

Legionella Bacteria Prevention Planning

Legionella bacteria can be found in a variety of naturally occurring sources (e.g., soils, ponds and streams) in addition to man-made sources such as cooling towers, potable water systems, and heating, ventilation and air-conditioning (HVAC) systems. Legionella bacteria are present in public and well water supplies at extremely low concentrations. Legionella bacteria grow well in cooling towers and other indoor water systems, primarily because of the presence of warm water and available nutrients. If not properly treated, this warm water can promote the growth of algae, microbiological “slime” and amoebae, which enhance the potential for Legionella bacteria amplification.



Cooling Tower



Cooling Tower Sump

bacteria, which are small enough to pass deep into the lungs and be deposited in the alveoli, the small pockets in the lungs. The dose of Legionella pneumophila and other Legionella bacteria required to infect humans is not definitively known. Legionnaires’ disease can have an incubation period of two to ten days. Although healthy individuals can develop Legionnaires’ disease, people thought to be at increased risk of infection include smokers and patients with cancer, chronic respiratory disease, kidney disease or any immunosuppressed condition.

The purpose of a Legionella control program is to minimize the presence of Legionella bacteria and other environmentally associated bacteria in building

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Hazardous Energy Lockout/Tagout: Fried and Died

The consequences of failing to effectively lock out/tagout equipment can be catastrophic. An extreme example of this occurred at a Wyman-Gordon Forgings, Inc., facility in Houston, Texas, on December 22, 1996, when eight workers were killed.



A crew of ten maintenance workers was performing work on a 40-foot-high pressurized nitrogen tank for a 35-ton forging press. They believed that the pressure had been bled from the tank prior to beginning work. When two-inch bolts were removed from a three-foot-square lid, it blew off, ripping a 40-by-50-foot hole in the factory roof. Five of the workers were blown off of the top of the tank. How could this have been prevented?

The OSHA-proposed penalty was \$1,803,500. The citation that OSHA issued had 34 items listed, including:

- There was a failure to provide appropriate hardware for isolating, securing, or blocking machines or equipment from energy sources.
- The hazardous energy control procedures (HECP) did not clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be used for the control of hazardous energy.
- The employer failed to effectively train each authorized employee.
- The employer did not conduct a periodic inspection of the energy control procedure at least annually.

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A Process of Continuous Improvement

It has been said that if something can be measured, it can be improved. This principle not only applies to increased quality and performance of products used in our daily lives, but it equally applies to everyday business practices. Yes, including safety and health programs. Fact is, most safety and health programs do not reach their full potential for one of many reasons, one of which is failure to implement a successful continuous improvement process. The basic framework for implementing a continuous improvement process for safety and health programs is depicted in the following model.



As shown in the model, gaining management support is one of the keys to the success of the process. Management support can be achieved only if you can provide convincing factual data regarding the benefits, i.e., the return on investment that the process will provide. Obtaining factual data requires detailing all the issues by conducting a GAP analysis. This may take time and outside resources to understand the intricacies of safety and health, BUT it really is at the crux of success. Remember, you need to correctly identify the issues in order to correct the problems.

Completing the GAP analysis will allow you to establish measurable goals and to develop very specific action plans that are critical to success. Action plans should be very short statements of what needs to be done, by whom and by when and with what results. It is important to point out that at this point the process is going to get more difficult, because it will require more commitment, more knowledge, more experience, more cooperation and involvement from more and more individuals.

As you begin to implement the action plans, you also need to begin the process of monitoring progress by collecting data. Remember that monitoring progress requires the use of objective measurable data which will identify how the process is progressing. This information will then allow you to modify the goals and actions plans as needed and provide reports back to management demonstrating the success of the safety and health program. Remember, management will commit its resources only if there is a clear path to success.



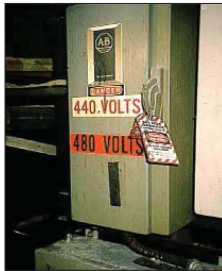
For additional information or to discuss how a continuous improvement program can increase the performance of your safety and health program, please contact Chris Schneider, CIH, President at 888-873-9983 ext 14, www.1ssh.com or at cshneider@1ssh.com.

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Another example that illustrates the need to use of HECPs and effective communication between host employers and contractors occurred at RR Donnelley & Sons Company in Lancaster, Pennsylvania, on December 22, 2002. The contractor, who was with Herr and Sacco, Inc., was severely burned by a release of steam from a line that he believed had been de-energized. He died from the burns. Both employers were cited, with RR Donnelley & Sons paying \$55,000 as the host employer and Herr and Sacco incorporated paying \$3,325. OSHA items common to both citations included:



- Lack of a compliant energy control program
- Absence of a suitable hazardous energy control procedure
- Failure to provide appropriate hardware for isolating, securing or blocking machines or equipment from energy sources



- Failure of the on-site and outside employers to inform each other of their respective lockout or tagout procedures

Failing to protect your employees from an unexpected release of energy can obviously have significant adverse consequences. Source Safety and Health, Inc. can help you to properly address this exposure by working with you to develop and implement compliant hazardous energy control programs, develop equipment-specific HECP, and provide training. For additional information or support contact Colin J. Brigham, CIH, CSP, CPE, CPEA, at cbrigham@1ssh.com or 610-524-5525, xt. 24.



