

Managing Safe Science Labs

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What is the size of your science classroom? Many of our newest classrooms are very small and crowded. Many older small classrooms are converted into science rooms simply because more science classes are needed at the school site. According to the Education Code, science is considered an academic class rather than a shop class. Sounds good at first until you learn that legally, academic courses do not require as much space as shop classes. Most of these classrooms are set up for lectures and not labs. Seating is provided with individual student arm desks rather than lab tables. Electricity and water are available only around the perimeter of the room and perhaps only on one wall of the room. Making such rooms a safe place for laboratory experiences is a challenge.

Safety needs to be in the forefront of any plans for lab science. First is safety for students and teacher, and next, safety for equipment. Unfortunately, many of our newest teachers are assigned the smallest, poorest equipped classrooms. So, how does a teacher in such a room provide a comprehensive science opportunity for students?

It may sound funny, but safety is no accident. You have to plan for safety. It isn't enough to tell students to be safe, read the instructions and no horseplay. Safe behavior must be taught and enforced. Every student who participates in lab should be provided safety instruction and be tested on it before any labs occur. Safety contracts should be signed by both student and parent/guardian before any labs occur. Teachers should keep the signed safety contracts in a binder in the classroom. Many science supply companies have safety contract samples that can be utilized by teachers. The *California Science Safety Handbook* is a recommended resource in all lab classrooms. The handbook provides safety rules and contracts that are designed for each type of science class. It is one of the best ways to spend \$18 there is, especially for new science teachers.

Each time a lab is provided, safety rules should be reinforced. Safe techniques should be demonstrated as part of the lesson, and it is recommended that you write any special safety measures in your lesson plan as a record or note which safety rules were mentioned that day.

Consider how students need to move around the lab area to obtain materials and complete a lab procedure. Determine that pathways to and from equipment and water sources are clear of debris and hazards. This is hard to do in small rooms. It may be necessary to practice moving individual student desks into a format to provide a lab area. With practice, students can reorganize a room in less than 60 seconds. You will have to plan how to

group students and then have students practice the conversion several days in a row to get the procedure clear.

It is important for the teacher to also consider how he/she can move about the room from station to station, and also keep all student groups visible at any time. Organizing the lab areas so that you can move around the perimeter is helpful. In this way, you are able to keep your class groups in front of you. A glance upwards brings everyone in range rather than having student groups behind you.

Many students have had few, if any, lab experiences prior to high school and may not know how to behave in a laboratory situation. It may be necessary to teach using more demonstrations. Rather than you demonstrating, though, have students carry out the procedure as the demonstration for the rest of the class. Students can earn the privilege of becoming lab technicians. None of this is easy. It is worth it. The reward is a safer science classroom where students get to "do" science, not just read about it.

The Science Safety Handbook can be found on the CDE website at cde.ca.gov/pd/ca/sc/documents/scisafebk.pdf.

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