

Directives drive innovative technologies

Global challenge: drinking water treatment and management...

In its 2000 Millennium Declaration, the United Nations set eight goals for development, called the Millennium Development Goals (MDGs). These goals set an ambitious agenda for improving the human condition by 2015. One of the goals reads 'by 2015, reduce by half the proportion of people without sustainable access to safe drinking water' based on the fact that one billion people lack access to safe drinking water.

A major milestone in addressing the global challenge on water resources

and management was the launching of the EU Water Framework Directive by the end of year 2000. The Directive is recognised as an international standard in water planning. Furthermore, with the future EU Drinking Water Directive coming up, emphasis is expected to be on management and technologies ensuring provision of healthy, clean and tasty drinking water.

The new drinking water directive, which is under preparation in the EU, will probably include substantial requirements for the introduction of

systematic monitoring of the microbial water quality in all EU countries. Thus, the water sector is poised to be one of the large growth areas in the 21st Century.

The future brings new requirements

The future requirements for risk management in water utilities make it impossible to use traditional microbial water analyses for controlling the water quality, as you do not have the result until the water is distributed to many consumers and has been drunk. In the case of polluted drinking water,



many people risk getting ill within a very short time period. It is therefore necessary to know your system and be at the front of tomorrow's events (future proofing). Thus, there is a huge need for up-to-date technologies to measure microbiological drinking water safety. Results can be achieved with simple, efficient and practical solutions supporting the objectives of the Drinking Water Directive, eg. BactiQuant®, a method for fast and simple recognition of bacterial pollution of drinking water, and a method for documenting microbiological water quality. BactiQuant was developed by Mycometer A/S, an offshoot of a research group at Copenhagen University. The BactiQuant method is a culture-independent technique based on a highly sensitive fluorescence technology for measuring enzyme activities. Mycometer A/S has developed an expertise in the use of this technology and is able to apply the methods to a wide range of applications. What makes this technology interesting for utilities is its broad applicability to a variety of sample matrixes including water, air and surfaces. With this technology the utilities gain access to simple, rapid and robust methods that reduce analysis time from days to minutes.

Facilitating implementation of new technology

The cooperation of the international consultancy company Grontmij | Carl Bro and Mycometer A/S has enabled the development of a strategy for the implementation of the new technology that is aimed at securing ownership at all levels in an organisation, for instance a water supply industry or food industry. The process is interdisciplinary and involves training and education – understanding basic concepts, best applications and limitations of the technology – as well as a practical framework that allows the utility to set limits, levels and define actions to control production processes and develop emergency response plans. The cooperation

between supplier and consultant has led to the development of easy access software solutions that integrate operational and management functions in a holistic set up. The aim is to empower the user and facilitate an optimal use of the technology.

Holistic approach makes the difference

One thing is to have the overlying goals and instructions in place – but it is the practical implementation that makes the difference. Combining experience with implementation of directives into administrative and legal practice of EU member states with emergent technologies can make a positive difference. Over the last decades Grontmij | Carl Bro has implemented a range of projects mainstreaming environmental legislation, institutions and organisations according to these best practices. There is a potential for synergy in combining the insight and experience from Grontmij | Carl Bro's work in both the public and the private sectors with emergent technologies.

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In other words, simple, efficient and practical solutions supporting the objectives of the Drinking Water Directive may reach European water suppliers in a more precise, applicable context when facilitated by consultants with experience. Grontmij | Carl Bro provides consultancy services for transposing and implementing the EU Water Framework Directive into the administrative and legal practice of EU member states and some of the neighbouring countries to the EU.

Prepared for climate changes

‘According to many experts, water and its availability and quality will be the main pressure on, and issues for, societies and the environment under climate change.’

IPCC Technical Paper VI

Climate change will pose new challenges to European water utilities in the future. More frequent and heavier rain periods will occur as well as more floods. With BactiQuant® Danish water utilities can intervene quickly and effectively in critical situations that may lead to contamination of drinking water. By collecting microbiological data, the water utilities can continuously assess the impact of climate change, eg. the effect of the expected rise in the average temperature on the microbiological water quality. In view of this, Danish water utilities are well prepared for adapting to the environmental consequences of future climate change.



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Hans-Martin Friis Møller
Business Unit Director, Environment,
Water & Energy

Grontmij | Carl Bro

Tel: +45 43486090

Hans-Martin.Friis.Moller
@grontmij-carlbro.dk
www.grontmij-carlbro.dk

Morten Miller PhD
Co-founder

Mycometer A/S
Lersøe Parkalle 40
2100 Copenhagen
Denmark

Tel: +45 39161072
Fax: +45 39161073

mmiller@mycometer.dk
www.mycometer.dk