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Microbiological Quality

Introduction

A primary goal of drinking water treatment is to remove microbiological contamination and thereby eliminate the risk of illness from pathogenic micro-organisms. However, achieving a zero risk of waterborne illness is virtually impossible. Instead, water purveyors attempt to reduce the risks of illness to levels deemed acceptable by public health authorities, by applying a multiple-barrier approach to the presence of pathogenic micro-organisms. This approach includes the protection of source water, the use of appropriate treatment, a well-maintained distribution system and routine monitoring of drinking water quality.

Monitoring water for all pathogens that could be present is not technically or economically feasible. Instead, faecal indicator bacteria are used to determine the adequacy of water treatment. The presence of faecal indicators, such as *Escherichia coli*, in a drinking water supply suggests that enteric pathogenic micro-organisms could also be present. The absence of faecal indicators, on the other hand, while denoting the absence of enteric bacteria, is no guarantee that enteric viruses and protozoa are absent. These micro-organisms can survive longer in water, are more resistant to disinfection and are more infectious than most pathogenic bacteria.

The use of indicator organisms is only one component in the multiple-barrier approach to microbiologically safe drinking water. Adequate treatment to remove or inactivate the pathogens is the primary means used to ensure against their presence in drinking water. A treatment system that provides effective filtration and disinfection and maintains an adequate disinfection residual should minimize the presence of pathogenic micro-organisms and the risks of related waterborne diseases. Where feasible, a watershed protection program should be the first line of defence against the presence of pathogenic micro-organisms.

If the safety of a drinking water supply is compromised to the extent that it presents a threat to public health, the authorities responsible for the safety of the affected supply should have policies in place for issuing and rescinding boil water advisories. In the event that a supply causes an outbreak, the responsible authorities should have a contingency plan in place to quickly and effectively minimize the extent of illness.