



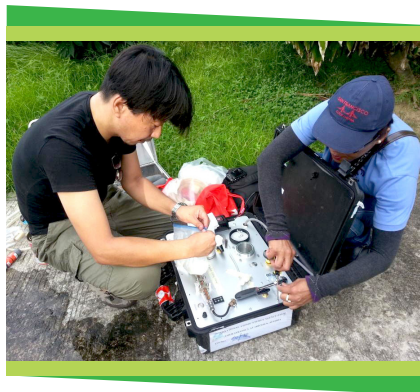
# Securing Safe and Clean Environment

Nuclear Science and Technology Working for You

## IAEA Water Availability Enhancement Project (IWAVE)



*PNRI undertakes sampling missions in Regions 2 (Luzon) and 10 (Mindanao) for groundwater age determination using isotope techniques with IAEA expert Takuya Matsumoto*



*Sample analysis for isotope hydrology studies at the Isotope Ratio Mass Spectrometry Laboratory*

The Philippines is one of the three pilot countries for the IAEA Water Availability Enhancement Project, or IWAVE. The project aims to enhance national capabilities to assess the availability, quality, and sustainability of water resources, contributing to the United Nations Sustainable Development Goals. Environmental isotopes are useful in tracing the

movement of water and the source of pollutants in a watershed.

Water managers and the National Water Resources Board are now integrating isotope hydrology techniques in the water resources programs in the country.

## Air Pollution Source Apportionment

Air particulate pollution is a continuing problem not only in the Philippines, but all over the world, affecting health, environment, and climate. It is not enough, however, to know that levels of air particulate matters (APM) are in exceedance of guideline values. In depth knowledge of the sources of APM is revealed through the use of nuclear analytical techniques (NATs) to generate multi-element data for source apportionment studies.

PNRI data in Metro Manila continue to indicate APM sources to be dominated (about 50%) by traffic-related activities. Addressing problems in vehicular emissions will bring about better air quality in Metro Manila.



*Gent Sampler set-up at an air monitoring station*

## Assessment of Pollutant Loading in Manila Bay



Location of the Pampanga River Basin

There is a need to identify sources (natural and anthropogenic) of pollutants entering Manila Bay. PNRI and the Bureau of Soils and Water Management (BSWM) used the stable isotope technique to trace the anthropogenic inputs (domestic, livestock, and croplands) from the Pampanga River Basin to Manila Bay.

Isotope mixing models revealed that domestic and cropland sources contributed dominantly in the pollution along the Pampanga River Basin leading to Manila Bay. The findings were presented to the

stakeholders and the Department of Environment and Natural Resources (DENR) in early 2014.

There is an on-going study by PNRI and BSWM covering Pasig and Bataan river basins to get a complete picture of the pollution loading in Manila Bay. In compliance with the order of the Supreme Court, DENR undertakes the restoration of the bay's waters to the Class SB classification, a water quality standard "fit for swimming, skin-diving, and other forms of contact recreation."

## Real - Time Environmental Monitoring System



Real Time Environmental Monitoring System installed at PNRI

The PNRI is establishing the System for Online Monitoring of Environmental Radiation (SOMER), a network of online radiation monitoring system in strategic locations throughout the Philippines for the early detection of radiation emergencies. As of 2018, eight fully operational SOMER stations are established, including three new stations in Aurora, Eastern Samar, and Surigao del Sur. The measurements in the three previously installed stations in Quezon City, Cagayan, Palawan, Cebu, and Davao City were normal background radiation levels.

The equipment measures the ambient radiation levels in the environment every fifteen minutes for 24 hours in a day continuously.

