

# Wastewater used to map illicit drug use

July 15 2009

---

A team of researchers has mapped patterns of illicit drug use across the state of Oregon using a method of sampling municipal wastewater before it is treated.

Their findings provide a one-day snapshot of [drug](#) excretion that can be used to better understand patterns of drug use in multiple municipalities over time. Municipal water treatment facilities across Oregon volunteered for the study to help further the development of this methodology as a proactive tool for health officials.

Applying analytical methods advanced at Oregon State University, researchers from the University of Washington, McGill University and OSU collected single-day samples from 96 municipalities across Oregon and tested the samples for evidence of methamphetamine, cocaine, and "ecstasy" or MDMA.

The study, published this week in the journal *Addiction*, reports a demonstration of this methodology conducted by UW drug epidemiologist Caleb Banta-Green, OSU chemist Jennifer Field, OSU toxicologist Daniel Sudakin, McGill spatial epidemiologist Luc de Montigny, OSU faculty research assistant Laura Power and OSU graduate student Aurea Chiaia.

"This work is the first to demonstrate the use of [wastewater](#) samples for spatial analyses, a relatively simple and cost-effective approach to measuring community drug use," said Banta-Green, lead author of the paper. "Current measures of the true prevalence of drug use are severely

limited both by cost and methodological issues. We believe these data have great utility as a population measure of drug use and provide further evidence of the validity of this methodology."

"Municipalities across the state generously volunteered to help us test our methods by collecting samples more or less simultaneously, providing us with 24-hour composite influent samples from one day -- March 4, 2008," said Field, who led the laboratory analyses of the samples.

Using these samples from 96 municipalities, representing 65 percent of Oregon's population, the researchers calculated the presence, measured as index loads, of three stimulant drugs: methamphetamine, 3,4-methylenedioxymethamphetamine (MDMA, or ecstasy), and benzoylecgonine (BZE, a cocaine metabolite).

They found that the index loads of BZE were significantly higher in urban areas and below the level of detection in some rural areas. Methamphetamine was present in all municipalities, rural and urban. MDMA was at quantifiable levels in less than half of the communities, with a significant trend toward higher index loads in more urban areas.

Researchers said the study validates wastewater drug testing methodology that could serve as a tool for public health officials. Officials could, for example, use the methodology to identify patterns of drug abuse across multiple municipalities over time.

The research team underscored, too, that data used for this study are inadequate as a complete measure of drug excretion for a community or entire state. The team looked at a single day, mid-week sample, for instance. Results might be altered depending on the day or time of year the sample was gathered.

"We believe this methodology can dramatically improve measurement of the true level and distribution of a range of illicit drugs. By measuring a community's drug index load, public health officials will have information applicable to a much larger proportion of the total population than existing measures can provide," said Banta-Green.

Currently, Field and Banta-Green are working on a project funded by the National Institutes of Health to determine the best method for collecting data in order to get a reliable annual estimate of drug excretion for a community.

Source: Oregon State University ([news](#) : [web](#))

Citation: Wastewater used to map illicit drug use (2009, July 15) retrieved 23 April 2024 from <https://phys.org/news/2009-07-wastewater-illicit-drug.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.