


# SHOWER-SAFE

## ENVIRONMENTALLY FRIENDLY, SUSTAINABLE LEGIONELLA CONTROL IN SHOWERS

### Nature of Problem

Today there are approximately 500 recorded cases of legionnaires' disease annually. However, leading epidemiologists at the Health Protection Agency believe that this figure could be as high as 9,000 per annum. Cases are not identified for many reasons including, subclinical infections, unclassified bacterial pneumonia and unspecified pneumonia organism. Interestingly it has been reported that around a third of Australians tested in a sample have legionella antibodies in their blood and 22.9% of a Danish sample in a similar check.

<b>Community Acquired Pneumonia</b> <b>National Health Service Hospitals in England 2005/06</b> 		
ICD codes	Primary Diagnosis	Hospital admissions (all ages)
J13	Streptococcal pneumonia	4374
J14	Haemophilus influenzae	751
J15	*Bacterial pneumonia unclassified	6366
J18	*Pneumonia, organism unspecified	165,059
J20	Acute bronchitis	2697
J22	*Unspecified acute lower respiratory tract infection	122,093
J16/17	Pneumonia, other infectious organism or classified elsewhere	201
	<b>Total all Community Acquired Pneumonia</b>	<b>301,541</b>
	<b>*Total all unspecified community acquired pneumonia</b>	<b>293,518 (97.3%)</b>

Data from Hospital Episode Statistics view at [www.hseonline.nhs.uk](http://www.hseonline.nhs.uk)

### *Table of community acquired pneumonia in NHS hospitals*

Many of the cases identified are caused by showers and probably the majority of those not identified will be from showers. Showers are the most probable cause because in a well controlled system where the naturally occurring legionella bacteria in the hot water has been killed by the water temperature and it has been too cold for the bacteria to grow in the cold water, the shower mixer valve produces an ideal temperature. If the shower is then not used it allows time for the bacteria to multiply to dangerous levels and the next user finds it easy to breathe in the contaminated water droplets.

#### **Vulnerability**

Sensitivity to the bacteria plays a significant part in catching the disease. Current research has not identified children as at risk. Adults up to age 50 are less vulnerable than those over 50. The following contributory factors also play a significant part. Males are three times more likely to catch it than females with smokers being particularly vulnerable. The immunocompromised are also very vulnerable, with this causing additional problems, because many patients in healthcare facilities are in this category.

#### **Possible Solutions**

There are several ways of minimising this risk. The Approved Code of Practise L8 calls for weekly flushing of little used outlets. Some systems have even been flushed daily to try to keep the bacteria at bay but it is only diluting the problem and will not totally eradicate it. Flushing particularly daily flushing is expensive in labour costs and probably a high proportion of the time is just a waste of water.

Self purging showers are an automatic way of flushing. However they have the disadvantage that if the shower is used regularly they waste a considerable amount of water. If the shower is not used it does not get flushed. In this case the automatic flushing may not be adequate because of the build-up of contamination and retrograde contamination may be possible.

Shower head filters can be fitted but they are expensive and require changing regularly at great cost. If it is the whole system that is infected, that should be treated, otherwise every single outlet will need filters fitting to protect all users.

UV shower head disinfection (Steri Spray) treats the flowing water through the shower. They require regular maintenance to maintain their efficacy and it is conceivable that dirty water on the incoming main, from say a fractured pipe, could cause all the outlets to shut down. They are expensive to install, maintain and run on 24/7 electricity usage.

If it is the whole system that is infected then every outlet needs to be covered.

## A New Environmentally Friendly Sustainable Solution

Shower-Safe is a new environmentally friendly, sustainable solution that treats the stagnant water left in the shower after it has been used. It will not contribute to retrograde contamination. It does not waste water or use electricity. It is very simple to install and will last a very long time. In fact if the shower is not used it will last for ever.



