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Keeping Watch on Asian POPs

UNU will continue to help Asian countries to monitor dangerous persistent organic pollutants (POPs)

POPs (persistent organic pollutants) are among the most pernicious artificial substances ever created. Whether synthesized for use in pesticides, solvents and plastics, or produced as the unwanted byproduct of industrial processes, POPs have long been released into the environment by human activity. Once released, POPs persist in the environment for years, or even decades, and can be spread widely from their source by water and air.

The danger to living organisms is that POPs accumulate in the food chain and are stored in the body tissues. In high-enough concentrations, certain POPs can cause chronic illness or death. Even low concentrations of POPs can have subtle but adverse health effects, including disrupting the body's immune and reproductive systems.

Monitoring POPs levels in Asian waters

The capacity for monitoring POPs levels in the environment is indispensable for implementing sound remedies and risk reduction policies. Yet many developing countries lack this capacity, both in terms of scientific expertise and the availability of analytical equipment.

The Environmental Monitoring and Governance in the Asian Coastal Hydrosphere project is an effort by the United Nations University (UNU) to address this issue. Led by the Tokyo-based UNU Institute for Sustainability and Peace (UNU-ISP), with support from Japan's Shimadzu Corporation (which provides laboratory equipment, such as gas chromatographs and mass spectrometers, as well as technical training), this capacity-building initiative provides developing countries with the scientific knowledge and technology to monitor POPs within their borders, so that they can better respond appropriately and implement multilateral environmental agreements such as the Stockholm Convention.

Inaugurated in 1996 as one of UNU's pioneering public- and private-sector partnership projects, the Environmental Monitoring and Governance in the Asian Coastal Hydrosphere project has to date trained more than 100 research staff from participating governmental institutions and universities in ten Asian countries in the latest POPs monitoring and analysis techniques. The project also has built an extensive network that connects academia, the private sector and government, both across the region and internationally.

On Monday, 12 November, in a ceremony at United Nations University Headquarters in Tokyo, UNU Rector Konrad Osterwalder and Shimadzu President Akira Nakamoto signed an agreement extending the project partnership for an additional three-year phase (2012-2015).

Keeping Watch on Asian POPs (continued)

Why tracking POPs is important

The consequences of POPs in the environment are a serious-enough concern that a global treaty, the Stockholm Convention on Persistent Organic Pollutants, was adopted in 2001 and entered into force in 2004. The aim of the Stockholm Convention is to restrict and ultimately eliminate the production, trade and use of (currently 21) POPs chemicals.

In studies on wildlife, exposure to POPs in the environment has been shown to cause reproduction failure/population declines, birth defects, feminization of males/masculinization of females, abnormal functioning of hormone systems, weakening of the immune system, abnormalities in behavior and tumors.

But the problem is not confined to wildlife. POPs have been found in the blood, muscles and fatty tissues of human populations throughout the world. While research on POPs' impact on human health is continuing, evidence to date suggests that, even at moderate levels, the accumulation of POPs in the human body can contribute to cancers and neurobehavioral impairment (including learning disorders), weaken the immune system, and trigger reproductive problems and sex-linked disorders.

Expanding the effort

POPs-contaminated areas and regions are found in many developing countries, in part as the result of environmental mismanagement, including improper pesticide use, poor domestic/industrial waste management and indiscriminate disposal of stockpiles. Persons at risk include not only local residents and those living downstream, but those who eat food grown in the polluted areas.

The five three-year phases of the Environmental Monitoring and Governance in the Asian Coastal Hydrosphere project completed to date have helped scientists in the project-partner countries to measure and analyse more than 100 different POPs compounds, including organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs; widely used in transformers, capacitors, and electric motors) and polybrominated diphenylethers (PBDEs; used as a flame retardant in building materials, electronics, plastics, and textiles). Project partners have analysed POPs concentrations in water, sediment, soil, and marine life (shrimp, fish, and squid) samples taken from more than 800 river, lake and coastal water sites throughout Asia.

Shimadzu President Nakamoto called the project "a very significant activity from the viewpoint of sustainable development, environmental conservation, and the spread of analytical technologies". UNU Rector Osterwalder echoed this view, saying that "this UNU-ISP project has successfully provided resources and training, in partnership with Shimadzu Corporation, to create opportunities for our partners in developing countries. And these acquired capacities have started benefiting the people of those countries".

In the current three-year phase of the project, confirmed by UNU and Shimadzu at the signing ceremony on 12 November, the focus will be on perfluorochemicals (PFCs), which were listed (as perfluorooctane sulfonic acid (PFOS) and its salts, and perfluorooctane sulfonyl fluoride (PFOS-F)) in May 2009 in Annex B of the Stockholm Convention.

Keeping Watch on Asian POPs (continued)

This new phase of the project will assist partner institutions in the Asia-Pacific region and continue environmental monitoring in the region. Specific goals of the new project phase include:

- building local capacity to analyse PFCs in industrial and environmental samples (with training and equipment provided by Shimadzu);
- disseminating the project activities and findings at relevant academic and UN conferences;
- involving PFC manufacturers, users and the waste management sector in the project, and establishing local networks in the partner countries; and
- establishing links and exchanging information/knowledge with the Stockholm Convention Secretariat and UNIDO/UNEP.

“During the previous five phases of this project, PFCs have not been analyzed as target chemicals”, said Rector Osterwalder. “Considering the importance of the sound treatment of PFCs ... and in accordance with the Stockholm Convention’s review on the evaluation of those compounds, we are aiming to produce the high-level recommendation based on our research results and submit it to the Persistent Organic Pollutants Review Committee on the use of PFCs by the end of 2014.”

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The online version of this press release includes links to related documents and photos. Please see <http://unu.edu/news/releases/keeping-watch-on-asian-pops.html>.

The UNU Office of Communications would be happy to help you get more information or interview project participants, or to assist you in developing an article or news story focusing on the UNU-ISP Environmental Monitoring and Governance in the Asian Coastal Hydrosphere project. Please contact William Auckerman or Aska Maki in the UNU Office of Communications, Tokyo (media@unu.edu; +81-3-5467-1298).