belspo

Cyanobacterial blooms : toxicity, diversity, modelling and management

FUNDP NAMUR

UNIVERSITEIT GENT

Vrije Universiteit Brussel

Université de Liège

UNIVERSITY OF DUNDEE

CONTRACT NUMBER
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The project B-BLOOMS1

- In view of the lack of knowledge about the situation in Belgium, three of the present partners initiated, 5 years ago, the BELSPO project B-BLOOMS1.

- Thanks to this work, it has been shown that the surface waters in Belgium are also plagued by cyanobacterial blooms, particularly in summer and autumn. Eighty % of the blooms contained taxa with the genetic potential to synthetise microcystins, and the presence of this toxin in the algal biomass was shown by HPLC analysis for 40% of the analysed bloom samples.

- The need of monitoring blooms in Belgium was confirmed by a recent paper of Willame et al. (2005) where 53% of the analysed bloom samples contained microcystins.

B-BLOOMS 2

Main objectives of B-BLOOMS2

From a **scientific** point of view, the research program focuses on :

- **Collection of physical, chemical, biological and meteorological data** on a few reference water bodies plagued by toxic cyanobacterial blooms

- **Identification and study of the toxigenic cyanobacteria** present in the Belgian samples based on molecular tools on samples and strains, including genetic diversity and factors regulating toxicity

- **Measurement of the major toxins** present in the blooms and water samples by analytical methods

- **Development and test of management scenarios** for control or mitigation of cyanobacterial blooms in one reservoir using integrated watershed models

- **Development of a statistical predictive model** for a series of urban ponds

From a **practical** and **science policy** point of view, the B-BLOOMS 2 objectives are :

- **Implement a network** of samplers based on existing monitoring programmes of surface waters or on collaboration with water management authorities or environmental organisations (BLOOMNET)

- **Transfer the knowledge** about methods of monitoring and analysis toward management authorities and environmental organisations by hands-on courses (in our laboratories and field sites)

- **Reinforce the communication** to and with authorities and population, to raise public awareness, contribute to future guidelines and risk assessment procedures, and improve monitoring and management.

The workshop
Cyanobacteria blooms: Risk assessment, management, remediation

Sharing information on the problems generated by cyanobacteria blooms in water bodies

- Part 1. How specialists see cyanobacteria blooms and their consequences

Jutta Fastner (Federal Environmental Agency, Germany) : Occurrence and risks associated with cylindrospermopsin in German water bodies

Cécile Bernard (Museum National d'Histoire Naturelle, Paris, France) : Effect of cyanotoxins on fish

Bas Ibelings (Nederlands Instituut voor Ecologie) : Toxic cyanobacteria in their ecological context

Geoffrey Codd (University of Dundee, UK) : Intracellular and extracellular microcystins and mechanisms associated with their release in the water

The workshop
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Sharing information on the problems generated by cyanobacteria blooms in water bodies

- Part 2. Meeting with the managers: monitoring of blooms, profile of bathing areas (EC Directive 2006/7/CE), risk assessment, situation in Belgium.

Maria Leitao (Bureau d'études Bi-Eau, France) Monitoring of cyanobacterial blooms

Joachim Pelicaen (Vlaams Milieu Maatschappij) Monitoring, risk assessment and communication concerning cyanobacteria blooms in the Flemish region

Renaud Bocquet (Bruxelles Environnement - IBGE) Management of eutrophic ponds in the Brussels Capital Region

David Samoy (Service Public Wallonie), Suivi des cyanobactéries en Région wallonne : état des lieux et perspectives