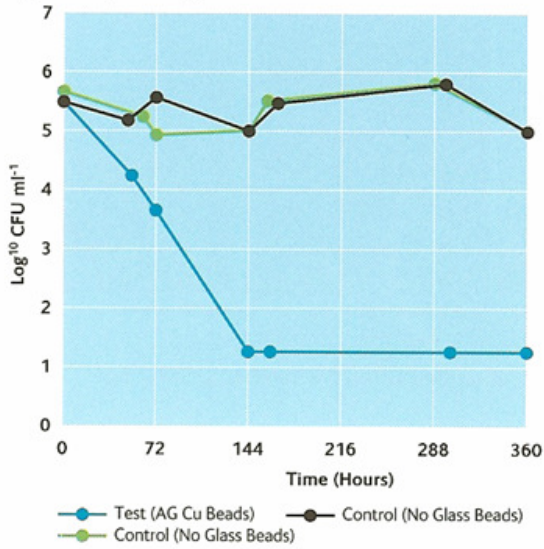
Shower-Safe is a very simple retro-fit kit containing silver and copper mesh beads. Half of the beads are put into the shower head and the remainder into the hose. Filter washers are used at the connections to keep the beads in their respective positions. Silver is a biocide and copper gets rid of biofilm. Together they kill the legionella bacteria and other bad bacteria such as pseudomonas etc. It is so simple to fit it takes just two minutes to fit to a domestic type shower and can be done by any competent person. In fixed copper pipe work the copper beads are not required but additional filter washer support fittings with compression fittings will be required. The kit also contains a water proof label to be fitted to the shower to indicate that Shower-Safe is fitted.

### Research

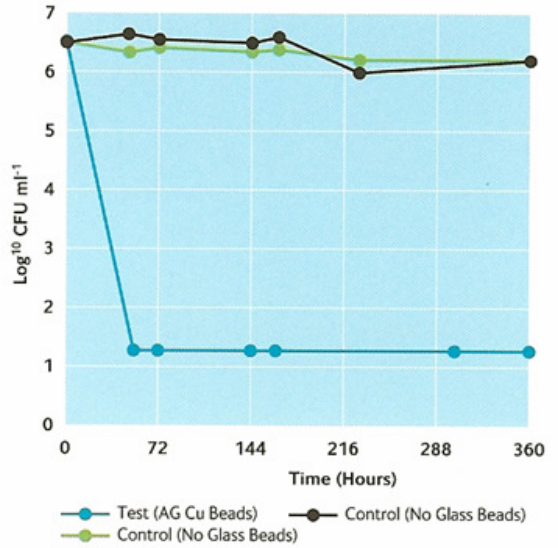
IMSL a renowned microbiological research company with offices in England, Germany and USA have conducted research to prove the efficacy of Shower-Safe. Research was done to observe the speed at which Shower-Safe beads killed legionella pneumophila and pseudomonas aeruginosa in comparison to control samples with glass beads and no beads. Similarly the development of biofilm was observed again comparing the effect of Shower-Safe beads to those of glass beads and no beads. The following graphs and photographs adequately illustrate the efficacy of Shower-Safe.

**Figure 2: Effect of Shower Safe Beads on Bacterial Population in Standard Hard Water (Results as Log<sub>10</sub> CFU ml<sup>-1</sup>)**

