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Biofilms – Slime and Staining

What is a biofilm?

A biofilm is a layer of biological material that can consist of a mixture of bacteria and fungi (yeasts and moulds) which are naturally present in the household environment. Given the right growth conditions, they will colonise a number of surfaces, usually in the kitchen and bathroom, typically producing a black/grey slime or pink/red staining on tiles. In order to multiply, these microorganisms require water and a source of nutrients.

Where can biofilms occur?

Biofilms can grow on any surface that is regularly in contact with water, and such areas are usually in the kitchen or the bathroom, for example:-

- Shower heads and on shower curtains/doors
- Bathroom tiles
- Toilet cisterns and bowls
- Drains and plugholes
- Inside washing machines, particularly around the powder drawer and rubber door seal
- On the inside of cold water taps, especially those with plastic or mesh-style inserts
- Around the base of tap fittings
- Refrigerator drip trays
- Ice-making machines
- In dehumidifiers

Are biofilms harmful?

Although they can appear unpleasant, and may cause earthy or musty taste and odour problems if growing in water pipes, biofilms are generally not considered to be a risk to health.

How can I prevent / remove biofilm growth?

There is nothing that we can do to the drinking water supply to prevent the growth of biofilms within customers' properties. However, some steps that you can take to prevent biofilms are:

- Open a window to improve ventilation and reduce humidity, letting steam and damp air out and allowing damp areas in kitchens and bathrooms to dry quickly
- Reduce the amount of food/nutrients available for bacteria and fungi e.g. shampoo, soap, washing powder, dust, general kitchen food etc.
- Certain plumbing materials (e.g. rubber washers) may encourage their growth and should be replaced.
- The microorganisms can attach and grow more readily on rough surfaces such as limescale, which can be removed using white vinegar or lemon juice.
- If a tap has a plastic insert in it or any other detachable fitting attached to it, this should be regularly removed, cleaned and disinfected.
- Running a washing machine at 60°C or above once a week may reduce microbial growth as will leaving the door open after use to allow it to dry out between loads.
- Ensure any in-line water filters or softeners are serviced according to manufacturer's instructions.
- Make sure that the storage tank that supplies showers and internal plumbing is covered and free of debris.

Biofilm growth can be removed from kitchen and bathroom surfaces by cleaning with a mild bleach solution, bicarbonate of soda solution or other household cleaner. Any growth on the inside of taps can be removed by cleaning with a small brush dipped in a mild bleach solution. The tap should then be flushed afterwards by allowing it to run for a few minutes.

If growths are not removed on a regular basis, they can grow into shower grouts, silicone sealants, shower curtains and rubber materials, permanently staining them.

Other causes of staining

Occasionally other sorts of stains can be observed which are not due to biofilms but fine particulate material:

- Green/blue – copper
- Black – manganese
- Brown/orange – iron
- White – calcium carbonate (limescale)

The presence of this material is likely to be associated with a disturbance in the property or distribution system (iron/manganese), from the plumbing (copper) or from water hardness (limescale). Generally such deposits can be rinsed away, or in the case of limescale, removed using white vinegar (see above).