

Middle School Laboratory Safety Course

Professional Development Outline

For more than 30 years Flinn Scientific has been considered the leader in laboratory safety by high school and middle school science teachers and administrators. We developed the Flinn Scientific Chemical Storage Pattern that is used by a majority of schools across the country to safely store laboratory chemicals. Flinn Scientific annually publishes the world-renowned *Flinn Scientific Catalog/Reference Manual*, which provides teachers with over 50 pages of laboratory safety articles and chemical disposal information.

Flinn Scientific has trained more than 100,000 teachers on classroom and laboratory safety through workshops, seminars, and monthly Department Safety Training Notes email—earning the reputation of being the science teacher’s “Safer Source for Science Supplies.” Now, all science teachers have the opportunity to become “Flinn Certified” in classroom laboratory safety. To be “Flinn Certified” means that you have received training from a company that is recognized nationwide by both teachers and administrators as the “go to” source for school science laboratory safety information.

You may become “Flinn Certified” by completing our Middle School Laboratory Safety Certification Course. This is a comprehensive online safety training video series that covers the 40 video chapters listed below. The total viewing time for the videos is just over six clock hours and this viewing time is tracked by the course software. If you are completing the course for certification, you will not be able to proceed to the next video in the course until the time requirement for the video chapter you are currently viewing is fulfilled. The 40 video chapters in the course comprise 10 different units organized by topic. You will be required to complete a 12 question assessment at the end of each unit and will not be able to proceed to the next unit until a minimum passing requirement is met. (*Note: There is not an assessment after Units I and X*).

Once all of the video chapters have been viewed to completion and all eight unit exams have been passed, you will be able to print a certificate of completion for the course. This certificate will note the date of completion and the name of the teacher that has been certified. The certificate is valid for three years from the completion of the course. You will also be able to print a document of professional development after you have completed the course. This form can be found by selecting your state on the Professional Development section of the Flinn Scientific Laboratory Safety Course Web site. The professional development document will include the clock hours spent in training and the content that was covered. You can also print a sample of this document from any of the state professional development pages.

Unit I. Introduction and Overview

Chapter 1 Why Safety Is Important!

Flinn Scientific’s goal is to provide the necessary knowledge you need to successfully and safely teach science. We identify and discuss most common safety issues, providing logical and affordable solutions.

Unit II. Safety—The Teacher’s Duty of Care

Chapter 2 The Teacher’s Duty of Care

Teachers are responsible for providing instruction, supervision, and a safe learning environment in their science classrooms.

Chapter 3 Legal Foundation of Negligence

Negligence and liability are determined based on whether a teacher has followed the required duty of care.

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Chapter 4	Causes of Laboratory Accidents	Learn how to prevent accidents in the science lab by reviewing common causes of accidents and identifying responsible solutions to avoid these problems.
Chapter 5	Legal Analysis—Teacher’s Duty to Instruct and Warn	Teachers are responsible for demonstrating proper laboratory techniques and discussing potential safety hazards before laboratory activities.
Chapter 6	Ideas to Demonstrate You Are a Responsible Science Teacher	Staff scientist Janet Hoekenga discusses how teachers can set the precedent that they have acted responsibly and proactively with respect to safety in the science lab.

Unit III. Chemical and Laboratory Safety Regulations

Chapter 7	Hazard Communication and the Laboratory Standard	Specific actions are required in order to properly follow both the Hazard Communication and the Laboratory Standards.
Chapter 8	Laboratory Ventilation and Use of Fume Hoods	Laboratory ventilation must be well-designed, meet specific criteria, and be regularly tested for proper functionality.
Chapter 9	Material Safety Data Sheets and Chemical Label Requirements	Material Safety Data Sheets require specific information, which can then be included on the chemical label.
Chapter 10	Five-Minute Safety Inspection	This brief safety inspection ensures that the most crucial items in the science lab are in proper working condition.
Chapter 11	Emergency Alert and First Aid	Emergency alerts and first aid procedures should be in place and practiced before the event of an accident.

