

# Major environmental study finds traces of many drugs in Swedish waters

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(PhysOrg.com) -- High levels of the anti-inflammatory substance diclofenac are released from wastewater plants, according to a study from IVL Swedish Environmental Research Institute and Umeå University that was commissioned by the Swedish Environmental Protection Agency. – This is a wake-up call that this substance and several other pharmaceuticals are so difficult to break down, says Jan Christiansson, the officer in charge at the Swedish EPA.

The uniquely large-scale screening has examined as many as 101 drugs and their levels in wastewater purification plants, surface water, drinking water, and [fish](#) caught in the wild. The study focused on effluents from densely populated areas with an emphasis on incoming and outgoing wastewater from wastewater [treatment plants](#) and the waterways and lakes that are downstream from these treatment plants. Tissue samples from fish (perch) were also included from waters downstream from two treatment plants and from two control lakes. Also included were analyses of drugs in drinking water from two cities.

The results show that many substances, including diclofenac, are released with little impact from the wastewater treatment plants. Seven samples with ten perch in each sample were analyzed, and as many as 23 of 101 drugs that were analyzed were found in these samples.

“We’re aware of the problem with diclofenac. The study shows further that there are other compounds than [diclofenac](#) that we should be monitoring and studying more closely. After all, these are fish caught in

the wild, and the samples show that there are drugs that are difficult to break down, that make it through wastewater treatment plants , and that they are bioconcentrated by the fish. Since we found so many substances in the fish samples, this is something we need to look at more closely,” says Jerker Fick, Umeå University.

As the study is so broad and covers such an unusually large number of pharmaceuticals, the findings are highly informative. The study shows that 92 of the 101 drugs could be detected in incoming wastewater and that as many as 85 could be detected in outgoing, treated wastewater.

“To alleviate these problems we need to improve our environmental adaptation of pharmaceuticals compared with today. This means that producers need to take their responsibility. Moreover, the behavior of the general public plays a role. Everyone needs to return leftover drugs to the pharmacy and not flush them down the toilet. What’s more, wastewater plants need to do a better job of breaking down compounds that are hard to break down, so they don’t jeopardize our health and environment via direct emissions or via sludge from wastewater treatment,” says Jan Christiansson, Swedish EPA.

Provided by Umeå University

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