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# Analysis of drugs in sewage - An approach to assess substance use, applied to a prison setting

**Analysis of drugs in sewage:  
an approach to assess substance  
use, applied to a prison setting**

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Reported levels of illicit drug use and diffusion are determined using data from law enforcement agencies (customs, police, national Gendarmerie), health science reports, surveys, etc.) and epidemiological surveys. In addition to the potential biases of these sources (under- or over-estimation of substance use levels), measuring illicit drug use also involves considerable time and monetary costs with respect to conducting surveys, performing analyses and generating reports.

In the 2000s, a new method to estimate psychoactive substance use was developed: using drug residues in sewage. Analysis of effluent samples from sewage treatment plants (STP) initially made it possible to measure the quantities of drugs and metabolites originating from a specific population (in urine and faeces) (Daugherty 2011). Then, in 2005, a formula was proposed which enabled the quantitative assessment to estimate the quantities used in the area demarcated by the sewage network connected to the sampling point (Ucciani et al. 2006). Ten or so years later, this innovative method (usually named "sewage epidemiology"), is now applied in numerous countries.

In 2011, a group of researchers in this field came together to propose a European study aiming to carry out a simultaneous week-long sampling campaign in all of the cities involved. The first comparative study on substance use levels in Europe, based on this method, brought together 15 major European cities, including Paris (Thomas et al. 2012). This study currently involves more than 20 cities, including non-EU cities. In 2013, the first international comparison, funded after Willau, was organised by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), based in

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Testing the water is an internationally renowned approach that leads to an objective estimation of illicit drug use in a given population area, varying in size depending on the chosen sampling point. This method evidently has some biases, and the results obtained are merely a reflection of the situation at a specific moment in time and does not provide data on the prevalence of use or user profile. However, it has the advantage of allowing illicit substance use to be mapped, in terms of the quantities used and type of substance, according to different geographical sectors. Comparing these findings with the economic and social data in the regions studied, together with the possibility for monitoring use over time appear to be relevant applications of this approach, to help manage prevention action and harm reduction measures related to illicit drug use.

The objective of this report is to present an initial feasibility study conducted in three prisons in France, in the specific context of a university research project initiated in 2015 in a prison setting.

The first results, together with the difficulties encountered, the limitations and ethical considerations will be developed in order to generate all of the aspects necessary to understanding and interpreting these types of analyses.

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