Learning by Accident

Learning by Accident is a new Crucible *feature, in which real-life lab accidents are recounted and explained. The goal is to highlight the consequences of ignoring safety rules – so that science educators will be further encouraged to become knowledgeable in areas of safety that affect their daily activities in the science classroom.* ***Submissions are encouraged. If requested, anonymity will be guaranteed.*** *Send written descriptions to: Ian Mackellar, Box 191, Maitland, ON K0E 1P0.*

I was teaching a grade eleven chemistry class. The class was just before lunch. We were using 2 mol/L sodium hydroxide. A young woman spilt the dilute sodium hydroxide on her dark brown corduroy pants but it was difficult to see how much without a very close inspection. She patted her dark pants with plenty of wet paper towels. I asked her if she had removed all the sodium hydroxide. She said she had. I did not check the pants carefully as it was in a very sensitive area.

The next day, her irate mother informed me she had a second degree burn from her knee to her crotch. I apologized both to the parent and to the student.

After the incident I gave much thought about what I should do in the future to prevent any similar occurence. I dismissed the idea of not doing experiments with dilute sodium hydroxide. Instead, I placed in the lab 2 or 3 long lab coats. I informed the students that if any liquid spill occurred(except for water) on any piece of clothing, they were to:

- remove the clothing as quickly as possible (with as little embarrassment to the student)
- rinse the skin well
- wash and dry the clothes thoroughly in the family studies dryer
- wear the long lab coat for the duration of the class until their own clothes were ready.

Although I had many spills occur in my lab, there were no further burns resulting from the use of corrosive chemicals.

« « « By John Henry

John Henry is a teacher in the Hamilton-Wentwork D.S.B. and a current member of the STAO Safety Committee.

Further Comments from the STAO Safety Committee

Most schools probably have bottles labeled 'dilute sodium hydroxide'. But how concentrated is this solution and, more to the point, how concentrated

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should it be ? Often, it will be 1 mol/L or 2 mol/L, for no better reason than that has been the precedent.

Sodium hydroxide is particularly dangerous to the eyes since it is classed as corrosive if it is > or = 0.5 mol/L, and irritant if it is at least 0.05 mol/L. School science would be a lot safer if we were to use sodium hydroxide solutions which are no more concentrated than 0.5 mol/L. Most of the traditional practical activities in school science courses will work just as well with, say, 0.4 mol/L sodium hydroxide.

Soap making, for example, is an exception but in that case the normal bench reagent would not be used and students could be specially warned about the necessity of wearing safety goggles etc. If the concentration of sodium hydroxide solutions is reduced, you might choose to reduce the concentration of other chemicals by an equivalent amount. Not only will it be safer, but you will also save money!