

"Self-regulation" spawns Legionnaire's Disease epidemic in Melbourne

Margaret Rees
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State health officials have classified Australia's worst outbreak of Legionnaire's disease as an epidemic, and linked the infection to air conditioning cooling towers at a newly opened tourist facility, an aquarium owned by Melbourne Underwater World.

Two women are dead, 72 cases of the disease are confirmed and there are at least another 23 possible victims. Nine patients are fighting for their lives in intensive care. So far, more than 2,000 people have been tested for the disease since they visited the aquarium between April 13 and 27, a school holiday period.

Nellie Campbell, 83, visited the facility on April 13 and died on April 25. Ilse Junge, 79, visited on April 17 and died on April 28. An Australia-wide alert has been issued through public health authorities, with confirmed interstate cases in Tasmania, Western Australia and Queensland. Four overseas visitors may also have contracted the disease before returning home to New Zealand and England. At least two of the aquarium's 70 staff have been tested.

Melbourne Underwater World opened this year in a supposedly state-of-the-art building, and 400,000 visitors flocked to see its attractions in the first few months. Many of the legionella victims were grandparents or parents taking their families for an excursion in the school holidays. Ernie Brown, 78, had visited the attraction with 60 other members of his senior citizens club, the Darebin Golden Oldies. He is now in intensive care, and a fellow member is also in hospital.

Legionnaire's disease has become a worldwide phenomenon since it was first recognised when an outbreak at an American Legion convention in a Philadelphia hotel in 1976 affected 221 people and killed 34. In the United States, between 8,000 and 18,000 cases now erupt each year. The previously unknown bacterium *Legionella pneumophila* has most commonly been transmitted through contaminated water sources, such as air conditioning cooling systems.

Legionella produces a virulent pneumonia, which is fatal in up to 20 percent of cases, particularly when it infects the elderly, or is not treated quickly. Symptoms include

diarrhea, vomiting, abdominal pain, breathing difficulties, headaches, fever and disorientation. A terrible death results when kidneys, lungs and bowel collapse.

Internationally, the disease has broken out in hotels, convention centres, a flower show and a trade fair exhibiting whirlpool baths, as well as hospitals and prisons. Legionella organisms can be found in many types of water systems but reproduce in high numbers in warm, stagnant water, such as that found in certain plumbing systems, hot water tanks, cooling towers and evaporative condensers of large air-conditioning systems, and whirlpool spas.

Despite the known dangers, preventative and inspection programs have deteriorated since Australia's previous worst outbreak in 1989 in Wollongong, where 10 people died and 44 cases were confirmed.

When health officials tested the Melbourne aquarium air-conditioning cooling towers on April 27 the results, not known until a week later, revealed that one tower showed 6,900 legionella organisms per millilitre, almost seven times the 1,000-organism level that indicates high risk. Contaminated spray drift from the cooling tower on the roof infected the victims. They had been queuing outside the aquarium beneath the air-conditioning system, with the exception of a 26-year-old victim, who had merely walked past.

The aquarium owners, the state Labor government, public health authorities and the media have gone into damage control, angering the relatives of stricken patients. John Watson, whose father Bill is on life support in Frankston Hospital, told *ABC TV News* that everybody was trying to shift the blame. "We don't want this happening again. The government has to put legislation in place that makes it compulsory that they [air-conditioning towers] are tested regularly."

Questioned in parliament two days before test results were obtained, state Health Minister John Thwaites admitted that the aquarium was clearly the source of the legionella bacteria. Yet it was not shut down.

Chief Medical Officer Dr Graham Rouch did everything to

allay public scepticism about the aquarium, saying it was “probably one of the safest places to be in the city” after the cooling towers were decontaminated. Public health authorities are advising school parties that school excursions can safely go ahead. Department of Human Services head of Communicable Diseases Dr John Carnie said it would have taken longer to shut the facility or to warn patrons than to disinfect the cooling towers and “solve the problem”.

Documents obtained by the Melbourne *Herald-Sun* indicate that a monthly bacteria test due in April was not carried out, with the result that no bacteria samples were taken for 43 days. The chemical treatment company responsible for the testing, Tamar Pty Ltd, refused to service the air-conditioning system because its bills for previous months' testing were unpaid. Airchief, the company that installed the aquarium's air-conditioning under contract from the builder, has since collapsed.

When Tamar last tested the cooling towers on March 15, it reported inadequate anti-bacterial chemical levels, and problems with the pump injecting the chemicals into the system. Airchief was in financial difficulty when it received the report detailing the problems, and by April 13 it was placed in voluntary liquidation.

A Melbourne law firm filed a Supreme Court class action for damages on May 4, on behalf of more than half the victims, including relatives of the two dead women. The lead plaintiff is Phyllis Patterson, 69, a pensioner in intensive care for six days after being diagnosed.

Regardless of the outcome of the legal action, it is already clear that the public health regime in Victoria governing such cooling towers is merely a facade. There is no compulsory supervision at all—the guidelines are only recommendations. There is not even a register of Melbourne's 10,000 cooling towers.

Building owners are under no obligation to monitor for legionella bacteria, but are advised simply to monitor an overall bacteria count each month. Building checks do not have to be reported to the government, owners simply have to keep a record to be produced on request. The maximum fine for non-compliance is only \$1,000.

Cleaning has to be done every three months, but it is not specified what disinfectant has to be used. There are no minimum qualifications for water consultants who test cooling towers. Health department guidelines only recommend testing if there are “associated cases” of the disease.

This system of self-regulation was established in 1990 by a former Labor government. The Kennett Liberal government loosened requirements for audit and inspection of plumbing installations in October 1998.

Thwaites has moved to disassociate the present

government from the most glaring inadequacies of this system, citing a working party draft report compiled last month. The report calls for a central register of cooling towers, and specific tests for legionella, as well as some independent inspection, funded by a licencing system. However, industrial water consultants pointed out that a draft of new regulations had existed for three years, but governments had done nothing.

Moreover, as the aquarium outbreak makes clear, far more than these token efforts are required to ensure public safety when crowds of people congregate in an air-conditioned facility.

In recent years legionella outbreaks have become common in Melbourne. Five cases occurred in a city building in March 2000; seven people were contaminated in inner-city suburbs in February 2000, one case occurred at the Department of Justice building in May 1999, and one case of contamination was discovered at a Melbourne hospital in January 1999. A serious outbreak occurred at the outer suburb of Thomastown in October 1998; with at least 16 confirmed cases linked to a cooling tower at a chicken processing company in the area. A 73-year-old woman died in June 1998, one of five cases in a north-western suburb.

Nationally, the number of cases is increasing. In 1999, 250 cases were reported, a 55 percent increase on 1997. Even before the aquarium outbreak, more than 100 cases of legionella were notified nationally this year, half of them in Victoria. Health officials claim that an improved urine test accounts for an increase of discovered cases, but this does not explain the rapid rise of cases in Victoria.

It has been known for some years that improved design and maintenance of cooling towers and plumbing systems can limit the growth and spread of Legionnaire's disease. Stringent testing and effective public health programs can also detect contaminations. The primary official concern, however, is the economic viability of major commercial projects, such as Melbourne's new tourist facility.



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