Large Loss Lessons Learned

Corrosive Chemical Causes Injury

An environmental contractor had a project to remove a highly concentrated sodium hydroxide mixture from a 2,000-gallon storage tank at a customer's site. The technician was using a vacuum truck to remove the product through a one-inch hose line running from the storage tank to the truck. There was a safety shower located within close proximity, and the technician was wearing a disposable chemical protective suit, a face shield, respirator, chemical-resistant gloves, and safety shoes. The chemical suit was rated to withstand several hours of direct exposure to caustic materials.

A leak occurred at the hose connection, and the technician was splashed with a small amount of caustic down the front of his unzippered chemical suit. He was instructed by his supervisor to go to the restroom to "clean up". He sponged himself off at the sink, put back on the same clothes, and went out to lunch with his co-workers. Upon return from lunch he complained of a burning sensation to his chest and abdomen, and was taken to a nearby medical clinic for treatment. He was subsequently treated and sent home, but had to return later that night to the emergency room for additional medical treatment.

CONSEQUENCES

- The injuries required skin grafts, physical therapy, and several months of lost work time.
- The total cost of the accident including medical bills, rehabilitation, and compensation was over $100,000.
- Additional untracked costs included the employee's pain and suffering, the company's lost productivity, and the negative affect on employee morale following the accident.

PRIMARY CAUSES

There were several underlying causes that contributed to the accident including:

- The chemical suit provided to the employee was too small and tight-fitting, making it uncomfortable for him to move about.
- The employee kept the front panel of his chemical suit unzippered to allow for easier movement. By having the suit open the caustic was able to get inside the suit rendering its chemical-resistant qualities virtually ineffective.
- The affected skin should have been thoroughly rinsed in the safety shower and subsequently washed in the locker room shower.
- The contaminated clothing should not have been put back on until they had been properly cleaned.
- A delay in providing adequate medical evaluation and treatment allowed the chemical burns to progress causing additional skin damage.

LESSONS LEARNED

- As part of a personal protective equipment (PPE) hazard assessment a variety of types and sizes of PPE should be made available. A PPE Hazard Assessment consists of an organized method of categorizing risk exposure in terms of potential to cause injury, as well as what parts of the body need to be protected. In the example above, determining the requirement for wearing a chemical resistant suit was based on the corrosive nature of the chemicals being handled. Similarly, the need for face shields, chemical resistant gloves, and safety shoes were determined through the Hazard Assessment of the project.
- Upon initial exposure to the caustic, the technician should have been instructed to immediately remove his suit, and rinse off thoroughly under the safety shower.
- He should have been sent immediately to the health clinic as a precautionary measure, rather than waiting until later that afternoon when the caustic had additional time to cause serious skin burns.
- Hazard communication training that is chemical specific is important so that employees know the signs and symptoms of exposure and the appropriate first aid measures to take following a concentrated caustic chemical exposure.
- The contaminated clothing should have been discarded or properly laundered.

ACTIONS TAKEN

The environmental contractor adopted the use of a PPE Hazard Assessment to determine the personal protective measures required to perform specific jobs safely. A sample Hazard Assessment form is available through the Risk Control division of XL Insurance.

Following the accident, safety training meetings were held to stress the importance of selecting, inspecting, and using personal protective equipment based on the chemical specific hazards anticipated.

Employees and supervisors were provided with a review of emergency procedures to follow in the event of a hazardous material accident/incident.

Chemical suits and other PPE of all sizes were ordered to ensure that employees were properly outfitted.

Please contact an XL Insurance risk control consultant at +1 800-327-1414 if you have any questions regarding PPE Hazard Assessments, or other health, safety, or environmental issues affecting your operations.

XL Insurance
505 Eagleview Boulevard
Suite 100
PO Box 636
Exton, PA 19341-0636
Phone: +1 800-327-1414
Fax: +1 610-458-8667
www.xlinsurance.com/environmental

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