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MICROMOLE

**EU Programme:** Horizon 2020

**Call:** FCT-05-2014 Law enforcement capabilities topic 1: Develop novel monitoring systems and miniaturised sensors that improve Law Enforcement Agencies' evidence- gathering abilities

**Type of action:** Innovation Actions

**Grant Agreement Number:** 653626

**Project title:** Sewage Monitoring System For Tracking Synthetic Drug Laboratories — microMole

**Duration time:** 1 September 2015 – 28 February 2019 (42 months)

**Budget:** 4 992 866,33 EUR

**Partners:** Warsaw University of Technology (Coordinator)(Poland), Central Forensic Laboratory of the Police (Poland), Bundeskriminalamt (Germany), Blue Technologies Sp. z o.o. (Poland), Capsenze Handelsbolag (Sweden), JGK Tech EHF (Iceland), Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung e.v. (Germany), Stichting Katholieke Universiteit Brabant Universiteit van Tilburg (the Netherlands), Universiteit Gent (Belgium), Universite Lyon 1 Claude Bernard (France), Universitaet der Bundeswehr Muenchen (Germany)

**Description:**

The aim of this project was 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. Criminal investigators and forensic specialists can use the system in case of:
1. initial general suspicion of ATS production in a certain area for locating laboratories;
2. strong suspicions that in a well confined area ATS is being produced, for collecting material for forensic analysis and potential use in court, and for aiding in the planning of LEA raid operations.

The integrated system prototype consists of four devices: three micromole ring devices and one gateway device. The first two ring devices are equipped with pH and conductivity sensors, a battery and a radio transmission module. The third ring device is equipped with a sampling module, a battery, an optical communication module and a radio transmission module. Each ring device was designed as to avoid blockage of the sewer pipes.

The integrated system prototype is capable of automatically analysing the variations of the pH and conductivity of the sewage flowing waste in real time. The system is also able to capture a physical sample of the sewage flow using the sampling module, and in addition, it is also able to trigger an alarm to a specific pre-configured external internet client. The sampling module is capable of storing up to three independent physical samples.

The consortium also developed a crawler robot that allows mounting the ring devices remotely in sewer pipes of no less than 250mm in diameter.