ACM) and was placed on the NPL in 1983.
- Several sources of nourishment sand have been used at the beach. Currently, IBSP requires 80,000 – 100,000 cubic yards of sand per year to prevent erosion, particularly to the North Unit beaches.
- 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.

**Past studies**

In 2000, the Illinois Department of Public Health (IDPH) published a Public Health Assessment of IBSP. The report concluded that there was no apparent public health hazard at IBSP. However, it was recommended that warning signs and flyers be posted to alert the public about the possible presence of asbestos materials on the beach, and continuation of periodic beach inspection and ACM removal.

In 2005, the Center for Excellence in Environmental Health at the University of Illinois at Chicago (UIC) School of Public Health published an evaluation of IBSP. The UIC study evaluated the levels of asbestos in various beach areas at IBSP, comparing the results to other beaches on the southwestern shoreline of Lake Michigan. Results of this study found statistically elevated levels of asbestos structures releasable from the sand in IBSP North unit sand relative to other background beaches. However, the estimated levels of asbestos exposure were below the risk levels used by EPA as a threshold for taking action.

**Why did ATSDR do this Exposure Investigation (EI)?**

Past studies of IBSP have found asbestos-containing material and asbestos fibers in beach sands. Current assessment methodology recommends that activity-based sampling be performed to assess potential exposure levels. This Exposure Investigation (EI) was conducted jointly with the Illinois Department of Natural Resources (IDNR) to estimate potential exposure levels to individuals who utilize the beach areas at IBSP by measuring exposure during simulated activities.

**What activities were simulated?**

We collected samples simulating construction of sand castles using dry sand and beach maintenance activities. We also sampled at reference stations inside the park boundary, but away from beach areas. Sand castle construction with dry sand was chosen as a representative activity because it involved close exposures to the breathing zone and manipulation of the sand. The beach maintenance activity was chosen because it represented the most intense manipulation of the sand.

**What are the results of the EI?**

ATSDR found that simulated sand castle building did not result in air levels of asbestos greater than the reference stations. Simulated beach maintenance activities (a tractor was used to drag a grating across the beach) resulted in slight elevations in asbestos levels compared to the reference stations. The reference stations were located in areas of the park away from the beach where no activities were expected to create airborne asbestos structures. None of the airborne asbestos samples detected chrysotile, which is the predominant type of asbestos found in the asbestos containing debris washing up on shore. Most of the

asbestos detected was not the regulated varieties used or found in commercial products, i.e., chrysotile, amosite, crocidolite, and fibrous varieties of tremolite, actinolite and anthophyllite.

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<b>What are the conclusions of the EI?</b>	The activities simulated at the beaches at IBSP pose no apparent public health hazard. Further activity sampling would help confirm this conclusion. Although an activist group has called for the closure of the park to protect public health, the weight of evidence of several previous studies, in addition to this EI, does not indicate that such an action is justified. There are significant health benefits to the community through the use of this valuable resource.
<b>What specific recommendations have been made?</b>	The IDNR should continue efforts to remove asbestos containing materials from the beach and continue educational activities to help visitors identify and avoid asbestos containing material. As an additional precaution to reduce releases during any beach maintenance activities (i.e., surface grading), intensive disturbances of the sand should be conducted during conditions when the sand surface is wet or when the beach area being maintained is closed to the public.
<b>What are the uncertainties that may affect ATSDR's conclusions?</b>	The activity-based sampling conducted during this investigation reflected typical activities that children may engage in at the beach, as well as beach maintenance activities that would represent worst-case worker exposures that are unlikely to reflect actual conditions. A review of the EI report by the EPA Technical Review Workgroup for Asbestos acknowledged that the range of potential exposures had been evaluated. However, they recommended additional sampling using a scenario that may reflect intensive recreational activities, to better characterize actual exposures.

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