

## Maintenance Mechanic Dies After Being Burned by Hot Boric Acid Solution

### SUMMARY

In July 2012, a 64-year-old maintenance mechanic at an aluminum foil processing facility died after being exposed to an approximately 180-degree Fahrenheit solution of boric acid and water while trying to remove a recirculation pump from its housing.

The pump was part of a boric acid evaporation system. The system took several days to completely cool through draining and flushing before it was safe to remove the pump. Workers in another department reported that they had completed draining the system.

As the victim and other workers used two 1.5-ton “come-along” puller devices to free the pump from its housing, a small amount of hot water/boric acid solution fanned out from around the seal. Seconds later, the force of the solution pushed the pump out of the housing, and hundreds of gallons of hot liquid flowed out.

The victim fell to the floor and was covered with the solution. He was wearing no personal protective equipment other than safety glasses, and received severe burns to over 80% of his body.

Some of the workers were able to get him to an emergency shower and began removing his soaked clothing, while others called 911. Emergency responders arrived within fifteen minutes and the victim was airlifted to a burn trauma unit. He died two days later due to his injuries.

### RECOMMENDATIONS

**Washington State Fatality Assessment and Control Evaluation investigators concluded that to protect employees from similar exposure hazards, employers should:**

- Design new equipment for manufacturing processes using the concept of Prevention through Design (PtD) to control risks by incorporating prevention methods in the final product.
- Enforce a comprehensive written hazardous energy control program. Train all potentially exposed workers in the hazardous energy control procedures for the system, and document training.
- Develop written standard procedures for regular maintenance operations. These should include information about hazards, required PPE, necessary safety checks, lockout/tagout procedures, and coordination with other workgroups to be done prior to beginning the task. Ensure that all workers performing maintenance tasks are trained on the procedures.
- Ensure that workers who may be exposed to hot liquids are provided with and use the proper personal protective equipment (PPE) for the job, including appropriate eye/face, hand, and body protection.

**SHARP Publication # 52-43-2018\_summary.** The full version of this investigation report, along with the detailed recommendations and discussions section, can be found at:  
[www.lni.wa.gov/Safety/Research/Face/Files/BoricAcidSolutionBurn.pdf](http://www.lni.wa.gov/Safety/Research/Face/Files/BoricAcidSolutionBurn.pdf)



**Boric acid evaporator recirculation pump.**

The Washington State Fatality Assessment and Control (WA FACE) program is one of many workplace health and safety programs administered by the Washington State Department of Labor & Industries' Safety & Health & Research for Prevention (SHARP) program. It is a research program designed to identify and study fatal occupational injuries. Under a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH grant# 2U60OH008487), WA FACE collects information on occupational fatalities in WA State and targets specific types of fatalities for evaluation.

More information about WA FACE can be found at [www.lni.wa.gov/Safety/Research/FACE](http://www.lni.wa.gov/Safety/Research/FACE).