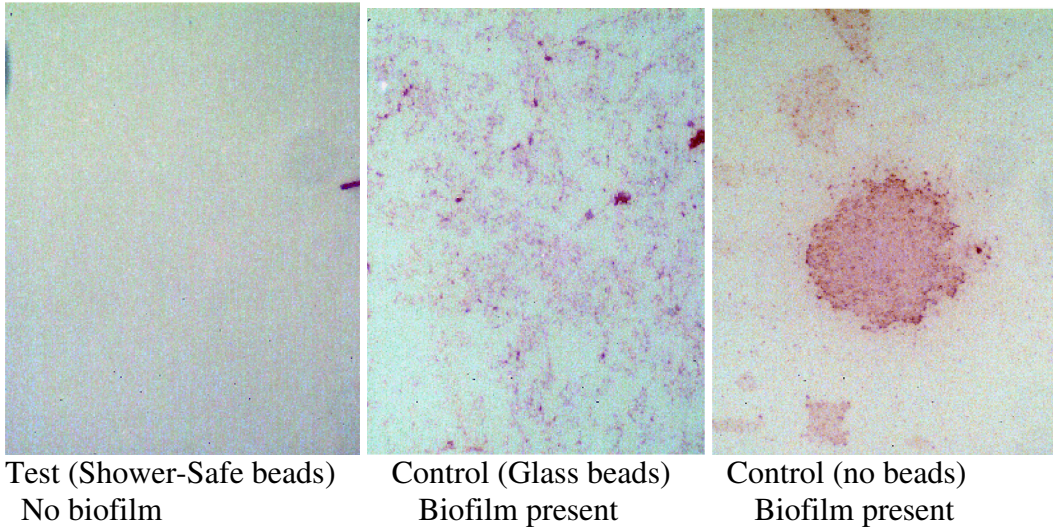
*Legionella pneumophila*



*Pseudomonas aeruginosa*



*Graphs showing effect of Shower-Safe on legionella pneumophila and pseudomonas aeruginosa*



*Biofilm formation following incubation at 20°C after 408 hours*

The use of the copper and silver within a potable water system has also been approved by the WRAS

## Shower-Safe Installations

Shower-Safe is already helping to protect people in numerous different locations. Hospitals fit them because their patients are often very vulnerable. Sheltered accommodation, residential care homes and nursing homes have both vulnerable people but also cannot adequately monitor shower usage particularly with en suite facilities. The fire and rescue service have many showers including portable ones in their many stations, the use of which is very random, particularly in the unmanned units. Schools, Leisure Centres and Sports Facilities fit Shower-Safe because in banks of showers often one shower has lower performance than the others and so customer avoid it, making it little used and vulnerable to contamination by the bacteria. Holiday home owners and homes with multiple showers fit them because the use of the shower cannot always be monitored and can be left for several weeks. This is particularly relevant where the property is in warmer climates than ours. Large buildings with guest's accommodation also fall within this bracket.

## Additional Shower-Safe Uses

Shower-Safe technology can be used in many different situations to give additional protection. Other typical installations are Spa Hot Tub pipe work, Emergency showers and Eye Wash units, Sluice pipe work, temporary dead legs, flexible connections particularly after mixer valves etc.

## Summary Table

The following table summarizes the benefits of Shower-Safe in comparison with other products

	Sustain able	Environ Friendly	Kills bacteria	Eliminates biofilm	Will not contribute to retrograde contamination	Capital costs	Running costs	Labour costs	Does Not Waste Water	Does Not Use electricity
Shower-Safe	√	√	√	√	√	low	nil	nil	√	√
Filters	X	X	√	X	X	medium	High	medium	√	√
Self Purge	X	X	dilutes	X	X	high	low	nil	X	X
Steri Spray	X	X	√	X	X	high	medium	medium	√	X
Flushing	X	X	dilutes	X	X	nil	low	high	X	√

## Conclusion

Shower-Safe is environmentally friendly, sustainable product that will help protect people from legionnaires' disease without wasting water or using electricity. It is simple and easy to fit and will provide years of protection.



## **Further Information**

For further information visit

- [www.shower-safe.co.uk](http://www.shower-safe.co.uk) or [www.legionnairesdisease.com](http://www.legionnairesdisease.com) or phone local 0870 SafeH2O (7233420)
- Legionella Control Association [www.conduct.org.uk](http://www.conduct.org.uk)
- Health Protection Agency [www.hpa.org.uk](http://www.hpa.org.uk)
- Research conducted by IMSL [www.imsl-uk.com](http://www.imsl-uk.com)