

Summary of Cannes's seminar on pathogens and contaminants in waters

The seminar of next year will take place at 11-13th June 2012.

The third seminar of European PhD students active in the domain of water and health started at the morning of June 27th in Cannes. Seven professors and eleven PhD students from 3 countries participated in this scientific event. We were invited by M. Levi, both via an email to Leesu and personal contacts. The presentations focused on 3 fields of research: microbiology and epidemiology of pathogens in drinking water and its resources, presence and toxicology of pathogens in wastewaters, fate and metabolism of pathogens in natural environments and wastewater treatment plants. The seminar, especially the discussion with German partners, was dominated by the background actuality on E. Coli.

According to the presentations and scientific discussions, the pharmaceuticals and pathogens can enter within water resources because of the incorrect respect to hygiene issues by stakeholders (upstream and near the sources) and hydrological and climate changes. Professor Hartmann, coordinator, introduced 4 steps for pathogenic roles of bacteria in any environment: 1-virulence, 2-toxic properties, 3-antibiotic resistance, 4-epidemiologic possibilities.

The emerging pollutants have been mentioned as a new issue in water and health but there is no available result of any epidemiologic study for these contaminants. Some of the present professors and students have devoted their presentations to these pollutants. To sum up these scientific works... emerging pollutants need more research and scientific communication.

The first problem is that these pollutants are numerous and diverse. The second lies in the weak knowledge we have about their degree of danger for health and their effects. In addition, there are not enough clinical studies for each pollutant for its reactions and metabolites in human or animal body cellules. The research has been limited to individual studies about the relationship of quantitative presence of these elements in different organs with development of disease or affected cells. So, there is problem in both the classification of emerging pollutants according to their effects and the estimation of the risk for human health (main challenge). In conclusion, we need a list of these molecules, their metabolites and by-products, and the priority of their danger according to dosage and duration of body exposure to them.

The amount of these pollutants in sewages is in the range of micro- to nano-gram by litre of water. Measuring the quantity of them in samples needs special methods and sometimes is still impossible. Pathways for the transfer of these emerging pollutants have been introduced by several lectures: from wastewaters to individual sanitation systems, then to the soil, then to aquatic systems, and finally to drinking water.

The discussion highlighted the fact that political and economical stress in each country has direct and side impacts in studying and financing the submitted projects on emerging pollutants. For instance, a long-term national project was proposed to sample, measure, register and analysis all information about emerging pollutants and their dosage from different sources. But forming a national database is out of question.

Nevertheless, a project of the Orsay University on R&D biological effects has launched such a study to help for a national French regulation on emerging pollutants... to emerge. Some local and specialized projects are based on measure and analyse of these pollutants from sources like wastewaters and soils. They open an opportunity to share and compare the results with other studies in other countries.