pplttraining

Covid-19 - GUIDANCE FOR MANAGING LEGIONELLA BACTERIA IN BUILDING WATER SYSTEMS DURING AND AFTER PROLONGED SHUTDOWN

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accredited

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Content

Background and concerns

Relevant technical guidance documents – reference purposes

Health risks associated in particular with Legionella bacteria

How does legionella react in a buildings water system

Problems linked with partially used or full shutdown of buildings

How do we manage the risk through the present challenges in:

- Partially used buildings
- Complete shutdown of buildings

Purpose and objectives

To address the potential concerns and challenges of maintaining safe domestic hot and cold water systems from this unprecedented and prolonged partial or full shutdown of building

Principle concern - the risk to health from Legionella bacteria

Purpose and objectives

Consideration should be given to the furtive nature of Covid-19 (which caused the lock-down). Some of those furloughed staff and others subsequently returning to the workplace may have had no symptoms but may have had the virus; suffice to say that Covid-19 can leave a body with a higher susceptibility to contracting other conditions such as Legionellosis.

Purpose and objectives

Reference document used in this short presentation

ACOP L8	HSE guidance document on regulations
HSG274 part 2	Technical support document
BS 8580-1	Risk assessment for legionella control
BS 8554	Guidance on sampling and monitoring
PD 855468	Flushing and disinfection of services
ESGLI	Managing Legionella through Covid 19

Legionella - Medical Background

What is legionella?

Bacteria - water borne micro-organism

What is legionellosis?

illness disease

Legionnaires disease

Pneumonia

Pontiac fever

flu

Main route of infection is through inhalation

A number of factors are required to create a risk of contracting legionellosis

Presence of legionella bacteria – naturally occurring in water

Presence of people who may be exposed, especially in premises where occupants are particularly susceptible or vulnerable

Medical Aspects

Risk factors

- males seem to be more susceptible
- age - over 45s
- risk increases with age
- heavy smoking, alcohol, no exercise
- illness such as respiratory or kidney complaints, cancer, diabetes, heart disease.
- anyone with an impaired immune system.

Incidence	500+ cases/year in England and Wales
Mortality Rate	12%. (30% in healthcare)

Source PHE

In January 2020 Public Health England published its' National Surveillance report for 2019.

Category	Confirmed* cases with onset in December 2019	Confirmed* cases with onset since 01 January 2019
Community	12	247
Nosocomial	1	11
Travel abroad	7	207
Travel UK	5	51
Unassigned	-	0
Total	**25**	**516**

Medical Aspects

Incubation period - 2-19 days (typically 6-7 days)

Symptoms - high fever, chills, headaches, severe muscular aches, cough, breathlessness, diarrhoea, vomiting, confusion/delirium

Source PHE

A number of factors are required to create a risk of contracting legionellosis

Presence of legionella bacteria

Presence of people who may be exposed, especially in premises where occupants are particularly vulnerable

Conditions suitable for multiplication of the bacteria

Temperature

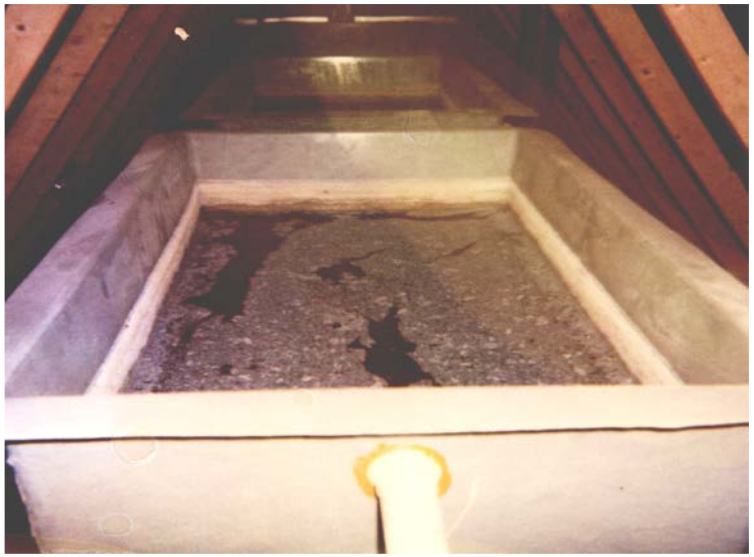
Avoid if possible temperature range of….20°c - 45°c

Optimum temperature for growth…….37°c

Body temperature

Stagnation

Water storage facilities, outlets not being used due to restricted use or closure of buildings



Nutrients

Examples

Corrosion/rust

Scale

Sediment

Algae

Materials

A number of factors are required to create a risk of contracting legionellosis

Presence of legionella bacteria

Presence of people who may be exposed, especially in premises where occupants are particularly vulnerable

Conditions suitable for multiplication of the bacteria

Means of creating and disseminating breathable droplets

Means of aerosol generation

Some example

Showers

Spray taps

High pressure hoses

Hose pipes

Irrigation

Some commercial kitchen appliances

Problems and Concerns

Restricted use or complete closure/shutdown of buildings

How do we manage the risk?

