

# Medicine residues may threaten fish reproduction

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Researchers at Umea University and the Sahlgrenska Academy at the University of Gothenburg, Sweden, have discovered that traces of many medicines can be found in fish that have been swimming in treated waste water. One such medicine, the hormone levonorgestrel, was found in higher concentrations in the blood of fish than in women who take the contraceptive pill. Elevated levels of this hormone can lead to infertility in fish.

The study is published in the journal [Environmental Science and Technology](#). The fish in the study were exposed to treated waste water from three sewage treatment works in Stockholm, Umeå and Gothenburg. The study shows that levonorgestrel - which is found in many contraceptive pills, including the morning-after pill - can impact on the environment and constitutes a risk factor for the ability of fish to reproduce. Levonogestrel is designed to mimic the female sex hormone progesterone and is produced synthetically.

A study from Germany showed very recently that less than a billionth of a gram of levonorgestrel per litre inhibited the reproduction of fish in aquarium-based trials. "We are finding these levels in treated waste water in Sweden," explains Jerker Fick at the Department of Chemistry at Umeå University.

For around ten years it has been known that synthetic oestrogen from contraceptive pills can affect fish that live downstream from sewage treatment works. The new study shows that synthetic progesterone-like

hormones in contraceptive pills also carry risks.

The [fish](#) in the study were exposed to undiluted waste water, whilst in the natural environment there tends to be a degree of dilution in watercourses. But the study pointed out that there are also watercourses with very little dilution, and probably treatment plants that filter out the hormone less effectively than those included in the study. These findings will help to improve our understanding of which substances need to be removed from [waste water](#).

"If we know how our medicines affect the environment, we will be in a better position to choose environmentally friendly alternatives, though we must always put the health of patients first," says Joakim Larsson at the Sahlgrenska Academy, one of the researchers behind the study.

Provided by University of Gothenburg

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