

A **59 year old male** employee contracted **legionnaires disease** from exposure to water from the chiller while working in the banbury/mixing area. This company manufactures tires for consumers, automotive and commercial vehicle original equipment manufacturers, and the agricultural, forestry, and mining industries.

The plumbing system, heating and cooling systems in the banbury area were installed in 1973 (over 48 years ago). The building system components have been routinely neglected from proper operation and maintenance which influenced *Legionella* and bacterial amplification in the plumbing system. The banbury is warm with an ambient temperature range from 75.6 to 78.5 degrees F which is an ideal temperature for *Legionella* amplification.

The power breezer cooling mist fans had not been cleaned or maintained since they were purchased around August 2019. Sediment from the environment and water minerals coated the water reservoir. This sediment, biofilm, and warm temperature provided a growing media for the *Legionella* bacteria to grow and thrive. When the *Legionella* amplification contaminated the water in the power breezer and it was aerosolized, it enabled employees to inhale *Legionella* bacteria.

The victim worked a rotation of 4 - 12 hr days on and 4 days off. Through interviews it was learned that he would routinely work overtime on his 4 days off, operating banbury line 623. Also, it was learned that he would stand in front of the 623 banbury power breezer to cool off during his work shift.

On 6/23/2021, the power breezer evaporative cooler located on the 2nd floor banbury mixing department where the victim worked was sampled and showed as positive for *Legionella pneumophila* (sero 2-14) with 15,000.00 CFU/ml. Inside the water tank was a coating of carbon and sediment. This sample had a high amplification of *Legionella* bacteria. In 0.005 ml of water (less than a drop of water) there were 15,000 colonies of *Legionella pneumophila* (sero 2-14), each colony formation unit had approximately 10,000+/- *Legionella pneumophila* (sero 2-14) bacterium.

The presence and amplification of *Legionella pneumophila* bacteria in the banbury department where the victim worked that was aspirated into water droplets, exposed not only him but all employees in the banbury/mixing department to the hazards of exposure to Legionnaires' disease. Through sampling for *Legionella* bacteria, TOSHA determined that *Legionella* in the Banbury exceeded the recommended detection limits in several areas.

The victim's death certificate stated the cause of death as myocardial infraction and *Legionella* Pneumonia. It was determined that he developed sepsis from a bad bacterial infection caused by legionella bacteria. The sepsis released chemicals in the bloodstream to fight the legionella

bacterial infection and triggered inflammation throughout the body. This caused a cascade of changes that damaged multiple organ systems, leading them to fail, resulting in his death.

Citation(s) as Originally Issued

A complete inspection was conducted at the accident scene. Some of the items cited may not directly relate to the fatality.

Citation 1 Item 1 **Type of Violation: Other-than-Serious** **\$7,000**

TCA 50-3-105(1): The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees, in that employees were exposed to Legionella bacteria and were at risk of developing Legionnaires' disease:

On 6/23/2021, four water samples were taken from three different Power Breezer evaporative coolers and one eye wash station. Of the four samples, two tested positive for Legionella pneumophila and three tested positive for Legionella sp. (not L. pneumophila). The evaporative coolers were in close proximity to employee workstations providing aerosolized mist water with a fan to cool workers within the Banbury Department. Power Breezer evaporative coolers were not properly maintained, providing an environment for Legionella pneumophila to grow, exposing employees to Legionella pneumophila. Water samples obtained on 6/23/2021 indicated:

- a) The 621 Banbury Power Breezer Mister, SN PB60042357, water was positive for 163.33 CFU/mL Legionella pneumophila;
- b) The 621 Banbury Power Breezer Mister, SN PB60042357, water was positive for 23.33 CFU/mL Legionella sp. (not L. pneumophila);
- c) The 623 Banbury Power Breezer Mister, SN PB60042423, water was positive for 15000.00 CFU/mL Legionella pneumophila;
- d) The 624 Power Breezer Mister, SN PB60042418, water was positive for 2.00 CFU/mL Legionella sp. (not L. pneumophila); and
- e) The 625 Banbury eye-wash station water was positive for 2.00 CFU/mL Legionella sp. (not L. pneumophila).

On 8/18/2021, three potable water samples were taken from water filters and a process mister. Three samples tested positive for Legionella sp. (not L. pneumophila). The process misters were in close proximity to employee workstations providing aerosolized mist water to control sulphur dust for fire protection. The potable water pipes and water filters were not properly maintained, providing an environment for Legionella and bacteria to grow, exposing employees to Legionella. Water samples obtained on 8/18/2021 indicated:

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f) The 621 3rd Floor Process Mister water was positive for 7.50 CFU/mL Legionella sp. (not L. pneumophila);

g) The 624 Process Mister Filter water was positive for 1300.00 CFU/g Legionella sp. (not L. pneumophila); and

h) The 3rd Floor Banbury Dump Bin Mister Filter was positive for 600.00 CFU/g Legionella sp. (not L. pneumophila).

Citation 1 Item 2 Type of Violation: Other-than-Serious \$7,000

29 CFR 1910.141(a)(3)(i): Places of employment were not kept clean to the extent that the nature of the work allowed:

The following work areas and equipment were not maintained in a clean condition:

a) On 6/23/2021, Power Breezer Misters in the Banbury/Mixing Department had not been cleaned since the misters were purchased; and

b) On 6/23/2021, the 2nd floor Banbury breakroom was coated with carbon black, and the air conditioning unit was dripping water into a trash can due to a rusted condensation drain pan.

Citation 1 Item 3 Type of Violation: Serious \$7,000

29 CFR 1910.141(b)(1)(i): Potable water was not provided in all places of employment, for drinking, washing of the person, cooking, washing of foods, washing of cooking or eating utensils, washing of food preparation or processing premises, and personal service rooms:

The employer did not provide safe drinking water that meets the quality standards prescribed by the U.S. Environmental Protection Agency's National Primary Drinking Water Regulations (40 CFR 141). The water supplying water fountains contained microbial contaminants such as Legionella bacteria.

Citation 2 Item 1 Type of Violation: Other-than-Serious \$1,000

TDLWD Rule 0800-01-03-.03(27)(b)3: Each recordable injury or illness was not entered on the OSHA 300 Log and/or an incident report (OSHA Form 301 or equivalent) within seven (7) calendar days of receiving information that a recordable injury or illness has occurred:

On 6/18/2021, the employer had failed to record an illness and death from a workplace exposure to Legionella bacteria on the OSHA 300 Log within 7 days of when the recordable illness and death had occurred

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