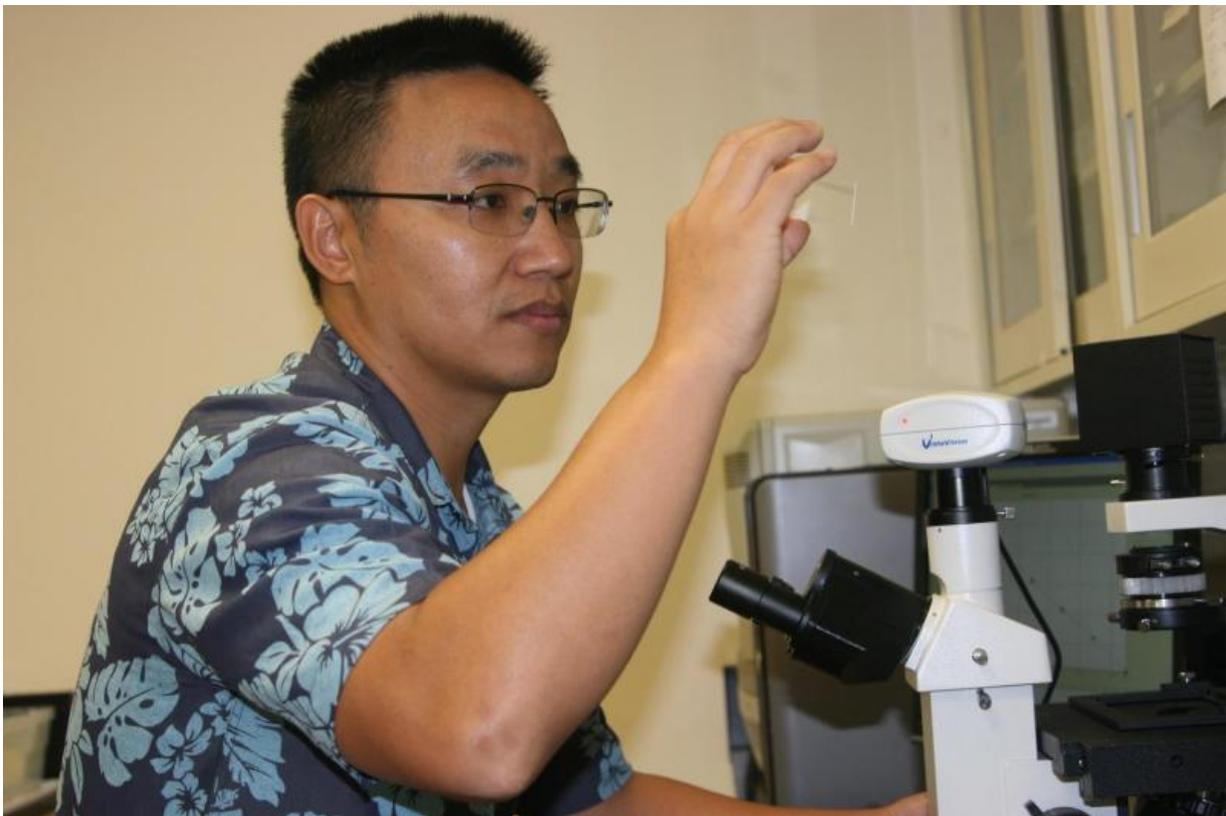


Engineering research team discovers that wastewater grease traps may damage sewer pipelines

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Tao Yan in his lab at UH Manoa.

A University of Hawaii at Manoa Engineering team has discovered that microorganisms in wastewater grease traps may actually aggravate fat,

oil and grease (FOG) deposits in sewers – a problem that the grease traps were designed to reduce.

Findings of the paper, authored by Associate Professor of Civil and Environmental Engineering Tao Yan and post-doc Xia He, were recently published in *Environmental Science, Water Research & Technology*.

Businesses can install grease interceptors between their kitchen wastewater drain and sewer pipelines in the hope of trapping and removing the fat, [oil](#) and grease. But the study by Drs. Yan and He indicates that [microorganisms](#) within these grease traps could produce long chain fatty acids that can form hardened FOG deposits in downstream sewer pipes.

Often known as fatbergs, the hardened FOG deposits are made up mostly by calcium salts of long chain fatty acids, rather than simply fats and cooking oils entering wastewater pipelines. They cause severe problems for those maintaining the sewers and, in worst-case scenarios, can lead to sewer overflows and sewer system degradation.

"We are interested in the biological processes that contribute to sewer systems deteriorating and in developing engineering solutions that can improve the sustainability of sewer infrastructure and help protect public health and the environment," explains Yan.

Yan and He replicated the conditions within grease interceptors – where microorganisms from food waste can thrive – in their laboratory. It was found that the process increased the concentration of fatty acids within the traps and in the water that would flow into a sewer pipeline.

Furthermore, the fatty acids generated by the microorganisms were mainly unsaturated. These unsaturated fatty acids produce stickier deposits, thus are a menace for sewer upkeep as they are harder to

dislodge, and corrode concrete pipes even more.

In light of these findings, Dr. Yan advises grease interceptor designers to consider microbial activities to maximize their effectiveness.

More information: Xia He et al. Impact of microbial activities and hydraulic retention time on the production and profile of long chain fatty acids in grease interceptors: a laboratory study, *Environ. Sci.: Water Res. Technol.* (2016). [DOI: 10.1039/c6ew00013d](https://doi.org/10.1039/c6ew00013d)

Provided by University of Hawaii at Manoa

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