Problems and Concerns

Staff involved in implementing existing and additional control measures should have had appropriate training to ensure their safety when carrying out tasks.

An appropriate risk assessment should therefore be carried out on tasks undertaken and control measures put in place

How do we manage the risk?

Review your existing water risk assessment – things to consider;

Are schematic drawings up to date? Has there been any changes to the water systems: mechanical or outlets

Cold water systems; If there are storage facilities assess turnover and reduce volume capacity to reflect present usage if applicable

How do we manage the risk?

Review your existing water risk assessment – things to consider;

Hot water systems: because of reductions in water movement hot water temperatures may not be achieving normal operating conditions. In larger buildings with circulation systems (principle, subordinate and tertiary loops) inappropriate temperatures may be being experienced

How do we manage the risk?

Review your existing water risk assessment – things to consider;

Water usage; any existing flushing of low use facilities will have to be amended and increased accordingly to reflect the current use of the building, frequencies may also require amending.

How do we manage the risk?

Review your existing water risk assessment

Update accordingly to reflect the current water systems usage

Document measures on how to protect staff and visitors who remain in the building and when it is fully re-opened

All of this may require help and support from competent service providers or public health bodies

Manage the risk

We'll look at two options on controlling and managing the risk

Option 1: Continue implementing existing and where applicable additional control measures – written scheme of control

Option 2: Complete shutdown of building and re-commission water systems prior to occupancy

The next slides will look at both these options

Manage the risk

Option 1: If applicable or possible maintain your normal control programme - written scheme of control.

If your building is only partially open or in use sporadically then increase water turnover to help reduce the risk of water becoming stagnant, implement a more robust flushing regime.

