

Mines Inspectorate

Safety Alert No. **151**
11 January 2007

Legionnaires' disease

Mine type:	All mine types
Incident:	Outbreak of Legionnaires' disease
Equipment:	Cooling towers/standing water/water accumulations
Hazard:	Biological (inhalation of contaminated water 'mist')
Cause:	Aeration of contaminated water

Comments

Two mine workers were recently diagnosed with Legionnaires' disease, which may have been contracted at a mine. Legionnaires' disease is a type of pneumonia caused by the inhalation of tiny droplets of moisture (mists or aerosols) that contain the *Legionella* bacteria. Possible sources of contaminated water on mines include intake air cooling plant and major compressor cooling plant. The contaminated mist can be inhaled and infect people susceptible to such health risks.

Only a small percentage of people exposed to the bacteria become ill; most exposed people exhibit no symptoms of ill health. People 50 years or older with weak immune systems or chronic respiratory illnesses are most at risk of contracting the illness.

The early symptoms of Legionnaires' disease are similar to the flu: fever, aches and chills (about two to 10 days after exposure to the bacteria). Other initial symptoms include a dry cough, diarrhoea, vomiting and stomach cramps. People who are treated early with antibiotics will usually begin to recover within a few days. Left untreated, the illness can progress rapidly, with infected people experiencing pneumonia-like symptoms, high fever, shortness of breath and chest pain. Legionnaires' disease can not be transmitted from person to person. Drinking and

washing in water containing *Legionella* is not likely to result in infection.

Recommendations

Recently, a number of underground coal mines in the Bowen Basin have installed bulk air conditioning plants to manage thermal stress. Typically, these plants are equipped with four bulk air coolers and one cooling tower (typically 12 m in length). These plants are fitted with an automated biocide dosing system to control bacterial growth.

When installing these plants, mines are advised to consider the following issues as part of a risk-assessment process:

- When choosing the plant installation site, consider the direction of the predominant prevailing winds, the potential for cooling tower drift and the location of underground mine air intakes. Ideally, any drift from cooling towers should be away from surface buildings, mine air intakes and areas of high human traffic.
- Prior to commissioning the plant, get a qualified person to test the water for bacteria—heterotrophic colony counts (HCC) and *Legionella*.
- Water-quality sampling should be conducted monthly (minimum).
- Regular maintenance should be conducted on the plant by a competent person to ensure it is operating to specification. Particular attention should be paid to operating water temperatures, the automated biocide dosing system, and the presence of any nutrients/algal growth.

Shutting down the power to bulk air conditioning plants for extended periods can create an additional risk. Without power, water will stagnate and temperatures in the plant may rise to levels that promote the growth of the *Legionella* bacteria. In addition, the automated biocide dosing system will not work without power. When recommissioned, the plants could potentially disperse contaminated water in the form of cooling tower mist.

One way of preventing this happening is to dump and drain the water from bulk air conditioning plants when they are shut down for extended periods. If this is not practicable, the water should be manually dosed and tested for HCC and *Legionella* at regular intervals to ensure a healthy water supply is maintained prior to recommissioning.

Further information and recommendations for controlling *Legionella* and heterotrophic colony counts in cooling towers can be obtained from Australian Standard AS3666 Air-handling and water systems of buildings – Microbial control.

References

Legionnaires' disease fact sheet
Queensland Health
<http://access.health.qld.gov.au/hid/InfectionsandParasites>

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