

Evaluating the lakes of Argentina's Nahuel Huapi National Park for mercury pollution

The challenge...

Nahuel Huapi National Park is the largest national park in Argentina, comprising a drainage basin that includes three major river systems, thirteen lakes of more than 10 km², and several hundred smaller lakes and ponds. Although there is no relevant industrial or mining activity, and no pollutant point sources have been identified within the park, high mercury (Hg) levels are present in different compartments of the ecosystem, for example, in fish. Mercury in the ecosystem can cause health issues further up the food chain.

Nahuel Huapi National Park is located in a region of volcanic and seismic activity, a potential source of natural Hg in the environment that has either been released in the past and stored in sediments and soil, or is associated with gaseous emissions today. However, studies indicate that natural local Hg sources overlap with global anthropogenic Hg sources, making it a complex system to study

The project...

High Hg levels identified in sediments and biota point to the necessity of understanding Hg circulation in the national park. The key to understanding Hg circulation in the park ecosystem is the water column.

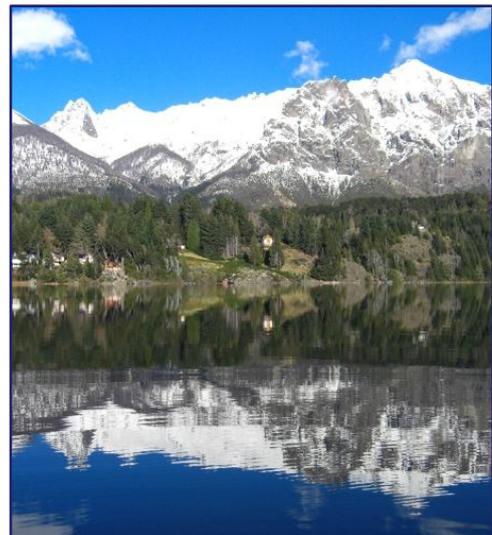
An IAEA technical cooperation project was implemented to determine methyl-mercury production and to identify predominant Hg bioaccumulation pathways and biomagnification processes in the water column of significant lakes of Nahuel Huapi National Park. Environmental data collected through the project was used to support research, and the conservation and management of natural resources.

Through the project, Argentina's capacity to evaluate Hg transference and risks in fresh water ecosystems was updated and enhanced with training and laboratory expansion and optimization. Two fellowships were awarded to specialists from the National Atomic Energy Commission (CNEA), and essential laboratory equipment was also provided.

The impact...

As a result of the project, human resources and technical capabilities for conducting Hg experiments were improved and strengthened, and the role of plankton in Hg inputs in fresh water food chains from the study region were determined. High mercury concentrations in plankton, from the surrounding lakes, were explained by passive absorption from wet deposition and runoff, showing limited mercury transference from pelagic organisms to the food chain.

The results gathered from experiments can be used for the establishment of maintenance, conservation and exploitation policies in the national park. The identification of Hg input paths to fresh water food chains allow the evaluation of water bodies or aquatic system conditions requiring control or management actions.



Lake Moreno, Argentina, was one of the lakes used for sampling.