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The use of RT-PCR techniques of *E.coli* and Enterococci for fast detection of faecal pollution in drinking water

Recently new methods are developed to detect within four hours of faecal pollution in drinking water. These methods are RNA-based and specially designed for the faecal target-organisms. For both *E.coli* and the Intestinal Enterococci, a detection limit is achieved of approximately 1 living cell/100ml. This low-level detection in real water samples is very different from other publications and makes it unique in the field of Polymerase Chain Reaction techniques. Experiments wherein a comparison is made with standardized ISO culture methods showed that the Reversed Transcriptase RNA methods for *E.coli* and Enterococci are more sensitive and accurate than the culture techniques. By choosing RNA instead of DNA sequences for targeting both bacteria the focus is laid on potentially surviving organisms instead of dead or not-culturable. This makes it possible to use it in both situations with or without using chlorine in distributing drinking water. Experiences in practical situations in real faecal polluted drinking water situations confirmed the former findings with laboratory experiments. Nowadays the methods are being used in the north of the Netherlands to detect a faecal pollution in early stage and are used to build up a database with information about the effect of working on hygienic base in difficult situations.

Biography

Gerhard Wubbels has a long working history in the field of Water Biology. He has a lot experiences in microbiology and molecular biology and combines this knowledge for optimizing quality control of water. Besides *Legionella*, pathogenic bacteria and biofouling in drinking water systems his field of interest is risk-analysis and water quality (water Safety Plans and Hazard Analyses of Critical Control Points). In 2010 starting at WLN with introducing and developing molecular methods for drinking water control. In 2018 first these methods for fecal pollution are accepted as national methods for drinking water control in the Netherlands.

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