

Independent Guide

What is important to know about drinking water quality: Pseudomonas aeruginosa?



Independent workplace compliance

What is Pseudomonas aeruginosa?

Pseudomonas aeruginosa can be found in soil, water and on plants. It is an opportunistic pathogen which needs very little nutrients to survive. The bacterium almost never infects healthy tissues, yet there is hardly any tissue that it cannot infect if the body's defences are compromised in some manner.

How does contamination occur?

Pseudomonas aeruginosa is a bacterial species which is particularly good at forming biofilms. Its growth in drinking water can cause problems with colour, taste, odour and turbidity if found in high numbers. Once established, biofilms can be difficult to eradicate from manmade water systems, because they need a biocidal agent (a chemical to breakdown the biofilm) and/or physical removal prior to disinfection. Pseudomonas aeruginosa is very difficult to get rid of once established in a vending machine, because of the inaccessibility of many of the components.

Contamination of vending machines and water coolers by Pseudomonas aeruginosa results from the bacteria either being introduced via the mains supply or through poor cleaning or installation practices. Due to the often sporadic or low flow rates in these types of units, the bacteria can attach to the internal pipework surfaces and form a biofilm to protect themselves and then start to multiply.

What is the legislation?

There is no legislation relating directly to the presence of Pseudomonas aeruginosa, however its presence can encourage the growth of other bacteria which contravenes the Water Supply (Water Quality) Regulations. The Water Supply Regulations and the Water Supply (Scotland) Regulations set strict guidelines to the physical properties of drinking water. They also state that drinking water should not contain certain chemicals or micro-organisms. This legislation is further enforced by the Workplace (Health, Safety and Welfare) Regulations, which state that every employer has a duty to supply "wholesome" drinking water.

What are the health effects?

Pseudomonas aeruginosa has not been shown to cause any health effects following ingestion. It is more likely to cause problems with the taste and odour of drinking water. However, the biofilms that Pseudomonas aeruginosa form could harbour more dangerous bacteria, such as coliform organisms and E.coli.

How do I know if it is present in my drinking water?

Regular testing of your drinking water supply by an independent company with no involvement with the water treatment or maintenance of drinking water outlets, such as vending machines and water coolers, will ascertain whether Pseudomonas aeruginosa or any other bacteria is present in your water system. In our experience, drinking water supplied directly from the mains in the UK tends to be of an extremely high quality (less than 1% of the samples we take from direct mains sources have failed to meet the wholesome drinking water criteria). However, we do find problems with drinking water quality in samples we take from vending machines and water coolers.

What should be done if Pseudomonas aeruginosa is detected in a vending machine or water cooler?

As Pseudomonas aeruginosa can prove difficult to remove, care needs to be taken when dealing with the management of Pseudomonas aeruginosa contamination. Actions to take should include:

- Discussions with your vending contractor regarding their procedures to minimise/remove the contamination.
- A review of the location and usage of the machines.
- A regular review of the water quality from your machines, ideally independent of your suppliers.

To avoid problems with cross-contamination of machines, it is extremely important to ensure that the staff responsible for the cleaning and sanitising of vending machines or water coolers are correctly trained and are aware of the potential for contamination during the cleaning process.

This guide is of a general nature; specific advice can be obtained from Assurity Consulting. Assurity Consulting is the UK's leading independent compliance consultancy specialising in workplace health, safety and environmental solutions. We have over 30 years' experience of helping customers of all sizes, from across all sectors, manage their compliance responsibilities, making sure that their organisation is compliant, their employees are safe, their processes are cost effective and their management team is in control.



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