

Using isotopic techniques to assess water quality in Asia and the Pacific region

The challenge...

Water is the most precious of all natural resources, but human activity has led to widespread pollution and contamination. Industry is the greatest source of water pollution: its pollutants include heavy metals such as nickel, chromium, mercury and lead, and other toxic chemicals such as asbestos, phosphates and nitrates, caustic soda and other sodium compounds, sulphur and sulphuric acid, oils and petrochemicals. Rain drainage, especially floodwater, is another major polluting agent because of the many different substances that it carries into freshwater systems.

Recognizing that they have many local and transboundary problems of contaminated water resources in common, the Member States of the Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA) requested IAEA support to improve freshwater resources management in the region using isotope techniques.

The project...

Through a technical cooperation project, RCA Member States received assistance in the effective application of environmental isotope and chemical techniques for the assessment of water quality trends. Training was carried out through expert missions and technical meetings on the use of isotopic techniques to assess water quality and to enhance understanding of contamination patterns and the hydraulic interaction between surface water and groundwater.

Through the project, the RCA Member States were able to set up a regional monitoring programme, including a shared database on the quality of surface water and groundwater. The project facilitated the exchange of information and the sharing of experiences, analytical facilities and expertise among developing countries.



Iodine-131 was used to trace the infiltration of water in soil.

The impact...

Through the project, RCA Member States' capacity to apply isotopic techniques in the investigation of water related problems increased. In the Philippines, the project results were used as a basis for recommendations to the water district managers and the local government on the prevention of surface contamination of groundwater.

The shared database on water quality is being used to address contamination problems affecting surface water and groundwater in the region. It also provides information for the formulation of policies for effective planning and management of water resources at both the national and regional levels.