



IAEA

International Atomic Energy Agency

Atoms for Peace

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Monitoring freshwater quality in Asia and the Pacific

The challenge...

The Member States of the Regional Cooperative Agreement for the Asia and Pacific (RCA) share many similar water resource contamination problems, both local and transboundary. Fresh surface waters (rivers and lakes) are polluted with heavy metals and toxic chemicals from industry, urban wastes, animal wastes, and agricultural and mining activities. These pollutants migrate from the surface waters to groundwater, leading to significant contamination in many areas. To protect water resources and to prevent transboundary effects, it is important to understand the hydraulic interaction between surface water and groundwater and to identify the pathways of contaminant migration.

The project...

The IAEA, in response to a request by the RCA Member States for technical support to address this problem, launched a project to improve freshwater resources management in the region, utilizing isotope techniques. Member State technical capabilities were developed through regional training courses focused on the application of isotope and geochemical techniques to surface water to groundwater interactions and contaminant transport. As a result of the training and other technical inputs provided through the project, the participating Member States have developed the capability to assess water resources, with a special emphasis on investigation of water quality, delineation of contamination sources, migration pathways, recharge mechanisms, interaction between rivers and groundwater, interconnection between shallow and deep aquifers, impacts of landfill on local groundwater, etc.



Collecting water samples from a pond in Malaysia affected by decomposing landfill waste.

The impact...

Through the project, Member States identified sources of groundwater recharge and contamination, and collected hydrogeological information and information on groundwater resource management to develop a regional database on water quality. Detailed hydrogeological and isotopic investigations of groundwater and surface water are being used to identify the processes involved in the formation of saline groundwaters and the pathways and temporal patterns of groundwater exchange. The work will help Member State decision makers to formulate management policies for the judicious use and protection of drinking water resources.

Technical cooperation projects RAS/8/104 and RAS/8/108: Assessment of Trends in Freshwater Quality Using Environmental Isotopes and Chemical Techniques for Improved Resource Management (RCA)