



Review of methods for the rapid identification of pathogens in water samples

ERNICIP thematic area
Chemical & Biological Risks
in the Water Sector
Task 7

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Abstract

Microbiological water contaminants represent an acute health risk in drinking water. There are a wide variety of bacteria and viruses that can potentially be found in drinking water resulting from either an attack or a natural contamination incident. Whatever the origin of the contamination, a rapid identification is needed to ensure water quality and subsequent citizens security. Currently, various detection and identification methods exist, but they are mostly time-consuming and unsuited to emergent harmful microorganisms. New developments are being performed in order to deal with this concern. In this desk study, the main basic technologies to identify pathogens (such as immunological and genetic methods as well as mass spectrometry, microarrays and physical approaches) are reported as well as their applications in the drinking water area. Then, some promising technologies under development are presented, especially integrated tool or new concepts in mass spectrometry. However, bottlenecks still exist such as sample preparation or live and dead pathogens discrimination. Alternatively, different projects founded by the European Commission are briefly reported in this study, as they allow a clear vision of scientific teams and networks working on this concern. Finally, European standards are being established as well as national initiatives that currently remain unofficial.

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