



***BS8580 – From the Viewpoint of a
Commercial Laboratory***



Andrew Hockin CBiol., MSB



ALcontrol Laboratories

BS8580

- BS8580 gives recommendations and guidance on the assessment of risk of *Legionella* presented in artificial water systems.
- It is NOT always necessary to carry out analysis when carrying out a risk assessment, however analysis can be and is often used to assist in the development of the risk assessment.
- An understanding of the microbiological activity within a water system is needed to understand if the environment is able to support *Legionella*, and the effectiveness of treatment.
- There are a number of ways that the commercial laboratory can help
- Clients should regularly liaise with their chosen laboratory



Commercial Laboratories

- There are around 40 independent ISO17025 laboratories in the UK accredited for Legionella (*excluding multiples of the same company and NHS/HPA/EA*).
- ISO 17025 is the standard for 'General requirements for the competence of testing and calibration laboratories' used to assess laboratories by the accreditation body. (In the UK this is UKAS)
- Each month between 30,000 and 40,000 *Legionella* samples are received by UK commercial laboratories
- Laboratories generally use BS EN 6068-4.12, ISO 11731 as the basis for analytical methodologies for *Legionella*, a culture based method that generally takes 10-12 days to complete



How Laboratories Can Assist

- Determination of contamination risk
 - *Legionella* can be introduced and contaminate a system at any point in its life.
 - It is appropriate to know the bioburden of a system to understand whether there is a change, and whether there has been an introduction of bacteria into the system.
- Determination of biofilm activity
 - Determining the background levels of the biofilm causing bacteria will give an understanding of the extent of biofilm formation within a system.
- Monitoring of efficacy of treatment
 - If the risk assessment is being carried out on a pre-existing system, it is useful to determine the effectiveness of the previous treatment regime, by determining the levels of legionellae and its supporting flora



But before we begin

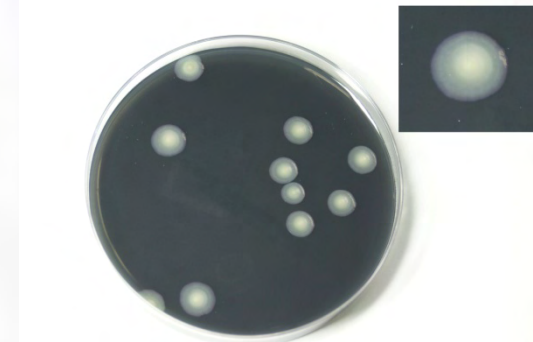
☛ Sampling – BS7592

- ☛ It is vital to ensure that an sampling carried out is performed by competent people that are trained to do so. There should be documented evidence of this
- ☛ Without the correct sampling procedure and/or without the correct equipment, the sample is invalid.
- ☛ For microbiological samples, bottles must be sterile with appropriate neutralising agents as required.
- ☛ Chemical parameters will also have their own bottle requirements
- ☛ The correct sampling procedure; when to take a sample and ensuring secure transport to the laboratory under the appropriate environmental conditions all need to be determined to ensure that the data generated is fit for purpose
- ☛ All the above are clearly explained in BS 7592.



Legionella Method

- Legionella – BS EN 6068-4.12, ISO 11731
 - This is a culture method that has an incubation of 10 days.
 - During this 10 day period plates can be examined 4 times in total. Incubation is at 36°C.
 - Usual sample volume is 1 litre.
 - The media contains specific ingredients including cysteine and cycloheximide
 - Confirmation is an additional 2 days and can usually be started as soon as a suspect colony is detected.



New Developments

• Molecular Methods

- There are number of molecular methods coming to the market place. Because of the high sensitivity of such methods it is possible to get a true idea of the makeup of a system, and be able to develop a balanced approach to risk.
- The development of multiple devices that allow the detection of more then one species, or even more then one type of organism will allow the development of detailed microbial mapping of a water system.

• Lateral Flow Devices

- Lateral flow devices are being developed to speedily confirm the presence of *Legionella* to provide greater information as to the course of action to be taken.
- These should be seen by the industry as complimentary to laboratory testing.



In Conclusion

- ➊ Accredited contract labs can and do provide additional data to enhance the risk assessment development, especially for complicated and unusual water systems.
- ➋ However the reasons for doing the analysis and the use of data needs to be defined before the sample is taken.
- ➌ Samples must be taken by trained individuals according to BS 7592
- ➍ More rapid and sensitive laboratory methods are being developed to provide more information to the industry
- ➎ It is important that clients regularly liaise with their chosen laboratory

Thank you for listening