污水濫用藥物分析文獻資料庫之開發
Development of a literature database for analysis of abused drugs in wastewater

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Abstract

The use of illicit drugs is increasing yearly and becoming a concerning issue. Recently, wastewater-based epidemiology (WBE) was used to measure the level of the drugs in the wastewater to estimate the consumption of illicit drugs. By using WBE, the mass load of abused drugs in wastewater would be calculated, then we could understand the situation of drug abuse in the region. Although many researchers have optimized different methods for analyzing abused drugs in wastewater, there is a lack of systematic collation. To establish a literature database, we used the keyword concepts, including "wastewater," "illicit drugs," and "mass spectrometry," to collect articles in the literature database PubMed. One hundred fifteen articles were collected in this study. The articles were used to compile statistics on targeted drug information, wastewater collecting methods, sample pretreatment methods, analysis methods, method validation, and epidemiology information. From the systematic organization of the 115 papers, we found that the most studied region is Europe, with 66 papers studied in Europe. The most used sampling point number is 1 to 10 points, which is applied by 88 papers. Amphetamine, Methamphetamine, and Cocaine or its metabolite Benzoylecgonine are targeted by the majority of studies. Glass microfiber filters and solid-phase extraction are the most popular filter and extraction methods in collected articles, respectively. In addition, since we collect information on the concentration and mass load of drugs in wastewater from different years and locations, the literature database could also be used for spatial and temporal distribution analysis. We compare the consumption of illicit drugs during different times at the same place or between countries to understand drug abuse situations. Our study developed a literature database including targeted drug information, wastewater collecting information, sample pretreatment method, analysis methods, and epidemiology information.

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