



Consequences of pesticide use in the tropics

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Topics: Drinking Water | Pollutants | Water & Development | Society

While the use of pesticides in industrial countries is being questioned more and more critically, less is known about their consequences on human health and the environment in tropical countries. The interdisciplinary project “Pestrop” is now changing this and also shows where the necessary measures need to be taken.

When it comes to water in the Global South, the focus is usually on microbiological quality. Small wonder, given that diseases, such as cholera or typhoid, spread through contaminated drinking water. Pesticides, on the other hand, are a little-researched topic in tropical regions. However, a team of experts from the fields of environmental chemistry, human toxicology and political science has now investigated which pesticides were used in two test regions in the period from 2017 to 2020 in Costa Rica and Uganda, and which active substances were found in streams and drinking water production. At the same time, research was conducted on how farmers handle pesticides and how well-informed they are about the risks. The team found clear evidence of long-term negative effects of pesticide use on farmers' health. The project also uncovered deficits in environmental data, inadequate advice to farmers and outdated statutory requirements on pesticide use.



Spraying equipment and pesticides in a shed in the Zarcero region of Costa Rica. (Photo: Samuel Fuhrmann, Swiss TPH)

Surprising insecticide findings

The project focused on “modern”, often polar active substances, such as fungicides and insecticides. In Africa as well as in Central America, there are still hardly any regulations on these. However, it is evident that they are widely used. In individual samples from streams, the researchers found active substances in concentrations that were significantly above the threshold limits as recognised in Switzerland. And problematic concentrations were also found in boreholes and ponds from which the population draws its drinking water. In addition – and this was surprising – the team found substances in the water that are hardly ever sprayed on the fields, including the insecticide chlorpyrifos, which has since been banned in Switzerland. The researchers suspect that the agent is used to control mosquitoes and mites in stables and enters the environment with farmyard manure, for example.

The “Pestrop” project was jointly led by the aquatic research institute Eawag and the Swiss Tropical and Public Health Institute.

Philipp Staudacher on the use of pesticides in developing countries

[Watch the video on Youtube.](#)

Lecture at Eawag Infoday 2023

At Eawag's Info Day "Aquatic research for sustainable development" on 14 September 2023 in Dübendorf, Christian Stamm, Deputy Director of Eawag, will take a closer look at Eawag's research on the use of pesticides in the Global South, but also in Switzerland, and present the research results. In particular, he will explain the conflict of goals between plant protection

versus environmental and health protection, identify the causes of the problems and outline possible solution strategies.

[Further information on the Eawag's Info Day programme and registration](#)

Cover picture: Farmers spraying vegetables in the Zarcero region of Costa Rica. (Photo: Mirko Winkler, Swiss TPH)

Original Publication

Oltramare, C.; Weiss, F. T.; Staudacher, P.; Kibirango, O.; Atuhaire, A.; Stamm, C. (2023) Pesticides monitoring in surface water of a subsistence agricultural catchment in Uganda using passive samplers, *Environmental Science and Pollution Research*, 30(9), 10312-10328, [doi:10.1007/s11356-022-22717-2](https://doi.org/10.1007/s11356-022-22717-2), [Institutional Repository](#)

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Eawag Swiss Tropical and Public Health Institute (Swiss TPH) University of Bern University of Basel National University of Costa Rica Makerere University, Uganda Uganda National Association of Community and Occupational Health (UNACOH)

Related Links

Information on plant protection products in water

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