

Study Measures Toxic Chemicals Entering Presque Isle Bay from the Air

Presque Isle Bay near Erie, Pennsylvania, is one of 43 locations around the Great Lakes region to have been designated an “Area of Concern” by the International Joint Commission, indicating that past use and contamination of the bay has led to impairments on the ability to fully use the bay for beneficial purposes. Presque Isle Bay has become the first of these 43 areas to be re-designated as an “Area of Recovery,” indicating that the bay’s management committee has determined that allowing a natural recovery—rather than an active remediation project—is the best course for bringing the bay back to full health. Local, state and national officials are therefore working hard to eliminate remaining sources of pollution to the bay and determine how long a wait is needed until the bay will return to health on its own.

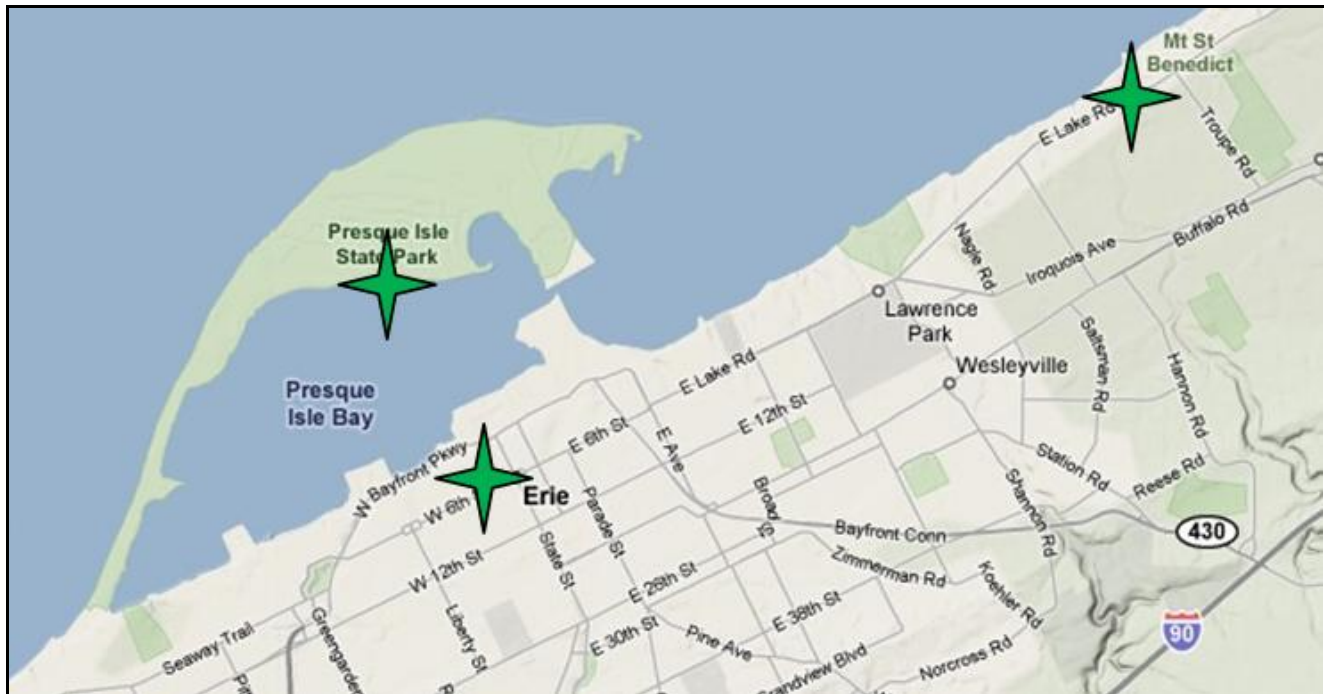
Although historical pollution of the bay was largely through industrial discharges directly into the bay’s waters, the great majority of such releases have now been eliminated. However, large amounts of some toxic substances may be entering the bay—and Lake Erie to which it connects—by depositing from the atmosphere. If chemicals are entering from the atmosphere at a significant level, it could significantly affect the time it will take for the bay to recover and for pollution levels in the bay’s sediment to decrease.

