

**It Was Here Before My Time!**  
**(and other favorite lines given to regulatory agents)**

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**ABSTRACT**

The awareness level has been raised in the academic world regarding environmental, health, & safety issues, especially in light of the initiative brought on by EPA Region 1. While teachers of high school programs may be concerned about improper management of waste chemicals, they sometimes confuse the environmental rules from the health & safety rules, or, they view them as interchangeable. Regulatory agencies may be focusing on research institutions, but they are well aware of a general lack of knowledge regarding environmental regulations at the secondary school level. Labeling chemicals for *use* in labs is different than labeling them *after they are used*.

Protecting the environment (EPA) comes under a different set of regulations than does protecting the employee (OSHA). Teachers in high schools need to be trained to understand what the **Lab Standard** (29CFR 1910.1450) requires, such as what a Chemical Hygiene Officer is, as well as to be told that under the **Resource Conservation and Recovery Act** (RCRA), one cannot simply co-mingle all ones experimental wastes without performing a hazard determination on each waste. Once the teachers are familiar with the laws, an added benefit is the sharing of this knowledge with the students so that they are introduced to environmental regulations.

What is presented here are actual events which occurred at a high school, which found itself dialing **9-1-1** for a minor mishap in a classroom, and realizing the occurrence led them to develop an in-house management system to prevent a re-occurrence.

**Act One, Scene One**

Any High School, Anywhere in the United States. College Chemistry and General Chemistry being taught. Typical acid-base titrations, elementary gas law experiments, and volume measurements. Its near the end of the school year, and the teacher has accumulated all the liquid waste chemicals from the experiments performed throughout the year, and, based on a seat-of-the-pants judgement, decided they could all be safely co-mingled, and, to reduce the volume, he placed the contents in a drying oven. Whether all the liquids were aqueous is assumed, but not necessarily the case. He continues to hold class throughout the day.

**Act One, Scene Two**

Last class of the day, and the oven appears to be smoking. Not only that, but an acrid smell is noticeable in the classroom. Realizing he may have a problem, he dismisses the class immediately, instructing them to leave their belongings behind, and to leave the building. The school is evacuated. The teacher has a room full of smoke and vapors. Now its time to make a decision- to dial 9-1-1 , or not. He does. Fire Departments arrive, HazMat teams are called in, and the State Environmental Protection Response Agents drop by, since they heard about the events on their scanners.

This could be a one-act play, where everything gets cleaned up, no injuries are reported, and no major expenditure is required. The teacher may get a stern look from the principal and/or superintendent and be told to never do THAT again. Or, the principal may decide that he needs to insure that it never happens again. Time to call in a consultant.

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Re-constructing the events that led up to the smoking oven, it was evident that the teacher was not informed of any environmental regulations. And, although the excuse that he was only trying to do the right thing, (reduce the waste volume) was a noble thought, the fact that such an act is considered treatment is a foreign term to him. And, his assertion that most of the waste was *here before my time* does not remove responsibility. Luckily, the principal was of a mindset that such happenings would not happen again under his watch, and did not renew this teachers temporary appointment. Perhaps it was the inevitable and unceasing number of phone calls from parents, inquiring whether their childrens clothes should be destroyed; or, since their bookbags and purses were left in the classroom, did this pose a threat of contamination? If their child develops a cough, is it related to the event? Thoughts of liability run through his head..

The approach taken to bring the teachers awareness level up to a point where prudent actions would be taken began with a training session. As obvious as it would seem to some people, teachers need to be told what can and cannot be poured into a sink, what chemicals can safely be stored together, and which ones should have no business being in a high school classroom. In this particular school, everything from lecture bottles of pure chlorine, to a half-pound of chloral hydrate, to elemental phosphorous, were found in the stockroom. *It was here when I came on board I think the local university donated it to us, back in the 60s No, Ive never used any of that, and never intend to The head of the Science department wants to keep that, just in case she wants to use it someday*

The answers are common, and, as excuses, they are flimsy. EPA doesnt care if the old chemicals were here before your time, or that someone might need it someday. They want evidence that someone is in control over the inventory. Which brings up the *accountability factor*. Someone has to be responsible, and it leads to the introduction of the term CHEMICAL HYGIENE OFFICER. The science teachers in this high school viewed the term as a burdensome, thankless job. It must be introduced in a positive light, and, as something that they are already doing. After all, a teacher is the one covered by OSHA, is responsible for applying safety rules in the classroom.

