

Chapter 5

Legal Aspects of Teaching Science

5.1 Civil Liability for Injury

Teachers and administrators often worry about their liability — can they be sued? While it is impossible to state that districts and teachers will never be liable for injury caused in science laboratories, there is limited district and teacher immunity from claims for simple negligence. According to the Illinois School Code (105 ILCS 5/24-24):

Subject to the limitations of all policies established or adopted under Section 14-8.05, teachers, other certified educational employees, and any other person, whether or not a certified employee, providing a related service for or with respect to a student shall maintain discipline in the schools including school grounds which are owned or leased by the board and used for school purposes and activities. In all matters relating to the discipline in and conduct of the schools and the school children, they stand in the relation of parents and guardians to the pupils. This relationship shall extend to all activities connected with the school program including athletic and extracurricular programs and may be exercised at any time for the safety and supervision of the pupils in the absence of their parents or guardians.

Nothing in this Section affects the power of the board to establish rules with respect to discipline; except that each board shall establish a policy on discipline, and the policy so established shall provide, subject to the limitations of all policies established or adopted under Section 14-8.05, that a teacher, other certified employee, or any other person, whether or not a certified employee, providing a related service for or with respect to a student may use reasonable force as needed to maintain safety for the other students, school personnel or persons or for the purpose of self defense or the defense of property, shall provide that teacher may remove a student from the classroom for disruptive behavior, and shall include provisions which provide due process to students. The policy shall not include slapping, paddling, or prolonged maintenance of students in physically painful positions nor shall it include the intentional infliction of bodily harm.

This doctrine of *in loco parentis* (105 ILCS 5/24-24, 38-84a) has been upheld in court to afford certified staff the same type of immunity from civil liability for actions necessarily arising from the student-teacher relationship as a parent would enjoy for actions arising from the parent-child relationship (see *Cates v. Cates*, 156 Ill.2d 76, 1993). The Illinois Supreme Court has specifically noted the immunity of certified staff acting *in loco parentis* is limited to those duties necessitated by the need to maintain discipline and authority. The district, and its staff remain immune under certain circumstances under the local government and Governmental Employees Tort Immunity Act (745 ILCS 10/1-101). Willful or wanton misconduct is not subject to immunity.

Whether an injury arose from negligence or from actions necessary related to the student-teacher relationship will be determined from the facts in any given circumstance. It is impossible to speculate as to possible liability in any given situation. To minimize claims of liability, districts and teachers should follow the district policies on laboratory conduct and comply with the applicable laws and rules.

To defend against claims of negligence, Gass recommends the following steps for a teacher to take.¹ These actions must be documented in case of future legal action since a lawsuit may be initiated years after the incident. This documentation could include a signed safety contract, results of a safety quiz, pre-lab tests with safety questions, and

safety rules written into a laboratory notebook prior to performing the experiment. A reasonable and prudent teacher would:

1. provide prior warning of any hazards associated with an activity;
2. demonstrate the essential portions of the activity;
3. provide active supervision;
4. provide sufficient instruction to make the activity and associated risks understandable;
5. insure all necessary safety equipment is available and in good operating condition;
6. have sufficient training and equipment available to handle an emergency;
7. insure the place of the activity is as safe as reasonably possible.

5.2 Illinois State Law

5.2.1 Eye Protection

Students, teachers, and visitors are required by Illinois law to wear approved eye protection when participating in laboratory activities.² Appropriate eye protection has the code "Z87" stamped somewhere on the eyewear and is suitable for the circumstances and hazards for which it is being used.

