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Effectively removing medicine residues from wastewater

EnviroChemie is developing sustainable and efficient wastewater treatment solutions for companies in the pharmaceutical industry. The procedure can be adapted flexibly when wastewater components change and has a minimal carbon footprint.

New medicines, new applications: As a result, treating wastewater from the pharmaceutical industry is an increasingly demanding task. Alongside thorough analytical methods, EnviroChemie offers a range of procedures for reliably removing critical ingredients, such as antibiotics or hormones, from wastewater.

Active pharmaceutical ingredients (API) are generally not easily biodegradable. Therefore, the wastewater may not be discharged into sewage treatment plants without pretreatment.

Various methods – or combinations of methods – are considered for pretreating wastewater from pharmaceutical production. Incinerating this wastewater consumes a lot of energy and generates high CO₂ emissions, while the HGV transport involved also increases the carbon footprint. Physical procedures are also expensive. Residues in wastewater are filtered out using membrane technology or absorbed by activated carbon. Following this, the residual materials must be disposed of. Depending on the type of wastewater, however, these methods can be suitable in combination with other technologies.

Advanced oxidation processes (AOP) are more common today. These split APIs or other substances that are not easily biodegradable into smaller organic fragments, so that the wastewater can then be biologically treated in the subsequent steps. The choice of the right AOP depends on the type of wastewater and its components. In its own labs and pilot plants, EnviroChemie tests the various procedures for the different pharmaceuticals and develops an individual treatment method for each individual application.

One example of this is the surfactant octoxynol 9, which is used as a solution in many rapid tests for COVID-19 and is therefore an example of a substance that can suddenly present a completely new challenge for wastewater treatment. Due to its toxicity, octoxynol 9 may not be released into wastewater even in small quantities. Producers are tasked with developing completely new solutions here; EnviroChemie has devised a custom treatment process on behalf of one of them. To this end, the wastewater specialist determined and tested the ideal parameters for the treatment in its own laboratories. Supplementary analyses from external specialist laboratories confirmed the decomposition results.

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