European Monitoring Centre
for Drugs and Drug Addiction

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IN AQUA VERITAS? ASSESSING ILLICIT DRUGS IN WASTEWATER

Wastewater analysis, a promising prospect for drug monitoring, says EMCDDA

(3.12.2008, LISBON) A novel approach to monitoring illicit drug use in the community is showcased by the **EU drugs agency (EMCDDA)** today in the latest edition of its Insights series. Entitled ***Assessing illicit drugs in wastewater: potential and limitations of a new monitoring approach***, the report looks at how analysing communal wastewater (e.g. from treatment plants) for residues of illicit drugs can provide real-time insights into local drug consumption levels and changing trends.

The report explains how technological advances and more sensitive detection techniques (mass spectrometry; high-performance liquid chromatography) have enabled scientists to identify drug residues in liquids, even at very low concentrations. The method involves analysing wastewater in order to measure levels of illicit drug by-products excreted in urine. These levels are then used to calculate the consumption levels of specific substances in a particular community.

'While work in this area is still in its infancy and considerable uncertainties remain, the approach appears increasingly promising', says **EMCDDA Director Wolfgang Götz**. 'It is becoming clear that new developments in our ability to detect drugs and their metabolites in wastewater are likely to have important implications for the approaches we adopt to monitoring drug consumption trends over time'.

The methodology was originally used by scientists in the 1990s to monitor the environmental impact of liquid household waste. Its potential in the area of illicit drug monitoring was quickly understood, with work focusing on cocaine launched in 2005. Since then, the procedure has been extended to other drugs including opioids, amphetamine-type stimulants and cannabis. Although it is possible to sample both wastewater (e.g. untreated fluid waste in treatment plants) and surface water (e.g. rivers, lakes), the report focuses on the former.

Scientific research in this newly emerging field is developing quickly and in a multidisciplinary fashion, involving analytical chemistry, physiology and biochemistry, spatial epidemiology and statistics, sewage engineering and conventional drug epidemiology.

Today's report explores how the approach can be applied to estimating drug use in the community, looking at: how drugs are broken down in the body; how drugs are transported in urban drainage systems; and how maps and geographical information systems (GIS) can be used to understand the complex inter-relationships between humans, disease and the environment. Experts also look at the ethical and legal aspects of wastewater sampling and how data from wastewater studies can complement drug use estimates gained from more conventional approaches.

'Illicit drug use is, by its nature, a covert and hidden activity, and traditional survey methods (such as population or household surveys) can be inefficient and sometimes ineffective ways of estimating levels of at least some types of illicit drug use', states the report. 'The possibility that a new technique for estimating illicit drug use might be added to the existing repertoire of research methods is, therefore, an exciting prospect'.

Notes: *Assessing illicit drugs in wastewater: potential and limitations of a new monitoring approach*, EMCDDA Insights No 9, December 2008 — http://www.emcdda.europa.eu/publications/insights

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