Every student, teacher, and visitor is required to wear an industrial quality eye protective device when participating in or observing any of the following courses in schools, colleges and universities:

a) vocational or industrial arts shops or laboratories involving experience with the following: hot molten metals; milling, sawing, turning, shaping, cutting, grinding, or stamping of any solid materials; heat treatment, tempering or kiln firing of any metal or other materials; gas or electric arc welding; repair or servicing of any vehicle; caustic or explosive materials;

b) chemical or combined chemical-physical laboratories involving caustic or explosive chemicals or hot liquids or solids. Such devices may be furnished for all students and teachers and shall be furnished for all visitors to such classrooms and laboratories. The State Board of Education shall establish nationally accepted standards for such devices. (105 ILCS 115)

5.2.2 Health/Life Safety Code

Every 10 years or as required by the Illinois State Board of Education or regional superintendent, each school board shall survey its school buildings and execute any recommendations in accordance with the procedures set in the Health/Life Safety Code. An architect or engineer licensed in the state of Illinois is required to conduct the surveys and make a "safety survey report"

The school board approves the report and submits it to the regional superintendent. The regional superintendent may approve or deny the report and submit it to the state superintendent of education, who also may approve or deny it. If approved, the report gets a certificate of approval. Upon receiving the certificate of approval, the regional superintendent shall issue an order to effect any approved recommendations included in the report. Items should be prioritized. Urgent items shall be related to lifesafety problems that present an immediate hazard to the safety of students. Required items are those necessary to a safe environment but presenting a less immediate hazard to the safety of students. Urgent and required items shall reference a specific rule in the code that is currently being violated or will be violated in the next 12 months if the violation is not remedied. Urgent items should be corrected as soon as achievable. Required items

shall be corrected in a timely manner, but no more than three years from the state superintendent's approval of the recommendation.

5.3 Federal Laws

In 1970 the U. S. Congress passed the Occupational Safety and Health Act. This act requires that certain precautions be observed to protect the safety and health of employees on the job. Teachers are considered employees under this act, but students are not covered. Under this act, OSHA (Occupational Safety and Health Administration) was established to regulate worker health and safety. NIOSH (National Institute for Occupational Safety and Health) was created as a service and information agency. In Illinois, public school teachers and all public sector employees are covered under the Illinois Health and Safety Act (1986) administered by the Illinois Department of Labor. Private school teachers are covered under federal OSHA.

The U.S. Environmental Protection Agency (EPA) has responsibility for the regulation of chemicals in the air, in water, and on land. The Illinois Environmental Protection Agency (IEPA) has regulatory authority in Illinois. The U.S. and Illinois departments of transportation have authority over the shipping of chemicals and their transportation over public roads. These agencies may regulate the moving of chemicals from one building to another or the transporting of chemicals for disposal.

The following table is a brief summary of some of the legislation that regulates the handling of chemicals. The citations are from the Code of Federal Regulations (CFR) and National Fire Association Protection Association (NFPA) codes.⁴

Act Activity Regulated Reference

Asbestos Asbestos materials 40 CFR 61

34 CFR 230, 763

Chemicals in Drinking Water Chemicals in drinking water 40 CFR 141, 144

Clean Water Act Control of discharges of hazardous substances

40 CFR 100, 401

Comprehensive Environmental

Response, Compensation, and

Liabilities Act (CERCLA)

Responsibility and compliance for
hazardous materials

40 CFR 302, 305, 306

Federal Insecticide, Fungicide and

Rodenticide Act (FIFRA)

Use of pesticides 40 CFR 150-199

Lead Contamination Control Act Lead in water supplies Public Law 100-572, October
1988

National Fire Protection Association

(NFPA)

Storage of flammable liquids NFPA Code 30

Protection of life and property in
laboratory settings.

NFPA Code 45

Life safety, technical standards for
fire prevention and safety.

NFPA Code 101
Occupational Safety and Health
Administration (OSHA)
Allowable standards in the
workplace.
29 CFR 1910
Occupational exposure to hazardous
materials in laboratories
29 CFR 1910.1450
Hazard communication standard 29 CFR 1910.1200
Occupational exposure to bloodborne
pathogens
29 CFR 1910.1300
Compressed gas standard 29 CFR 1910.101
Flammable liquids 29 CFR 1910.106
Eye/face protection 29 CFR 1910.133
Respiratory protection 29 CFR 1910.134
Quick drench 29 CFR 1910.151
Portable fire extinguishers 29 CFR 1910.157
Automatic sprinkler systems 29 CFR 1910.159
Record keeping requirements 29 CFR 1910.20
Protection of Stratospheric Ozone Release of freon to the Atmosphere 40 CFR 82
Radioactive Materials Hazardous radioactive materials 10 CFR 19, 20
Resource Conservation and
Reauthorization Act (RICRA)
Disposal of hazardous materials 40 CFR 241
Superfund Amendments and
Reauthorization Act (SARA)
Reporting, planning, and training
regarding hazardous materials
40 CFR 300
Toxic Substances Act (TOSCA) Chemical information, rules, PCBs 40 CFR 712, 716
Federal Hazardous Materials
Transportation Act
Transportation, labeling, handling,
training, classification, description,
marking, packaging, loading, and
storage of hazardous chemicals
49 CFR 107-180

