DEAR Labby



Dear Labby,

I read your column regularly and like your advice, so I thought I would run this by you. I'm a new assistant professor and have gotten my lab set up and have hired a very able research assistant; I also recruited a promising postdoc and have no less than three students doing rotations with me. My department is supportive, and I like all my faculty colleagues. Life seemed great until last week when I got a visit from my institution's lab safety people. Aargh! They found numerous violations ranging from how I store various chemicals to how I handle waste. I tried to adopt a cooperative stance but when they told me I could not pour a solution of sodium chloride no more concentrated than pickle juice down the drain, I was exasperated. (They said I had to regard it as chemical waste and that the bottle must be

labeled "sodium chloride," not "NaCl.") I could go on and on about this crazy encounter but will come to the point: isn't much of this just plain foolishness? I am drowning in paperwork and looking at a cart of various bottles of innocuous materials waiting for pick-up by these people. What I should be doing is science!

-Safety Villain

Dear Safety Villain,

First off, you are not a villain, you have just been caught unprepared. You may not have been sufficiently exposed to safety rules and practices as a student or postdoc. At most institutions, students and postdocs are required to take a lab safety course. Moreover, most faculty are "under the gun" from their institution's administration—that is, they recognize that they need both to follow the rules and train their lab members in these important matters. So try not to be defensive and take the broad view. (And if it is of any comfort, Labby had exactly the same reaction when first visited by the lab safety personnel, back when I was at your early career stage.)

We think of all our chemicals as well contained but the proper mindset is to envision worst-case scenarios, for example, two bottles breaking against each other (or vapors from one bottle eroding a metallic container of another). In the case of some strong acids and bases, the confluence can be explosive, incendiary, or both. As regards what can or cannot be poured down the sink, most research institutions have opted, or negotiated with regulatory agencies, to include a wide swath of apparently "benign" substances to demonstrate cooperation and goodwill. Generally, these standards include nonindustrial quantities (10 milliliters to liters) and cover many substances that would not typically be seen as environmental assaults (in such amounts). Thus, a 500-milliliter bottle of one molar sodium chloride is captured in such a program.

Another key, relevant issue is the immediacy with which emergency personnel, usually firefighters, can assess a lab explosion or fire upon arrival. These noble men and women are not PhD chemists but you would be impressed to know how knowledgeable they are about laboratory chemicals. Nevertheless, writing out names of chemicals in word format can save valuable seconds or minutes; indeed this has made the difference in averting disaster in many cases.

Beyond respecting lab chemical safety rules, and following them for their own sake, we scientists need to recognize the inherent dangers that lurk in labs. Some fatalities occur when the danger of a chemical is not fully known. Two decades ago a scientist died from chronic transdermal uptake of a mercury-containing chemical used to denature RNA in an early version of the Northern blot method. She was fully aware of its danger in terms of inhalation or direct skin contact, but it turned out that this chemical passed through latex gloves. These and other tragedies are not due to deficiencies in the lab safety programs of our institutions or to noncompliance. But they serve to remind us of how unpredictable the collusion of chemicals in the lab can be, and the need for vigilance.

Labby is most impressed by the vast knowledge of my institution's chemical safety personnel. The time spent in listening, and learning, from them is part of Labby's ongoing education. It may prevent an accident or injury in my lab. So view your safety personnel's help and advice, and rules, as the one aspect of your training you, I, and many others may have never received, but should now welcome.

Direct your questions to labby@ascb.org. Authors of questions chosen for publication may indicate whether or not they wish to be identified. Submissions may be edited for space and style.

