

Scientists identify most pressing environmental issues posed by pharmaceuticals

October 1 2014

A new study led by the University of York identifies the key research questions about the risks of pharmaceuticals and personal care products in the environment.

Pharmaceuticals and [personal care products](#) (PPCPs) are widely discharged at low levels into the environment through a number of different routes, with potentially important human and ecosystem health implications. Scientific evidence is crucial for determining the effects of PPCPs in the environment and informing regulatory and policy responses to potential risks.

The results of the study, which involved researchers from the University of York, the United States Environmental Protection Agency and Baylor University, are reported in the journal *Integrated Environmental Assessment and Management*.

The study built on a recent 'big questions' exercise in which participants - largely from North America - identified 22 important research questions around the risks of PPCPs in the environment that would help address the most pressing knowledge gaps over the next decade.

To expand that analysis, the York-led research team developed a survey that was completed by 535 environmental scientists from 57 different countries. Nearly half of the respondents identified environmental or

analytical chemistry as their primary disciplinary background.

Respondents ranked the 22 original research questions and submitted 171 additional candidate research questions they felt were also of high priority.

Of the original questions, the three perceived to be of highest importance related to the effects of long-term exposure to low concentrations of PPCP mixtures on non-target organisms; effluent treatment methods that can reduce the effects of PPCPs in the environment while not increasing the toxicity of whole effluents; and the impacts of other substances that are formed from PPCPs when they are degraded.

Dr Murray Rudd, from the University of York's Environment Department, who led the study, said: "Our research highlighted international scientists' research priorities and should help inform decisions about the type of hazard and risk based research needed to best inform decisions regarding PPCPs in the environment."

Dr Alistair Boxall, also from York's Environment Department, added: "For a long time now, the research community has raised concerns about the top ranked question, the long-term effects of the very low levels of PPCPs that occur in the environment. I am therefore not surprised that this topic was ranked of highest importance. Hopefully the findings of the survey will help convince funding agencies to invest in research to answer what is a very tough question."

The researchers found significant differences in research priorities between scientists who completed English and Chinese language versions of the survey. They also found that the disciplinary training of a scientist or engineer appears to strongly influence preferences for research priorities to understand PPCPs in the environment.

Dr Rudd added: "Further research into how patterns of research priority vary between academic and government scientists and between scientists and other government and stakeholders would be useful in the future, and provide information that helps focus scientific effort on socially relevant challenges relating to PPCPs in the [environment](#)."

More information: The paper is available online:
onlinelibrary.wiley.com/doi/10.1002/ieam.1551/pdf

Provided by University of York

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