6

7

5.3.1 Bloodborne Pathogens

Concerns about workplace exposures to bloodborne pathogens led the Occupational Safety and Health Administration (OSHA) to issue regulation 29 CFR 1910.1030 in 1991. This regulation was adopted by the Illinois Department of Labor in 1993 (Illinois Revised Statutes Ch. 48, Sec. 137.3 & 137.4).

The new standard requires employers to prepare an exposure control plan to bloodborne pathogens. The employer must perform an exposure determination to identify employees who may incur occupational exposure to blood or other potentially infectious materials. The exposure control plan must include a schedule and method of implementation for the various requirements of the standard. One requirement is the adoption of universal precautions to prevent exposure to bloodborne pathogens such as HIV (human immunodeficiency virus) and Hepatitis B (HBV). This statute applies to not only blood but to other body fluids contaminated with visible blood (section 6.5). Since all such specimens are to be considered infectious, adherence to these universal precautions and decontamination procedures are important for school nurses, coaches, janitors, and any teacher who might administer first aid or clean up a spill of body fluids, such as a nose bleed. Since cuts are the most common injury in science labs, teachers and school nurses need to be familiar with this policy.

5.3.2 Hazard Communication Standard (Right to Know)

In 1983 the Federal Hazard Communication Standard (29 CFR 1910.1200) became law. In 1984 Illinois adopted this standard as the "Toxic Substances Disclosure to Employees Act" (Public Act 83-248) — also known as the "Right to Know" law. Basically, this law requires employers whose employees use toxic substances to provide these employees with (1) material safety data sheets (MSDSs) that describe the properties, safe handling, and health hazards of toxic materials; (2) labeling of all toxic substances with product name and a hazard warning; and (3) annual training on the hazards of toxic substances, safe handling procedures, and how to read MSDSs.

8

5.3.3 Occupational Exposures to Hazardous Chemicals in Laboratories

In 1992 Illinois adopted the federal "Occupational Exposures to Hazardous Chemicals in Laboratories" legislation (29 CFR 1910.1450). This legislation requires all employers who are engaged in the laboratory use of hazardous chemicals to develop a chemical hygiene plan that details how each employee will be protected from overexposure to hazardous chemicals and describes specific work practices and procedures in the laboratory to minimize employee risk. Students are not considered employees under this law. However, this standard is based on the assumption that safety experts agree on a set of standards and practices for laboratory work that should be integrated into the chemical hygiene plan. This body of knowledge becomes the professional standards by which a teacher could be judged for negligence. Components of the chemical hygiene plan are:

1. designation of a chemical hygiene officer to oversee the implementation of the chemical hygiene plan;
2. standard operating procedures for working with hazardous chemicals;
3. criteria that would trigger the implementation of exposure control measures including engineering controls, personal protective equipment, and hygiene practices;
4. procedures to ensure the proper functioning of fume hoods and other protective equipment;
5. employee information and training;
6. any circumstances in which a laboratory operation, procedure, or activity will require prior approval from the employer;
7. provision for medical consultation, surveillance, and examination;

8. provisions and procedures for designation of specific areas for handling particularly hazardous materials.

