ADVANOX™
powered by VAN REMMEN UV Technology

Reference case

Removal of pharmaceuticals from hospital wastewater

The background

Micropollutants such as pharmaceuticals, antibiotics, and hormones enter the water cycle with our wastewater. These pharmaceuticals, are designed to be difficult to break down and highly effective. This aids medication to have an effect for a long time in the body at low concentrations. Because they are designed this way, wastewater treatment plants are to a large part unable to remove them. The residues from pharmaceuticals, antibiotics, and hormones end up in our surface waters where they affect the ecosystem, and eventually they end up in our drinking water, where they can affect us directly. Pharmaceuticals in wastewater are a very important issue. WHO predicts that by 2050 antibiotic resistance will be a bigger threat to humanity's health than cancer is now. Male fertility is also on a rapid decline, and aquatic species and insects like bees are suffering and declining. Hospital wastewater has very high concentration of micropollutants such as antibiotics, and by focusing on removing the pharmaceuticals at the hospital pressure on the wastewater treatment plant is lowered and risks are removed.

The case

To investigate and demonstrate the possibilities of removing pharmaceuticals directly from hospital wastewater and reducing the pressure on the local wastewater treatment plant, Van Remmen UV Technology B.V. and Nijhuis Industries B.V. contacted Waterschap Rijn en Ijssel (Waterboard Rhine and IJssel) and Streekziekenhuis Koningin Beatrix (SKB, Queen Beatrix Regional Hospital) in Winterswijk. This resulted in a joint research venture where the combination of UV-C and ozone was tested both at the hospital and the local wastewater treatment plant (Winterswijk RWZI).

Facts

Contractor
Koningin Beatrix Hospital, Waterschap Rijn en IJssel, RWZI

Location
The Netherlands, Winterswijk

Purpose
Pharmaceutical removal

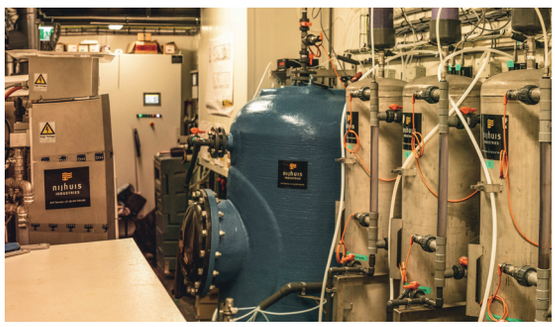
Solution
MediOxi™

The solution

Van Remmen UV Technology together with Nijhuis Industries developed the concept MediOxi for this project which was a fully containerized solution of the combination. This combination is perfect for hospital wastewater where the ozone breaks down many of the tough pharmaceuticals and the UV-C does secondary breakdown of contrast agents, removal of residual ozone, and complete disinfection. The UV-C was supplied by Van Remmen UV Technology and the ozone by Nijhuis Industries.and extends shelf life of the product. With this system IDH makes sure they maintain their exceptional high quality standard.

Results

The system was tested successfully from autumn of 2019 to summer of 2020. During these tests 58 pharmaceuticals, antibiotics, contrast agents, etc. were investigated. Out of these, 10 were “gidsstoffen” or guide substances as assigned by STOWA. A removal efficiency of >70% was reliably reached on average of all pharmaceuticals, and among the guide substances the removal efficiency was >85%.



Customer quote:

Herman Jansen | Projectcoördinator Vastgoed & Techniek | Koningin Beatrix Hospital: *“Pleasant cooperation”*