



Working Group N°5: Wastewater Reuse

Screening campaign of selected antibiotic resistance determinants and mobile genetic elements (AR/MGE) in WWTPs in Europe

NORMAN JPA 2015

Announcement and invitation to participate

Background

Antibiotic resistance prevalence has increased worldwide over the last decades with dramatic consequences for human health. This situation is in part due to the excessive use of antibiotics. Because hospitals may discharge their effluents into municipal collectors, and palliative care and patient recovery is increasingly made at home, municipal sewage treatment systems are considered as one of the most important hotspots for resistance propagation in urban areas. On average, a municipal wastewater treatment plant discharges billions of antibiotic resistant bacteria ($>10^{12}$) per day to the surrounding environment, facilitating horizontal transmission of mobile antibiotic resistance genes to other bacteria thriving in soil and water environments.

Recently the WHO re-emphasised the need for coordinated analyses of antibiotics and resistance determinants to combat the current rise of antibiotic resistance. In accordance to this need and in line with the aims and scope of its mandate, NORMAN Working Group 5 is about to organise the monitoring of antibiotic resistance genes in treated wastewater as a follow-up to the screening campaign organised in 2014.

Objectives

Specific objectives of this proposal include:

- Selection of target genetic determinants (e.g. resistance genes, mobile genetic elements)
- Definition of harmonised protocols for assessment of antibiotic resistance in treated wastewater (including sampling, sample processing and analysis)
- Generation of qualitative and quantitative data on each of the selected targeted genetic determinants in wastewater and/or surrounding environments
- Development of a database to store the collected data, by location, sample characteristics and genetic determinants, to be maintained in the long run and open to other partners.

Methodology

Five laboratories have been assigned the task of performing the microbiological analyses while nine institutes will be responsible for collecting and sending wastewater samples for analyses.

The first goal of 2015 activities is to enhance the datasets produced during the 2014 campaign and quantify six antibiotic resistance genes identified in treated wastewater effluents. The genes under focus will be *int11*, *su11*, *blaCTX-M*, *blaTEM*, *vanA* and *qnrS*.

Based on the overall results, selected participants will be then invited to provide samples from water receiving environments, crops and plants.

Contact

Laboratories interested in participating (other than partners of the WG-5 core group) can send samples following the sampling protocol already developed by the group. They will bear the costs of the analysis, but such costs will be treated as an in-kind contribution to the NORMAN Association Joint Programme of Activities for 2015. Please reply by April 10th, 2015.

For further information please contact Dr. Despo Fatta-Kassinou at dfatta@ucy.ac.cy

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Network of reference laboratories, research centres and related organisations for monitoring of emerging environmental substances

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