

LEGIONELLA

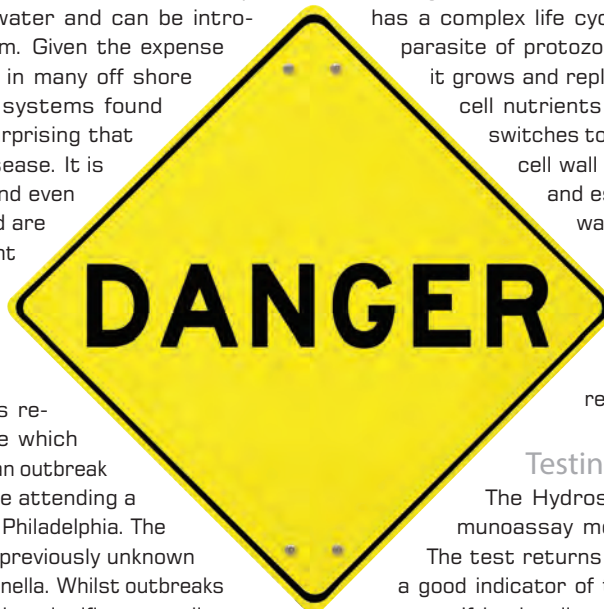
Legionnaires disease can affect superyachts in much the same way it attacks closed water systems aboard passenger cruise liners. **Captain Michael Howorth** finds ways to keep superyachts safe from the killer disease.

Ask any manager in charge of passenger cruise liners what their number two fear is, and they will say Legionella. Their first fear is always; Fire aboard a large passenger ship. Fortunately the outbreak of fire aboard a well run passenger ships is rare, sadly the outbreak of Legionnaires disease is a lot more common than many in the industry would hope for. Legionella is found everywhere, and without good management programmes in place it will proliferate and become a problem. All ships have closed water systems, which are by their nature, subject to uncontrolled external influences through recharge or desalination. In this regard superyachts are no different to ships. Bacteria is often found in saline water and can be introduced through any recharge system. Given the expense of controlling water temperatures in many off shore situations and the type of water systems found on board some superyachts it is surprising that there are not more outbreaks of disease. It is however possible that many crew and even at times guests who do get infected are often wrongly diagnosed with straight forward pneumonia rather than Legionnaires' disease.

Media attention

Legionella is the bacterium which is responsible for Legionnaires' disease which acquired its name in July 1976 when an outbreak of pneumonia occurred among people attending a convention of the American Legion in Philadelphia. The causative agent was identified as a previously unknown bacterium, subsequently named Legionella. Whilst outbreaks of Legionnaires' disease often receive significant media attention, individual cases and small clusters are more common but receive less notoriety. The fatality rate of Legionnaires' disease has ranged from 5% to 30% during various outbreaks. The disease can be virulent and is taken very seriously in developed countries. Records for cases and outbreaks of the disease vary according to the seriousness of the authorities in controlling the disease. Counter-intuitively those countries which record the highest number of disease cases are those which are best at identifying the disease. Indicating that the disease is likely much more prevalent than recorded. For example there are more cases of Legionnaires disease in UK from people who have recently visited Turkey than there are cases of the disease in Turkey itself. The bacteria exist in natural waterways, but are particularly effective at colonising man-made water systems, particularly when the system is used intermittently allowing stagnant places to occur. The highest risk aboard most superyachts is likely to be from whirlpool spas (Jacuzzis), hot tubs etc, but other areas such

as shower heads and air conditioners which present the bacterium in aerosol form, in which it can enter the lungs where it lodges causing pneumonia. The most important part of control is prevention. This is done by keeping all pipe work and holding tanks clean and preventing stagnant places. All taps and outlets should be used regularly (at least weekly). Water temperatures should be very hot >55 degs C or cold less than 20 degs C. Testing the water aboard superyachts is an important part of a management and control system, but this is itself not straight forward. It is best done by the yachts own engineering team, following the routines laid out inside the testing kits. Legionella has a complex life cycle with two distinct phases. It is a parasite of protozoa or amoeba. In its replicating phase it grows and replicates inside the host. Once the host cell nutrients have been consumed the bacterium switches to its distribution phase, grows a thicker cell wall and a tail, dissolves the host cell wall and escapes into the larger environment or water system. During the motile phase it is at its most virulent and it is during this phase that it can cause disease and death to humans. Typically in aerosol droplets it enters the human respiratory system and takes up residence in the lungs causing pneumonia.



Testing times

The Hydrosense Legionella Field Test is an immunoassay meaning it detects Legionella antigen. The test returns a result in 25 minutes. This makes it a good indicator of the presence of Legionella in a water system. If Legionella antigens are detected then there has certainly been Legionella in the system and the system should be thoroughly cleaned. It is certainly worth knowing if the bacteria exist in the more virulent, non-replicating form, and whether it has existed recently within the system in its replicating form. An immunoassay like the Hydrosense Legionella Field Test can provide this information within 25 minutes. It is therefore a valid and powerful part of a Legionella risk assessment strategy. Basically if Captains of superyachts are confident and can demonstrate that the water system is well managed and has been clean for over a year then it would be sufficient to carry out testing monthly or even quarterly. If there are doubts about the water quality for whatever reason then it would be sensible to carry out tests which provide quick and reliable answers so that remedial action can be taken.

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