

URI researcher calls for global effort to monitor marine pollutants

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A University of Rhode Island researcher who studies chemical pollutants in the marine environment has called on colleagues around the world to establish a global monitoring network to verify that the chemicals banned by the United Nations in 2003 are no longer in use.

Rainer Lohmann, associate professor at the URI Graduate School of Oceanography, and colleague Derek Muir of Environment Canada made their call to action in the journal [Environmental Science and Technology](#) last week.

"The U.N. Stockholm Convention banned the production and use of many [chemical compounds](#), but it is very difficult to verify whether or not it is working," said Lohmann.

The Convention was driven by concerns about the risks to people and wildlife from [organic pollutants](#) that persist in the environment for long periods of time, accumulate in body tissues, and are prone to travel great distances in the air or water. Among them are what Lohmann called the "legacy pollutants" like PCBs, DDT, dioxins, and some insecticides, as well as newer chemical compounds like [flame retardants](#), fluorinated compounds, and those used in some industrial processes.

While atmospheric sampling is being conducted in some parts of the world to monitor the success of the chemical ban, Lohmann says that aquatic monitoring is even more important because most human and wildlife ingest the banned chemicals through the consumption of fish,

shellfish and other [marine organisms](#).

Lohmann and Muir recommend that the proposed marine pollutant monitoring program use a simple and inexpensive technology called polyethylene passive samplers to assess concentrations of banned chemicals in the world's oceans. The samplers are small sheets of a thin plastic material that are sold at most hardware stores as a painter's drop cloth. Chemical compounds that are dissolved in water become absorbed into the polyethylene, and chemical concentrations can be easily measured with a simple lab test.

The URI professor first tested the effectiveness of the polyethylene samplers in Boston Harbor, and in 2007 he published an award-winning paper on their use. The following year he was awarded a \$300,000 grant from National Oceanic and Atmospheric Administration to further study their effectiveness.

"The passive samplers are cheap, they're easy to handle, and they can be deployed by non-scientists anywhere," Lohmann said. "And if the international community agrees that this is the right approach, there is already a means in place to train people around the world to implement it."

Assuming he can generate consensus for the idea among his scientific colleagues, Lohmann's next challenge will be to find a government agency to fund the training, deployment and analysis involved.

"Not only will this monitoring program help to verify the effectiveness of the Stockholm Convention, but it could also help us gain a better understanding of what happens to these compounds over time," Lohmann said. "Do they remain in the oceans for decades, do they settle into the sediments and stay there, or do they break down in the sunlight? We don't really know as much as we should about their ultimate fate."

Provided by University of Rhode Island

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