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Cyanobacterial blooms : toxicity, diversity, modelling and management

CONTRACT NUMBER
SD/TE/01A

FUNDP NAMUR

UNIVERSITEIT GENT

Vrije Universiteit Brussel

Université de Liège

UNIVERSITY OF DUNDEE

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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

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Main objectives of B-BLOOMS2

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

- Measurement of the major toxins present in the blooms and water samples by analytical methods, ELISA and Mass Spectrometry methods
- 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
- 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

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B-BLOOMS

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.

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Aims of the workshop

- Presentation of the available results of phase 1 (2007-2008)
- How well-known specialists see cyanobacteria blooms and their consequences
- Setup of phase 2 (not begun yet, but we have to organise) → discussion with the users : what are their needs ?

  ➢ in the prospect of development of a cyanobacteria – cyanotoxins monitoring scheme

  ➢ in the prospect of defining and implementing management strategies for cyanobacteria blooms reduction

  ➢ others ? We are open to suggestions …