**National Science Teaching Association**
**Position Statement**

# Liability of Science Educators for Laboratory Safety Position Statement

## Introduction

Laboratory investigations are essential for the effective teaching and learning of science (NSTA 2007). A school laboratory investigation ("lab") is an experience in the instructional space (e.g. laboratory, classroom, or the field) that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3). Throughout grades K–12, students should have the opportunity to carry out scientific investigations and engineering design projects (NRC 2012).

Inherent in laboratory-based activities is the potential for injury. As professionals, teachers of science have a duty or standard of care to ensure the safety of students, teachers, and staff. Duty of care is defined as an obligation, recognized by law, requiring conformance to a certain standard of conduct to protect others against unreasonable risk (Prosser et al. 1984, NSTA 2014a). "The breach of a particular duty owed to a student or others may lead to liability for both the teacher and the school district that employs that teacher" (Ryan 2001). As such, a science educator must act as a reasonably prudent person would in providing and maintaining a learning and working environment for their students and staff that is as safe as possible.

Educators' duty to maintain the safest learning environment possible while providing science instruction should be shared by school leaders, district administrators, school boards, parents, and students. It is vital that teachers and administrators communicate regularly and fully on the essentials of safety instruction for students and staff.

NSTA recommends science educators—including those at the elementary level—adhere to the better professional practices and legal safety standards outlined in the NSTA position statement, *Safety and School Science Instruction*, and be proactive in ensuring that school and school district leaders know and are adhering to these safety expectations.

## Declarations

To provide and maintain a learning and working environment for students and staff that is as safe as possible, NSTA recommends that science educators

- exercise reasonable judgment when conducting laboratory investigations;

- accept the duty of care to provide all students and staff with the safest environment possible when performing hands-on science investigations or demonstrations in the instruction space (laboratory, classroom, or field setting); using, storing, disposing/recycling, or transporting biological, chemical, or physical materials; or engaging in related activities;
- share the responsibility with school district officials in establishing and implementing written safety standards, policies, and procedures, and ensure their compliance is based on legal safety standards and better professional practices;
- be proactive in seeking professional learning opportunities to implement practices and procedures necessary to conduct laboratory science investigations that are as safe as possible, including specific training on storage, use, and disposal of biological, chemical, and physical materials; use of personal protective equipment; engineering controls; and proper administrative procedures (Roy 2006);
- conduct regular preventative maintenance (as required under OSHA, NFPA, etc. legal safety standards and under ACS, NSELA, NSTA, etc. better professional safety protocols) on engineering controls (e.g., eyewash, shower, ventilation) in science instructional spaces (e.g. laboratories, classrooms, etc.) and related areas (e.g. storerooms, preparation rooms, etc.) and ensure controls are accessible and appropriate for the specific class subject, type of investigation, and student development level;
- modify or select alternative activities to perform when the proposed activities cannot be performed safely or a safer environment cannot be maintained, based on hazards analysis, risks assessment, and available safety actions;
- identify, document, and notify school and district officials about existing or potential safety issues that impact the learning environment, including hazards such as class-size and/or occupancy load overcrowding in violation of occupancy load codes (ICC 2024, NFPA 2024) or contrary to safety research (West and Kennedy 2014), inadequate or defective equipment, inadequate number or size of labs, or improper facility design (Motz, Biehle, and West 2007), and give necessary recommendations to correct the issue or rectify a particular situation (see NSTA safety statement for specific recommendations); and
- understand the scope of the duty of care in acting as a reasonably prudent person in providing science instruction, and acknowledge the limitations of insurance in denying coverage for reckless and intentional acts, as well as the potential for individual liability for acts outside the course and scope of employment. [*See generally*, Restatement (Second) of Torts §202. 1965; Anderson, Stanzler, and Masters 1999, p. 398.]