The chemical hygiene plan is a comprehensive plan for schools and covers all aspects of chemical safety in laboratories. A sample chemical hygiene plan is included in chapter 12 of this manual and may be modified for local needs. The chemical hygiene plan provides a way to get the entire school concerned with safety and could form part of the school safety plan. It is important to remember that the chemistry teacher is not the only person in the school who handles hazardous chemicals. Custodians who use cleaners, grounds people who use pesticides, teachers in art, print, and shop classes all use hazardous chemicals. Safety is everyone's business.

5.3.4 Americans with Disabilities Act

Congress passed the Rehabilitation Act of 1973 and the Individuals with Disabilities Education Act of 1975 to ensure that:

No otherwise qualified handicapped individual...shall, solely by reason of his handicap be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

Both public and private schools are required to comply with provisions of the Americans with Disabilities Act of 1990. The Committee on Chemists with Disabilities of the American Chemical Society has published a manual *Teaching Chemistry to Students with Disabilities* that provides information for science teachers in regard to the classroom, laboratory, computer use, laboratory safety, and testing and evaluation. Handicapped students are entitled to a level of laboratory experience appropriate to the individual student. Illinois public facilities are required to meet the Environmental Barriers Act.⁶

5.4 How Can I Get Action?

When a safety problem is noticed, what steps should be taken? The science teacher is usually perceived to be the in-house expert and should use her/his best judgment to evaluate the situation and make a recommendation in writing to the safety committee, chemical hygiene officer, department head, and building principal.

Where can the teacher go to get input on his/her assessment of the situation? The school's written safety policy is a good place to start. If the school does not have a written safety policy, one should be developed as soon as the situation is resolved. The teacher may get input from teachers in other districts, local members of professional organizations such as the Illinois Association of Chemistry Teachers, Illinois Science Teachers Association, American Chemical Society, or the local fire department. The letter requesting correction of a safety concern should stress the importance of safety and ask for a written response within ten working days. If no action is taken, the letter might be sent to the school board as a second step. A third step could be to send the letter to the school's insurance carrier. The letters could be sent registered mail to provide a record of receipt.⁷ A sample "Request for the Correction of Safety Concern" is included. The following steps should be included in your written report:

1. a clear statement of the problem,
2. a list of possible solutions,
3. the recommended solution,
4. estimated cost.

The problem should be classified according to a priority system. One priority system could be (1) conditions that are immediately life threatening; (2) conditions that fail to

meet current standards but are not immediately life threatening; and (3) other conditions that need to be corrected. Once the priorities are established, their remedies can be planned and budgeted.

5.4.1 Sample Request for Correction of Safety Concern¹¹ **Request for Correction of Safety Concern**

(Date) (School) (Room)

The following is a safety concern in the science area:

Because this request is such an integral part of the safety policy of our department, written response is expected within 10 working days.

(Name)

(Signature)

cc. (Step 1) Department Chair, Safety Committee, Chemical Hygiene Officer,
Building Principal

(Step 2) School Board

(Step 3) Insurance Carrier

5.5 References

1. Gass, J. R. 1990. Chemistry, Courtrooms, and Common Sense: Part I: Negligence and Duty. *J. Chem. Educ.* 67:51-55
2. Illinois State Bar Association. 1992. Eye protection in school act. In *Illinois Compiled Statutes*, ed. :105 ILCS 115.
3. Illinois State Bar Association. 1992. School Building Code. In *Illinois Compiled Statutes*, ed. :105 ILCS 5/2-3.12.
4. CHEMIS. 1994. *CHEMIS: Chemical Health and Environmental Management in Schools ¾ Administrative Manual*. Independence, MO: Pan-Educational Institute
5. Kucera, T. J., ed. 1993. *Teaching Chemistry to Students with Disabilities*. Washington, D.C.: American Chemical Society. 3rd ed.
6. Illinois State Bar Association. 1992. Environmental barriers act. In *Illinois Compiled Statutes*, ed. :410 ILCS 25.
7. Flinn Scientific Inc. 1994. *Flinn Scientific Safety Seminar: Practical Solutions to Laboratory Safety Problems*, video tape.
8. Gerlovich, J. A. et al. 1990. *The Total Science Safety System*. Waukegan, IA: Jackel, Inc. 6th ed.