It was evident in the case of this particular high school during the training session, that the science teachers needed to work more closely together. Questions arose regarding the alcohol used in biology labs. It had always been disposed of down the sink. Teachers need to be made aware of local wastewater permits- maybe their municipality would allow it, if the paperwork was in order. But RCRA views waste ignitable solvents as hazardous waste, and even water-soluble alcohol fits that definition.

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This high school lab also had the usual RCRA violations- funnels left in waste bottles, no labels with the words Hazardous Waste, no contents itemized- EPA has seen it all before, in countless labs. One teachers comment that *everyone should know what MeOH stands for* is yet another example of how one population may view safety labeling differently from a regulatory agency.

None of the staff could produce the Material Safety Data Sheets for the chemicals used in their respective laboratories. Once they were shown how easy the MSDSs could be downloaded from the web, they began to see that being a CHO may not be the burden they once thought it was. The links provided from <http://hazard.com> and from universities allow access to MSDSs.

Other resource materials can be downloaded from the Lab Safety Institute ([www.labsafety.org](http://www.labsafety.org)), and software for educational systems can be purchased by visiting [www.safechem.com](http://www.safechem.com).

As mentioned earlier, this high schools stockroom was an example of no one taking responsibility. The accumulation of old, unstable, and unlabeled chemicals would have filled an EPA inspectors citation notebook. The presence of the

chloral hydrate, while not regulated under RCRA, nevertheless needed to be disposed of by the Drug Enforcement Agency, being a designated Controlled Substance. The science teachers had no idea of its characteristics.

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After the teachers are trained in the applicable regulations, after they have performed an inventory of their chemical stockrooms, and after they have written a Chemical Hygiene Plan, one has to develop a system of *sustainability*. Once there is a designated Chemical Hygiene Officer, that person need look no further than his/her PC to maintain compliance. Well, that, and resources, and commitment from administration.

Many state departments of education have resource materials available on-line. By going to Connecticut's Department of Education web page [www.state.ct.us/sde/dtl/curriculum/currsci.htm](http://www.state.ct.us/sde/dtl/curriculum/currsci.htm) one has access to two publications: **Key Issues in School Lab Safety**, and **Science & Safety- Making the Connection**. The latter was developed by the Council of State Science Supervisors (<http://www.enc.org/>), and is geared towards grades 9-12.



It provides readers with other web sites to access safety information, and addresses the legal responsibilities science teachers should be aware of.

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The principal of the school actually found out that the state's Environmental Protection Agency provided grant funding for schools to help pay for the cost of removal and disposal of unwanted chemicals. That was the incentive needed to act. By requiring the staff to evaluate each and every chemical in the stockroom, three benefits were within reach. One, they would finally know exactly what they had; two, they would only keep what they needed; and three, everything else could be taken away at no cost to the school.

One science teacher took the lead as chemical waste coordinator. The remaining teachers agreed that the role of Chemical Hygiene Officer could be a shared one- and that it may be more efficient to call it a Chemical Hygiene Committee. Of course, the physics teacher felt that, since he did not use any chemicals, he felt his department should be excused from the responsibility, but, there was enough peer pressure to make him at least agree to be part of the group.

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Although this particular event turned out OK for this school system, it could have become a different story. Had the teacher not evacuated the classroom, I'm sure there would have been students complaining of respiratory problems. The issue of negligence leading to suits against the municipality are easy to envision. If the teacher had tried to remedy the situation himself, and in the process become injured, there could have been an OSHA investigation. The inspector would have asked about a written Chemical Hygiene Plan, a designated CHO, where the MSDSs were, and, had the teacher received any training.

If the State's Response Team thought there was need for an investigation, the RCRA inspector would have asked about what system was in place to manage hazardous waste. The issues of labeling, storage, and training would have come up. It's easy to see how a simple procedure- trying to reduce the volume of a mixture of wastes- could have become a complex public relations nightmare.

In conclusion, the lesson to be learned is that excuses tend to be based on human nature- true, the 40-year-old bottle of

benzoyl peroxide was there **before your time**, but, the regulations are in place **during your time**.

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