



Are Emerging Contaminants a Problem for Sharjah?

In the UAE, Sharjah is renowned for its forward-thinking policies when it comes to water management. Not only has the emirate recently doubled its strategic wastewater treatment capacity, but it is also actively pursuing solutions to recycle the treated water and turn a waste product into a usable commodity.

However, a recent study into emerging contaminants in Sharjah wastewater effluent revealed that the filtration techniques employed at the site might not be as wholly effective at removing all contaminants as previously assumed. As the first study of its kind, the paper provides the scientific community with food for thought on the efficacy of Sharjah's wastewater treatment protocols and a strong platform for future research.

What are emerging contaminants?

With tens of thousands of chemical compounds in circulation today – and more being synthetically manufactured and released all the time – it's only logical that there will be many about which we know little. These substances, whose concentrations in and consequences upon the natural world remain unclear at present, [are defined as emerging contaminants](#) or contaminants of emerging concern (CECs).

Although CECs are generally released into the environment in extremely small doses, many of them have the ability to persist in the natural world for a long time. This poor biodegradability means that they can accumulate over the years, eventually reaching levels which could pose a threat to both human and environmental health.

CECs in Sharjah

To discover whether or not CECs pose a problem for the city of Sharjah, a group of scientists assessed both influent and effluent from the Sharjah wastewater treatment plant (SWWTP) over a period of 12 months. To do so, they used a variety of sophisticated analytical techniques, which helped to identify and quantify emerging contaminants at the nanogram per litre level.

In total, 57 different substances which could be classified as CECs were found to be present in the wastewater samples, including 10 pharmaceutical products which were



quantified at the granular level. The results of the investigation revealed that between 4% and 69% of the CECs found in the influent were also found in the effluent, shedding some light on the issue.

Much work ahead

The study highlights that SWWTP is 97% effective at removing some CECs – but only 31% effective at removing others. That means that some substances which could potentially endanger the environment are finding their way back into it when the water is discharged back into the natural world.

That's of particular concern given Sharjah's plans to recycle its wastewater effluent. Among other applications, it is often used in district cooling, chemical and ready-mix plants, steel factories and landscaping projects. However, the implication that it may contain some CECs could indicate that further research is needed to investigate the ramifications of this contamination.