To provide and maintain a learning and working environment for students and staff that is as safe as possible, NSTA recommends school district officials, including administrators, principals, assistant principals, science supervisors, and superintendents:

- review existing school or employer insurance policies to ensure adequate liability insurance coverage for laboratory-based science instruction;

- develop and implement comprehensive safety policies with clear procedures for engaging in lab activities; ensure that these policies comply with all applicable local, state, and federal health and safety codes, regulations, ordinances, and other rules established by the applicable oversight organization, including the Occupational Safety & Health Administration (OSHA), International Code Council (ICC), and National Fire Protection Association (NFPA); and be reviewed and updated annually in consultation with school or district science educators;
- ensure better professional safety practices by following safety recommendations of established organizations, such as NSTA and its affiliates, the National Science Education Leadership Association, and the American Chemical Society;
- become knowledgeable of and enforce all local, state, and federal codes and regulations to ensure a learning environment for students and staff that is as safe as possible (Particular attention should be given to hazard prevention, including reasonable class sizes to prevent overcrowding in violation of occupancy load codes (ICC 2024, NFPA 2024) or contrary to safety research (West and Kennedy 2014); adequate number or size of labs (Motz, Biehle, and West 2007). Attention should also be given to replacement or repair of inadequate or defective equipment, and the proper use, storage, disposal, or recycling of biological, chemical, and physical materials.);
- understand that the number of occupants allowed in the laboratory must be set at a level based on building and fire safety codes; size and design of the laboratory teaching facility; biological, chemical, or physical hazards; and students' needs (NSTA 2015a; Roy 2006);

  *Note: Science classes should have no more than 24 students to allow for adequate supervision during science activities, even if the occupancy load limit might accommodate more (NSTA 2014b). It is equally important to ensure adequate workspace for each student. NSTA recommends 60 sq. ft. for each secondary student and 45 sq. ft. for each elementary student in a laboratory/classroom setting (Motz, Biehle, and West 2007).

- require teachers to work together with the school employer to develop, maintain, and implement chemical hygiene plans based on OSHA's Laboratory Standard (Occupational Exposure to Hazardous Chemicals in Laboratories) criteria (OSHA 29 CFR 1910.1450) and Right to Understand Standard (OSHA 29 CFR 1910.1200);
- obtain materials and resources from national, state, and local organizations that will inform and educate teachers about safer laboratory activities, safety procedures, legal safety standards and better professional safety practices in the teaching of science;
- provide teachers with sustained, comprehensive training in lab logistics—including setup, safety, management of materials and equipment, and assessment of student practices—at the time of initial assignment and before being assigned to a new exposure situation (OSHA 29 CFR 1910.1450[f][2]) (This should include storage, use, and disposal of biological, physical, and

chemical materials; use of personal protective equipment; engineering controls; and proper administrative procedures.);
- ensure that the custodial and/or plant and facilities staff conduct regular preventative maintenance on engineering controls (e.g., eyewash, shower, ventilation) in science instructional spaces (e.g. classrooms and laboratories) and ensure controls are accessible and appropriate for the specific class subject, type of investigation, and student development level;
- ensure that teacher training occurs on an annual basis to keep teachers well informed about changes in safety procedures (NSTA 2015b);
- support the decisions of teachers to modify or select alternative activities when the proposed activities cannot be performed safely; and
- conduct annual safety audits to ensure school science facilities are as safe as possible and are adequately supplied and properly equipped (Motz, Biehle, and West 2007; Ryan 2001).

To ensure a learning environment that is as safe as possible, NSTA recommends that members of the school board:

- support the continual improvement of school science facilities and science curriculum and instruction, and if possible, conduct a districtwide review of science facilities and instruction every three to five years;
- ensure that the district has adequate insurance to cover liability claims arising in the science instruction spaces (e.g.classroom/laboratory) and related areas (storerooms, preparation rooms, etc.); and
- adopt districtwide policies for safety, including guidelines for a working environment for all employees that is as safe as possible.

*—Adopted by the NSTA Board of Directors, September 2007*
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**References**

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**Additional Resources**

Americans with Disabilities Act of 1990 (ADA).
See www.usdoj.gov/crt/ada/adahom1.htm and www.ada.gov/pubs/ada.htm.
Individuals with Disabilities Education Act (IDEA).
See www.ed.gov/offices/OSERS/Policy/IDEA/index.html and www4.law.cornell.edu/uscode/20/1400.html.
International Code Council (ICC). See www.iccsafe.org.
National Fire Protection Association (NFPA). See www.nfpa.org.
National Research Council (NRC). 2006. *America's lab report: Investigations in high school science*. Washington, DC: National Academies Press.
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See www.osha.gov.