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Tackling the threat of shipborne Legionella



Special Report
International Cruise Ship Industry

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All too frequently, there are reports of sickness on board cruise ships, which is often caused by contaminated water pipes. This can lead to compensation payments, loss of reputation and ship delays.

Legionella can plague ships but an effective Water Safety Plan can help to mitigate the risk, says John Chillingworth, senior marine principal at Lucion Marine.

Initial symptoms of Legionella usually include flu-like symptoms, such as headaches, muscle pain and fever, with symptoms of pneumonia once bacteria begin to infect the lungs.

There are different degrees of Legionella: the worst can cause death but there is a lesser known form called Pontiac, which can often be misdiagnosed as flu and can only be accurately verified by having a urine test. While the Pontiac strain is like a severe five-day flu for fit people, it can be worse for older people or those with breathing difficulties.

The disease, which isn't contagious and can't be spread directly from person-to-person, is usually caught by breathing-in small droplets of contaminated water, usually in showers - it's transmitted by an air-borne mist and can develop in still water between 20 deg C and 50 deg C.

It can also lie dormant in otherwise 'safe' water systems for years, protecting itself in other matter available in the water system biofilm. It is therefore important that water supplies are kept below 20 deg C for cold water and 50 deg C for the hot supply.

Over the years there have been a number of high profile cases that have hit the headlines highlighting the risk of the disease in the marine environment, particularly among cruise ship passengers.

Showers that have not been used for several days or weeks, along with poorly managed whirlpools, jacuzzis, spray from decorative fountains or water features, can all be sources for contracting Legionella-related illnesses. There have also been cases of shipyard fitters dying from Legionella after stripping down

equipment, such as pumps and being exposed to contaminated water.

Lack of knowledge

Although there is far more awareness today of the risks of on board Legionella and its effects, there's a perceived lack of knowledge at both vessel management and crew level. There's also a significant corporate risk with the potential damage to reputation, and operator integrity on the line, for anyone whose vessel is affected by the disease.

This all reinforces the need for a thorough Legionella risk assessment to be included as part of a preventative shiprepair and maintenance programme and shipyards should be alerted to any potential risks before a vessel arrives in dock.

A proper Water Safety Plan (WSP), as recommended by WHO Water Safety Guidelines, should be implemented and based on an individual vessel risk assessment, and not, as is usually the case, a generic set of broad guidelines. This must also be 'owned' by the vessel's management.

For further effect, it's also important that the WSP includes elements proposed by the WHO Guide to Ship Sanitation. This covers system assessments, which describe the water supply system up to the point of consumption and operational monitoring (including identification and monitoring of the control measures applied on board).

Verification and programmes to manage people and processes should also be covered under the management and communication elements.

Despite its unpredictability, it may be possible to design-out the risk of Legionella from vessels and better manage the risk. Regular

and effective reviews of critical piping systems and components can help while checking procedures and proactive advice on the most suitable WSP can contribute to all round improvements and contribute to the risk management process.

Critically, any plan must be effectively managed by a competent ships' team*, which is responsible for various aspects of the water safety plan and updates risk assessments on a regular basis.

All shipowners should protect themselves from any potential Legionella exposure claims from passengers or crew by verifying that they have correct water management controls and records in place by having an independent audit by a reputable marine specialist.

More awareness needed

We also need to see more public, scientific and medical awareness around the causes and symptoms of Legionella infection to improve reporting and compile accurate statistics. In addition, marine regulators must make operators responsible for Legionella control.

For example, UK legislation dictates that establishments such as hotels require a Legionella risk assessment and that other relevant documents are in place and reviewed regularly and/or when significant system changes are made.

Clearly, similar requirements should be in place for the global maritime industry. The EU has established and funded the development of SHIPSAN with the objective of implementing pan-European ship health and hygiene common standards. The development and implementation of WSPs is an integral part of the best practice guidance within the SHIPSAN manual. The EU is setting up additional training for port health inspectors to carry out more ship inspections to check water management on ships.

It is very likely that other major port health authorities such as the US, Brazil, Australia and Canada will adopt similar requirements for water safety plans in the near future. It is also understood that the Chinese authority responsible for port health is already considering the adaptation and implementation of the SHIPSAN guidance.



John Chillingworth
Lucion Marine

The author, John Chillingworth, is a former Chief Engineer, who served on Cunard Line's 'Queen Elizabeth 2' and a marine technical manager who has over 27 years' experience in dealing with marine asbestos and hazardous materials.

He is currently a senior marine principal at Lucion Marine, which employs some of the most respected water safety specialists in the industry and can provide WSP audits for ships that provide a substantial defence against potential Legionella exposure litigation. See

<http://www.lucionservices.com/companies/lucion-marine/>

*Ships' team

A ships' team is responsible for various aspects of the water safety plan.

On a cruise ship, the team would be headed up by the deputy Master, Hotel Manager, Chief Engineer and various subordinates who would have clear responsibilities and accountabilities.

On a cargo ship, a few of which carry up to 12 passengers, it would be Chief Officer, Chief Steward and First Engineer.

Part of the checks on a cruise ship would occur every seven days: the housekeeping should flush all water lines in showers, bidets, baths, while the technical team should measure water temperatures - often shower mixes pass hot to cold, which would be identified by the temperature checks.

All this would be logged and reported at a monthly review meeting.

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International Cruise Ship Industry (ICSI) is an industry news service, via newsletter, website portal and regular reports. With a contact list of over 3,100 cruise industry specialists actively working for owners, operators, and managers, along with senior executives in international cruise ship companies, we keep all professionals involved with innovation up to date with the latest new ideas and concepts.

With emphasis placed on the latest innovative products and services being brought to market the key message to the industry is that cruise ships in the 21st century are not all the same and there is a cruise and cruise ship for everybody.

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