We're Already Working ...

The editors of *The Risk Factor* are already working on future issues. Here are a few of the stories you'll be seeing:

- Asbestos O&M Plans
- Safety and Health Audits
- Safety Committees



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Algal Growth on Cooling Tower

waterside systems and consequently reduce the potential for illnesses associated with these organisms. The mechanism to achieve the above is to limit the ecological conditions (temperature range and nutrients) and physical plant (design) operations and maintenance

issues that allow the *Legionella* bacteria to grow and amplify. However, note that complete elimination of *Legionella* bacteria in building water systems may not be possible. As such, instituting preventive maintenance procedures is a critical aspect of *Legionella* bacteria control. A well-designed control program includes the following information and procedures.

- Source Identification – Review design, operations and maintenance of waterside systems (e.g., hot water tanks, cooling towers, HVAC systems, humidifiers, piping networks, process water and distribution systems) for source identification and to perform a risk assessment to determine the likelihood that the system harbors *Legionella* bacteria and the potential for exposure to aerosolized water droplets or mist.



Bacterial Growth on Cooling Tower

- Preventive Maintenance - Develop site-specific guidelines for preventive maintenance procedures for each of the waterside systems for cleaning and maintenance of environmental conditions, such as temperature ranges and water treatments, to reduce the potential for amplification of *Legionella* bacteria.
- Sampling and Analytical Procedures, and Data Interpretation - Determine the best practices for water sampling, including location, frequency of sampling and data interpretation, in relation to preventive maintenance and risk assessment.
- Decontamination Guidelines - Develop site-specific guidelines for decontamination of each waterside system, including mechanical cleaning, chemical treatment options and heat pasteurization techniques.
- Emergency Response Procedures - Identify the appropriate team members from within the facility and outside resources, including facilities/physical plant personnel, safety team, medical workers, experienced industrial hygiene consultant, environmental laboratory technician, chemical treatment vendor and field sample collection team, to efficiently respond to high concentrations of *Legionella* bacteria in samples or a Legionnaires' disease outbreak.

For additional information or to request a proposal, please contact Harry M. Neill, CIH, at 888-873-9983, ext. 15, or hneill@1ssh.com.





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Leadership Tip – One Sure Way to Be a Better Manager

If you want to be a better manager, here's one sure bet: Surround yourself with people who are willing to speak their minds. If you ensure that the people who work for you are the kind who will tell you the truth and not hold back out of fear, you will open a flow of information that will allow you to stay on top of troubles that inevitably develop in a workplace. While a group of people who are always admiring you might be comfortable to be around, they are not likely to help you define and solve the problems that will keep things running smoothly in the long run.



Future Food Safety Might Hinge on a 'Dipstick'

With all the food-safety scares of the recent past, it's nice to know that scientists are working on a consumer test kit that can quickly determine whether food is spoiled or safe.

Chemists at the University of South Carolina describe the test as a "dipstick" that can rapidly detect the presence of disease-causing bacteria. Researchers say consumers will be able to use the dipsticks in homes as well as restaurants, and the device could help avoid illness and death by food poisoning, which affects millions in the United States every year.

Testing will take less than five minutes, and the device includes special polymers that change color to indicate the degree of food spoilage in a sample. For instance, in the test case of fish, the polymer starts out at deep purple; when the polymer turns reddish it indicates a mild-level of spoilage; and when the polymer turns yellow it indicates a badly spoiled fish that the consumer would want to avoid. Tests proved 90 percent accurate.

The sticks, preliminary tests indicate, will be sensitive enough to detect even small amounts of protein decay in other foods such as fruits, vegetables and meats. Detailed tests are planned, and scientists say they hope to have the dipsticks on shelves for consumers in two to three years. The findings were reported at the 223rd national meeting of the American Chemical Society.



To Stay Safe on the Road, Don't Drive in a Hurry

Being in a hurry can be dangerous, especially when you are driving. Managing your mindset when you are behind the wheel is essential for your own safety as well as that of others on the road. "The world might be in a hurry, but you don't have to be," says Bob Stuber, a nationally known safety expert and former Los Angeles police detective, on Safety.com. Here are his tips for managing your driving time:

- Make sure you allow ample time to get where you're going, then add 10 minutes to that time.
- When planning your drive, always assume the slowest scenario, like getting caught at every red light or behind a slow driver.
- Don't be afraid to revise your time estimates.
- If you feel yourself getting in a hurry, stop!
- If you are habitually late, set your clock 10 minutes fast. You'd be surprised at how well this works for some people.

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