

Large amounts of antimicrobial substances in Swedish sewage treatment plants

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A large number of antimicrobial substances are found in sludge and water in Swedish sewage treatment plants. Several of them pass through the treatment plants and are released into the aquatic environment.

However, with new technologies like ozone and activated carbon, emissions can be significantly reduced. This is shown by Marcus Östman in his dissertation, which he defends at Umeå University on Wednesday, November 7th.

Antimicrobial substances are used to fight bacteria, both in the form of [antibiotics](#), but also as disinfectants and preservatives in cosmetics, etc. It is likely that antibiotics and other antimicrobials in the environment can contribute to the emergence of antibiotic resistant bacteria. For reasons of caution, it is therefore important to reduce the levels as much as possible.

Marcus Östman shows in the dissertation that many antimicrobial substances are very common in [sewage treatment](#) plants and also at high levels. Highest concentrations are found in the sludge, especially of substances known as quaternary ammonium compounds. Treated wastewater effluents contains generally lower levels, but large amounts are still released in total.

At present, there is no legislation to regulate the emissions of these substances from sewage treatment plants. However, new technology is evaluated to address the problem, and in the thesis, Sweden's first full scale ozone treatment plant in Knivsta, as well as an activated carbon test plant, are evaluated.

"The ozone increases the removal efficiency, but it is first with activated carbon that results become very good for the compounds studied. Developing [sewage treatment plants](#) with improved advanced tertiary treatment, which has now begun, could reduce emissions to the environment of [substances](#) that are currently difficult to remove, such as antibiotics and many other drugs," says Marcus Östman.

More information: Antimicrobials in sewage treatment plants –

occurrence, fate and resistance.

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Provided by Umea University

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