

Interview with Prof. Dr. Tinka Murk, University Wageningen, NL



*Prof. Dr. Tinka Murk,
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Why do you find ecotoxicology so fascinating?

As a biologist I am fascinated by all the processes that make living things function and adapt to environmental challenges. Toxic compounds interfere with these natural processes at very different levels. Especially the more subtle are a challenge to track down, but they nevertheless can have a serious impact on population development. Since the frequency of obvious toxic disasters is strongly reduced, ecologists underestimate the current role of toxicants in population development.

Why did you decide to engage in ecotoxicology?

Because of a combination of the fascination stated above and the challenge of the puzzle that have to be tackled at different levels of organization. I also am interested in the link between environmental and human health, and feral species often are the first to show adverse effects because of high specific exposure or ecophysiological events challenging potentially affected endocrine processes more than average.

Why should young people choose ecotoxicology as their subject?

As our modern society highly depends on the use of chemicals, compounds will continue to enter the environment and potentially induce toxic effects. In combination with increasing pressure on the ecosystem to sustain growing populations of people, toxic effects could hamper the vitality and sustainability of these systems. The new EU REACH legislation aims at identifying and regulating the most relevant chemicals. This approach, however, is limited for practical reasons so more dedicated (eco)toxicological research is needed to more specifically study the effects under natural, multistress and mixture exposures.

Please briefly explain your field of activity and research in a way that an amateur would understand you.

My field of study especially focuses on interaction of realistic levels of chemicals with developing organisms. Because these levels are so low the adverse effects are not so obvious as for example death or malformations. Especially compounds that can mimic hormones can disrupt for example early development of eggs and metamorphosis, and if they can cross the placental barrier they can induce changes in developing organisms that will become apparent much later in life. These effects occur in invertebrates as well as vertebrates including humans. Based on thorough knowledge of the crucial biological system and the mechanism of disruption by the toxic compounds, biomarkers can be developed to test whether these effects actually occur and test systems in cultured cells can be developed to be able to study the mechanism in more detail and screen the effects of environmental contaminants. The latter so called in vitro bioassays also prove to be very useful in identifying still unknown toxic compounds in the environment and food.

How will the results of your research influence our daily lives and our society?

Advanced knowledge of the above mentioned mechanisms, policy makers can be advised to help further development of more rational advanced methods for risk assessment, which sometimes can result in less strict standards and sometimes indicates stricter measures. In addition, the above mentioned knowledge can help explain ill understood problems such as population decrease and (in the case of humans) e.g. increased breast cancer and infertility.

Everybody can contribute with her/his own behaviour to minimize the chemical pollution of our environment. Which three specific measures would you consider the most effective ones?

Be critical when shopping; do you need all the stuff that is too cheap because it is produced in e.g. China at the cost of the environmental and human health?

Be critical when travelling; sure it is nice to fly to all those exotic holiday locations, sure it is easy to take the car for track of even a few kilometres, but are there more sensible alternatives?

Take your societal role, meaning communicate your knowledge to laymen and be rational when voting.

The center of ecotoxicology in Dubendorf/Zurich was opened in October 2008. What could be the role of the center to implement these measures in our society?

Tackle issues that are relevant for society because people are worried about it or because you have reason to believe that they are of potential concern. Communicate your results to the scientific community (high level scientific journals and scientific meetings) and to the general public.

Translate scientific results to options with consequences to assist that policy makers that have to weigh risks and benefits when making societal decisions.

Make the connection to the EU although you are not part of it.

Thank you very much for answering these questions.