

# Sewage monitoring system for tracking synthetic drug laboratories (microMole)



Tim Metzner, M.Sc.,  
tim.metzner@unibw.de

PD Dr.-Ing. habil. Steffen Krause  
steffen.krause@unibw.de

## BACKGROUND & OBJECTIVE

The threat of synthetic drugs is one of the most significant current drug problems worldwide. Amphetamine-Type-Stimulants (ATS) are the second most widely used drugs. The presence of its precursors (e.g. APAAN, BMK) in the sewage could be used as a marker to account for the location of illicit drug production labs on a given area.

- The aim of this project is to design, develop and test a prototype of a system for legal recording, retrieving and monitoring operations of ATS and ATS precursor laboratories in urban areas.
- The sensor system will be installed within the sewage system in order to track waste associated to ATS production. Criminal investigators and forensic specialists will use the system.

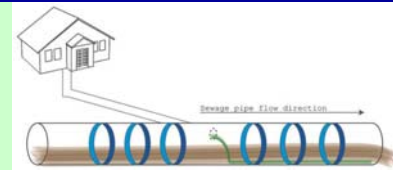


Fig. 1: Installation of the microMole-device

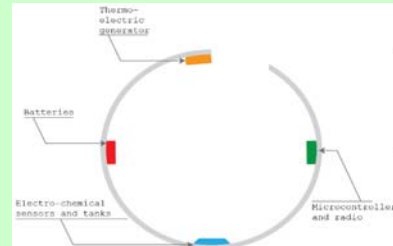


Fig. 2: Physical design of the microMole-ring

## COMPONENTS

The microMole prototype will contain the following features:

- miniaturized system for DN 200 sewage pipes
- high-specificity electro-chemical sensors
- integrated micro-tanks for sample storage
- secure GSM and radio communications for remote monitoring

Analysis of privacy law, data protection and social acceptance will be carried on at different stages.



## PART OF THE UNIVERSITY

- Advising partner for wastewater composition, chemical & physical properties and sampling concepts.
- Organisation, implementation and monitoring of tests of the (sub-)devices in real-life environment in cooperation with the Kompetenzzentrum Wasser Berlin (KWB).
- Sewer network modelling in cooperation with tandler.com (++Systems) in order to have a rough estimation of the drug waste concentration that can be expected at different sites in the sewer system downstream a given site of disposal.
- Preliminary study on temperature differences in the sewer system.

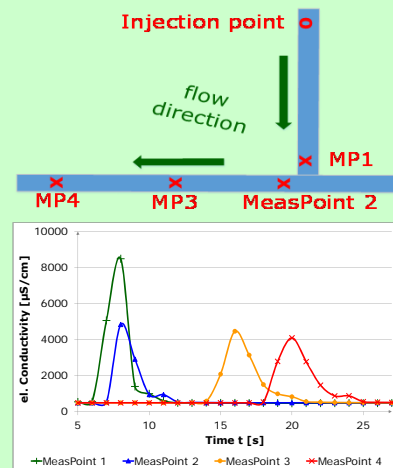


Fig. 3 - 4: Testbed to analyse the dispersion of a punctiform discharged salt-solution along the flow-path in a sewer-pipe

## PROJECT-CONSORTIUM

There are 11 consortium members within the project:

Warsaw University of Technology (Poland), Central Forensic Laboratory of the Police (Poland), Federal Criminal Police Office (Germany), Blue Technologies (Poland), CapSenze (Sweden), JGK Tech-Pipeferret (Iceland), Fraunhofer Gesellschaft (Germany), Tilburg University (the Netherlands), Ghent University (Belgium), Université Claude Bernard (France), Universität der Bundeswehr München (Germany).

EU-Horizon 2020 research and innovation programme No. 653626

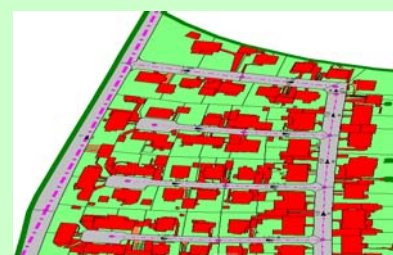


Fig. 5: Sewer Network Model in ++Systems. Infiltration areas (green), buildings (red), roads (grey), sewer-pipes (pink lines)