

UC Monthly Safety Spotlight, April 2012

Creating a Job Safety Analysis, Using Personal Protective Equipment

Careless Chris Misplaces His Trust...an Imaginary Scenario

Fictitious Principal Investigator Careless Chris supervised a team of hardworking employees in a busy laboratory. He enjoyed his diverse responsibilities in managing lab operations and strategizing about future research projects. Chris had recently filled an open position on his team. According to his resume and interview, Bart, the new hire, was already proficient in the kind of laboratory work he would be performing. He had a top-notch resume and Chris had been impressed with his performance during the job interview. Bart was well-educated, eager and very knowledgeable about the science and technology involved in the research.

Chris was going through a busier-than-normal period, and he was very confident in Bart's experience and intelligence. He wanted Bart to start work immediately, so he decided Bart could postpone attending the required lab orientation classes, which included safety training. He would soon learn that he should have trusted his campus procedures more than Bart's impressive education and convincing resume.

The tests in Chris's lab used a limited number of chemicals but the chemicals were quite hazardous – several strong acids and bases were used, along with a couple of flammable alcohols. One of the more critical new protocols used concentrated sulfuric acid, which had to be diluted right before performing one of the new tests. The lab was getting ready to implement some new test protocols and had scheduled a training to update the workers on the new protocols. This was one of the training sessions that Bart did not attend.

Bart had been on the job for three weeks before the new test protocols were introduced. He was a little nervous because he wasn't familiar with some of the processes. When he heard about the new protocol, he didn't point out to Chris that he didn't fully understand how to perform it. He decided that when the time came, he would just soldier through, maybe ask for some advice, and hope for the best.

When it was time to carry out this particular analysis, Bart asked a co-worker where this dilute acid was stored. The co-worker, not realizing Bart had not attended the recent training, pointed out where the concentrated acid was stored and told him the amount of water to use to dilute the acid to the proper concentration for the test.

After some searching, Bart found where the acid was stored and his co-worker, assuming Bart had been in the orientation class, advised how much water to add. Bart had never worked with acids before but he did know enough to put on a lab coat, safety goggles and some nitrile gloves before measuring out the acid and water to make up the proper concentration. He took a deep breath and prepared to add the water to the acid.

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Since Bart hadn't been in the training class that covered the new procedure, he missed the instructor's admonition to ALWAYS add acid to water rather than the other way around. Dilution of acid by adding water gives off an enormous amount of heat – enough to create instant rapid boiling and violent splatter of the solution, causing heat and chemical burns to the skin and any clothing or equipment. By instead adding acid to water to create the dilute solution, slowly and with continuous stirring, the risk of overheating is minimized.

When Bart added the water to the acid, the solution began to boil and splatter the hot, corrosive solution out of the beaker. Bart got hot sulfuric acid on his lab coat and on his face. Thankfully, he was wearing safety goggles so there was no eye damage. But he did sustain a nasty burn on his face for a while and the lab coat ended up with some significant holes in it.

In the aftermath of the incident, two people were faced with some tough realizations. As supervisor, Chris seriously regretted not following department procedures that required ALL laboratory employees to complete required training. He realized that a great education and convincing resume didn't ensure that an employee automatically had proper safety knowledge for the specific job requirements. New employee Bart was embarrassed to admit he had overestimated his skill, and should have told Chris that he didn't really know how to handle Sulfuric acid, rather than taking a chance on performing the test.

When new protocols or procedures are implemented in the workplace, it's very important for everyone to attend training on those new procedures. If employees are unable to attend any part of the training, they should follow up with their supervisors to make sure they know the proper precautions to take to keep themselves and their co-workers safe. Supervisors can use their experience and leadership to encourage all employees to fulfill their training requirements. Chris and Bart were both glad that the incident did not result in more serious injury. They now have a healthy respect for complete and timely training in ensuring a safe workplace.