Tracking community-wide drug use by testing water at sewage treatment plants

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Scientists in Oregon and Washington State are reporting the development and successful testing of a new method for determining the extent of illicit drug use in entire communities from water flushed down toilets that enters municipal wastewater treatment plants. The technique may be an effective tool for comparing drug use in different regions of the United States and the world, they note in a study is scheduled for the December 15 issue of ACS' *Environmental Science & Technology.*

In the study, Aurea C. Chiaia and colleagues note that the new test eliminates the need for sample preparation — saving time and money and decreasing the risk of sample contamination. They proved the test's effectiveness by measured levels of illegal drugs like methamphetamine and legal drugs like prescription painkillers in wastewater from seven U.S. municipalities. The research team also tested the levels of 'urine indicators' such as creatinine, a metabolic byproduct that can be used as an indicator of drug use.

The scientists determined the 'index loads' of the different drugs — the amount of drug per person per day —based on estimates of the population served by each wastewater facility. These calculated index loads generally reflect known illegal drug use patterns in the US and worldwide. The loads for methamphetamine in western and southern U.S. were much larger than previous reports from Europe, for example.

The authors proposed that urine indicator compounds like creatinine could be used in place of population estimates — which can fluctuate

and be unreliable — to determine more accurate community-level drug index loads, which can then be compared between municipalities.

Source: ACS