Reducing the effects of harmful algal blooms in El Salvador

The challenge…

El Salvador's coastal areas are often struck by harmful algal blooms (HABs), or red tides. These massive accumulations of toxin-producing algae can cause huge fish kills and turtle deaths and can enter the food chain, with severe consequences for human health. Consuming contaminated seafood can lead to nausea, memory loss, brain damage and paralysis. When a red tide occurs, fishing grounds must be closed, leading to considerable financial losses. To reduce the risk of intoxication and limit the closure of fishing grounds, HABs events must be identified early and accurately. Nuclear techniques, such as receptor binding assay, in combination with other methods, offer precise, quick and efficient toxin detection.

The project…

Several IAEA technical cooperation projects have been carried out to help El Salvador deal with HABs related issues and to establish a permanent monitoring system that provides early warning of toxins in microalgae and seafood products. To support these initiatives and help fishing communities benefit from nuclear technologies, the IAEA has provided training in the use of specialized detection equipment to monitor HABs. In addition, the IAEA has helped to establish and equip a marine toxin laboratory with a unique capacity to measure the toxin content of HABs, a capability that no other laboratory in the region has yet developed.

The impact…

The establishment of the laboratory was a remarkable development in the country's efforts to ensure seafood safety, human health and economic stability. It has allowed for greater focus and more research on HABs, and El Salvador now has the necessary tools and know-how to deal with HABs emergencies. The new toxin detection methods have reduced the time required to obtain results and increased the number of samples that can be analysed. With a proper monitoring system in place, it is now possible to provide early warnings of HABs, as was demonstrated during a red tide incident in 2010.

The laboratory has developed an online information system (http://toxinasmarinas.cimat.ues.edu.sv) as a primary mechanism to support early warning of red tides. This provides data on the physiochemical parameters of phytoplankton status in the coastal zones of El Salvador. The data are used to identify critical algal outbreaks and thus avert the negative impact of HABs on human beings.

> **Technical cooperation project ELS7002/3: Detection of Marine Toxins through the Use of the Radioassay Method in El Salvador/Supporting a Monitoring Programme for the Marine Environment**