Among the primary contaminants causing concern in Presque Isle Bay are a group known as Polycyclic Aromatic Hydrocarbons, or PAHs. Unlike some persistent chemicals that can be transported across the globe in the atmosphere, PAHs are degraded quickly enough in the atmosphere that most deposition of these chemicals is likely to come from relatively local (within a few hundred miles) sources. There is therefore greater potential that actions could be taken to reduce deposition if airborne contaminants were indeed shown to be affecting the bay. To determine the amount of these chemicals entering the bay, a study has been undertaken by a research team at Gannon University, led by Dr. Michelle Homan and Dr. Weslene Tallmadge.

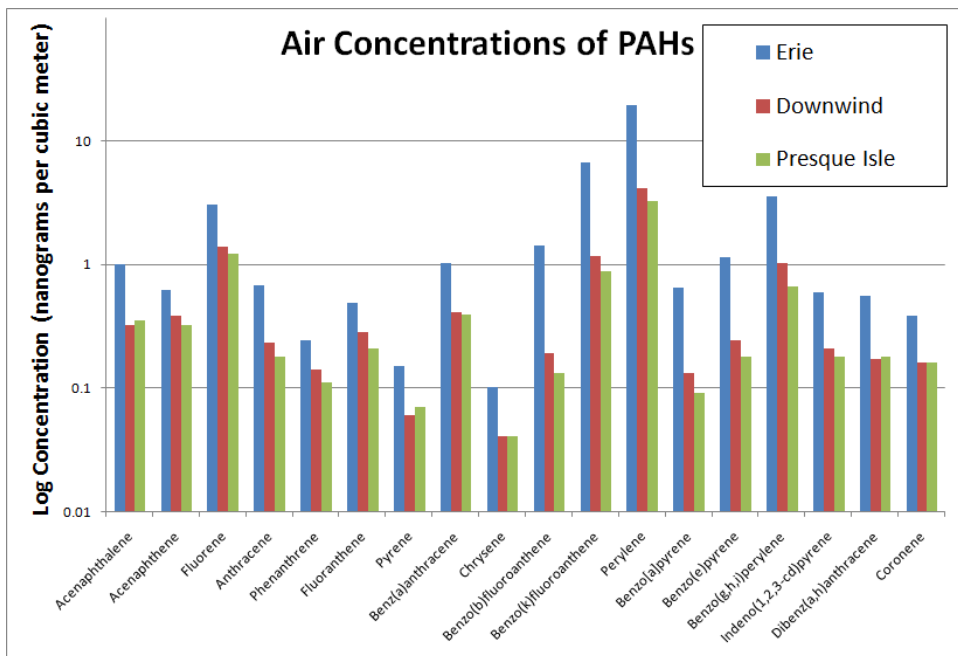
This research project monitored the levels of these chemicals in the air and in precipitation over the course of one year in the area of Presque Isle Bay. Three monitoring stations were established, one very near the bay and additional sites in the city of Erie and downwind. In addition to regular samples of air and precipitation, the researchers also directly measured the amount of chemical depositing to surfaces. With this information, estimates are able to be made of the amount of these chemicals reaching the bay through the atmosphere.

The results of the study allowed the research team to make some preliminary assessments of the relative importance of various sources to the PAH concentrations and deposition to the bay. Activities are now underway to collect additional sampling data, which is needed to improve the results of the source identification work. The overall results of the project will be useful in helping local managers create models of how pollution from the atmosphere is affecting the bay, whether current levels of contaminants in the atmosphere are contributing to continued impairment of the bay and what might be done to decrease the.

Additional information and the project report are at: www.glc.org/glad/projects/homan04/



Sampling Locations



Results of Average Air Concentrations



The project was supported by the Great Lakes Commission's Great Lakes Air Deposition (GLAD) Program with funding originating from the U.S. Environmental Protection Agency. The GLAD Program aims to help regional state governments and their partners better understand and manage the treats of toxic substances that enter the Great Lakes from the atmosphere. For more information, visit www.glc.org