

TRANSITION FROM LIQUID TO SOLID CHEMICAL

INCIDENT OVERVIEW

In March 2015, at a Client's central utility plant in San Diego, California, an incident brought the critical need for safe chemical handling practices to light.

A site engineer was performing his routine task of topping off a chemical barrel for the cooling tower liquid chemical treatment program with isothiazolin, a very hazardous biocide. Despite wearing the prescribed Personal Protective Equipment (PPE), which included a face shield, chemical apron, and rubber gloves, he sustained a serious injury.

The isothiazolin chemical spilled onto his apron and then ran down onto his pants. He did not realize the extent of the spill until he arrived home and removed his work clothes, revealing blisters on his shins.

Not only is isothiazolin a corrosive chemical, but it is also a skin-sensitizer meaning it causes an allergic reaction after skin contact and can spread rapidly, much like poison ivy.



The engineer's wife attempted to treat the blisters by lancing them and applying hydrogen peroxide. Unfortunately, this led to a painful burning sensation, necessitating a visit to the emergency room burn unit. Although the ER was able to successfully control the chemical burn, he was left with permanent scars and was out on disability leave for two weeks as he recovered from the injury.

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RESPONSE AND SOLUTION

The safety incident accelerated a decision that had already been under consideration for several months: transitioning from liquid chemicals to solid chemicals. Within a week of the incident, the client ordered solid chemicals and feed equipment which was installed and commissioned by Capture H₂O. By the time the engineer returned to work, he found the liquid barrels gone and solid feeders in their place.

Capture H₂O also provides regular safety training included in the service program at every site to ensure that all site personnel are familiar with the Safety Data Sheets (SDS) of the chemicals they are working with.



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BENEFITS OF SWITCHING TO SOLID CHEMICAL

1. Enhanced Safety

- Reduced Spill Risk: Solid chemicals eliminate the risk of spills that can occur with liquid chemicals, thereby minimizing direct contact and potential chemical burns.
- Easier Handling: Solid chemical feeders are easier to handle compared to heavy liquid barrels, reducing the likelihood of accidents caused by lifting and pouring.

2. Improved PPE Efficiency

- Solid chemicals significantly reduce the likelihood of exposure, even if PPE is compromised, as there is no liquid to seep through protective clothing.
- The incident underscored that even with appropriate PPE, accidents with liquid chemicals can lead to severe injuries. Solid chemicals significantly reduce this risk.

3. Simplified Storage and Disposal

- Solid chemicals require less stringent storage conditions compared to liquids, reducing the risk of leaks and contamination. They also take up a significantly smaller footprint, holding chemicals in a solid, concentrated form which is dissolved directly at the point of application.
- Disposal of solid chemical containers is simpler and safer, with fewer regulatory constraints and lower environmental impact.

4. Operational Efficiency

- The transition to solid chemicals streamlined chemical handling processes, allowing for quicker and safer refills.
- Managing the solid chemical feed with smart controllers optimizes chemical use in the system, allowing for optimal scale, corrosion and bacteria control while minimizing water and chemical consumption.
- Reduced downtime and fewer incidents mean that workers can focus more on productive tasks rather than dealing with chemical safety protocols.

CONCLUSION

The switch from liquid to solid chemicals not only improved safety for employees, but also enhanced overall operational efficiency at the site. The accident, while unfortunate, served as a catalyst for change, demonstrating the substantial benefits of solid chemicals in preventing injuries and promoting a safer working environment. This proactive move by the client ensured a safer workplace, safeguarding their employees' health and well-being while optimizing their maintenance processes.



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