Ensure all extra activities are documented

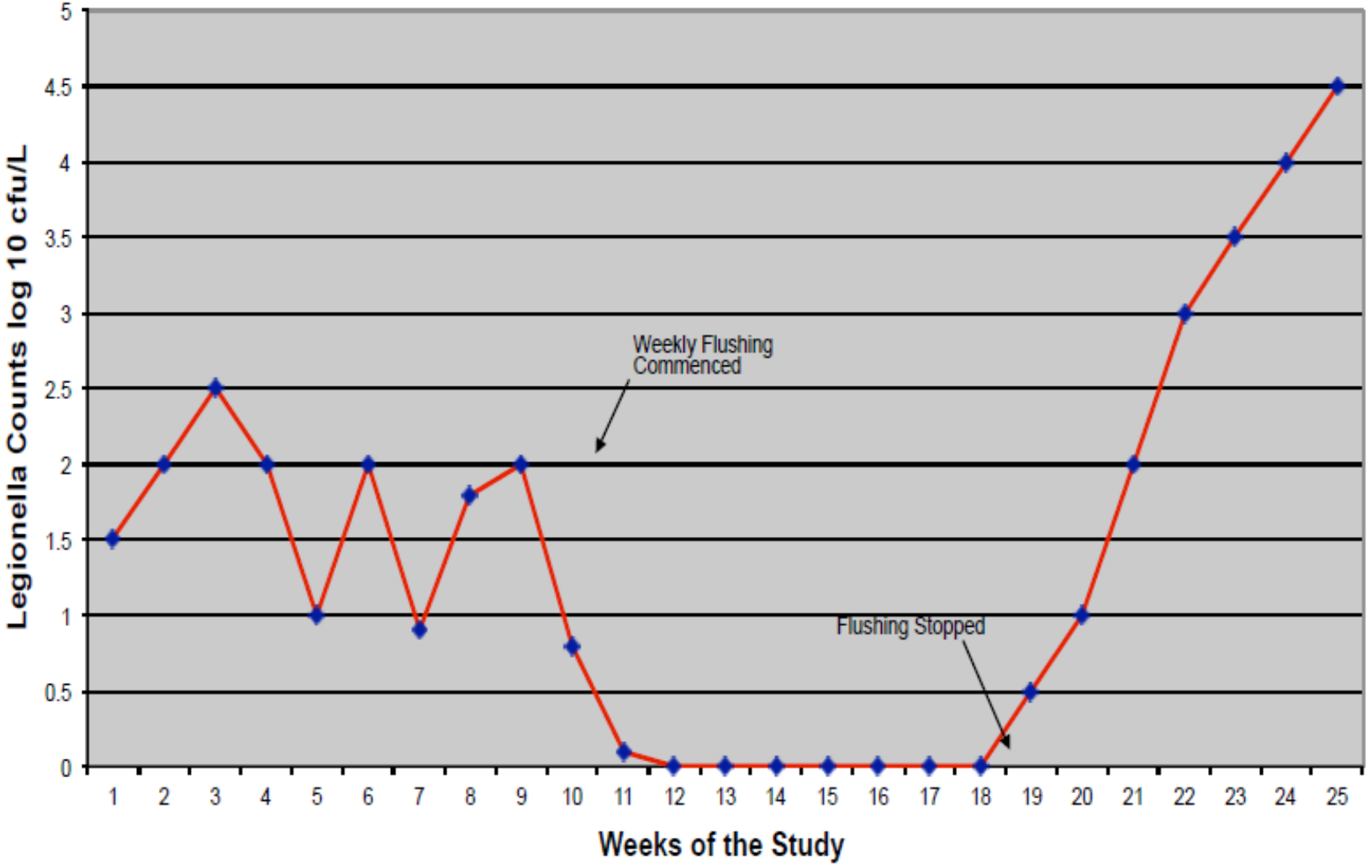
Flushing

Research has shown that regular weekly flushing of water systems significantly reduces bacterial levels of legionella

Outlets should be flushed until the temperature at the outlet stabilises and is comparable to supply water.

In buildings which have been mothballed / vacant it may be advisable to increase the frequency of flushing.

Flushing



Makin and Hart - 1990

Manage the risk

Option 2: If your building is shutting down for longer than a month and you plan to reopen immediately after the prolonged closure then ensure the following steps are followed for the duration of the shutdown

Maintain normal temperature control regimes (HSG274 part 2)

hot water storage operating temperatures >60°c
hot water circulation >50°c
hot water outlet temperature >50°c within 1 minute
cold water outlet temperature <20°c within 2 minutes

If using biocides maintain target levels throughout the system

Manage the risk

Note

Chemicals / biocides can be used as a primary means of controlling legionella bacteria either as an alternative to temperature or in combination with temperature

Therefore operating levels of the biocide have to be checked and maintained throughout the water systems as indicated in the written scheme

Manage the risk

Flush carefully all outlets until temperature stabilises (HSG274 part 2) to include toilets and urinals – weekly

Ensure all additional actions are documented including any amended risk assessment remedial actions, why? by who? and when? - paperwork to be signed off accordingly

Manage the risk

Managing water systems in buildings which are to be closed down completely and (normal control measures are not being implemented)

In general water systems are normally left filled with water, this helps to avoid other problems linked to systems drying out including failure of seals and jointing compounds and corrosion in metal.

If drained down moisture can remain in pipework enabling formation of biofilms and creating an environment, for example, Legionella bacteria.

Manage the risk

Managing water systems in buildings which are to be closed down completely

Closing down without draining:

If there's a calorifier (hot water vessel) purge water carefully from the base until water runs clear

Where applicable consider full system disinfection at 50ppm free chlorine or equivalent biocide for one hour – flush through, neutralise where applicable, until normal chlorine levels are achieved, 0.2ppm is average mains water residual.

Manage the risk

Managing water systems in buildings which are to be closed down completely

When reinstating the systems without draining

Carry out full water system disinfection (PD855468)

Re-heat hot water vessel to >60°c and pull through to all outlets – avoid scalding risk.

Monitor temperature levels for at least 48 hours then take Legionella samples from sentinel points on the system.

Manage the risk

Managing water systems in buildings which are to be closed down completely

Legionella samples to be taken following guidance in HSG274 part 2 and BS 7592

Samples should be sent to a UKAS accredited laboratory for analysis

Manage the risk

Managing water systems in buildings which are to be closed down completely

When reinstating the systems without draining

Once satisfied the water systems are under control (all operating outcomes being achieved) - reopen building and document all actions

Note: its advisable to leave for at least 48 hours after disinfection before Legionella samples are taken

Manage the risk

Managing water systems in buildings which are to be closed down completely

Closing down systems with draining:

Undertake full system disinfection prior to draining

Where biocides are not used at part of legionella control programme blow air if possible through systems to dry as far as is possible.

Manage the risk

Managing water systems in buildings which are to be closed down completely

Closing down systems with draining – when reinstating:

Carry out full system disinfection (PD 855468)

Flush cold water from every outlet

Refill and re-heat hot water vessel to >60°c then pull through to all outlets

Monitor temperatures for at least 48 hours

Manage the risk

Managing water systems in buildings which are to be closed down completely

Closing down systems with draining – when reinstating

Take Legionella samples from sentinel points

Once satisfied the water systems are under control - re-open building and document all actions

Note: its advisable to leave for at least 48 hours after disinfection before Legionella samples are taken

Manage the risk

Once the building is back operating under normal occupancy conditions continue with the original water management plan and monitoring programme

All additional actions implemented during the shutdown period and the reasons for returning to the original programme to be documented in the Water Hygiene Log Book

Thank you for participating on this e-learning unit.

If you have any questions or wish check on the availability of other courses please contact us at:

info@ppltraining.co.uk