Unit IV. Principles of Toxicology

Chapter 12	Basic Principles of Toxicology	Toxicology depends on variables such as dosage and routes of exposure.
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Chapter 13 Relative Toxicity—Understanding and Assessing Risks In order to understand toxicity it is important to understand the basic terminology and guidelines.

Chapter 14 FAQs—Applying the Principles of Toxicology Learn how to protect yourself against toxic chemicals and the steps regulatory agencies take to protect end users.

Unit V. The Use of Personal Protective Equipment

Chapter 15 Goggle Safety Proper eye protection that is suitable for a given activity should be worn in the laboratory at all times. This basic rule must be strictly enforced by the instructor.

Chapter 16 Aprons, Gloves, and Other PPE In addition to goggles, students and teachers must wear the necessary personal protective equipment in order to avoid exposure to laboratory chemicals.

Unit VI. Laboratory Safety Equipment and Procedures

Chapter 17 The Duty to Provide and Maintain Safe Laboratory Facilities The duty to provide a safe learning environment requires that teachers, administration, students, and parents work together.

Chapter 18 Master Utility Controls It is important to know how the water, electric, and gas shutoffs work in the laboratory.

Chapter 19 Electrical Safety Understand the safety precautions that apply to outlets, cords, and other electrical equipment.

Chapter 20 Fire Blankets Fire blankets have diverse applications that make them valuable for several safety problems in the science lab.

Chapter 21 Fire Extinguisher Basics and Training Choose a fire extinguisher based on your laboratory needs and learn how to properly operate the fire extinguisher.

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Chapter 22 Eyewash Requirements An effective eyewash must provide a continuous flow of clean water to both eyes for 20 minutes.

Chapter 23 Safety Showers Essential safety equipment for the laboratory includes safety showers, which are offered in many forms.

Chapter 24 FAQ—Lack of Proper Safety Equipment A teacher may be found liable if the proper safety equipment is not provided for an activity in the laboratory or regular classroom.

Unit VII. Safe Laboratory Practices

Chapter 25 The Duty to Supervise—Classroom Management Tips These tips offer solutions for common classroom management issues so teachers can fulfill their duty of supervision.

Chapter 26 How to Conduct a Safe Lab Activity Teachers need to make sure students understand the common language of chemistry warnings. Teach this language using demonstrations.

Chapter 27 Safety Guidelines for Chemical Demonstrations Learn about the 12 safety guidelines for chemical demonstrations provided by the American Chemical Society.

Chapter 28 Life Science Lab Safety The biology lab can be hazardous too. Here are some proper procedures, instruments, and safe methods.

Chapter 29 Glassware Safety It's important to be aware of standard safety precautions that should be taken when using, heating, or handling glassware.

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Unit VIII. Safe Chemical Management—Principles and Practice

Chapter 30 Chemical Purchasing Guidelines Always ask yourself five simple questions before purchasing a chemical!

Chapter 31 Classroom Chemical Storage and Security Chemicals must be stored under lock and key—there are no exceptions to this rule.

Chapter 32 Dispensing Chemicals and Acid Safety Chemicals should be bottled, dispensed, and stored properly.

Chapter 33 Chemical Spill Control Every science laboratory should be equipped with the proper materials to treat a chemical spill and the science instructor should be aware of proper cleanup techniques.

Unit IX. Storage and Disposal of Chemicals

Chapter 34 Safety and Design of the Chemical Storeroom Chemical storerooms should be properly designed and possess the necessary safety resources.

Chapter 35 Chemical Storeroom Ventilation Chemical storerooms should be vented to allow proper air exchange.

Chapter 36 Chemical Storage—Storing Chemicals by Compatible Families Chemicals should be stored according to a logical and safe pattern known as compatible chemical families.

Chapter 37 Chemical Treatment and Disposal Options Promote methods to minimize hazardous waste by source reduction, reuse and recycling, and chemical treatment.

Chapter 38 Licensed Hazardous Waste Disposal Hazardous waste disposal companies should be EPA certified, provide reliable references, and give detailed and specific cost estimates ahead of time.

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Unit X. How To Improve Laboratory Safety

Chapter 39 FAQ—Administration Won't Address Safety Concerns The administration is more likely to address safety concerns when presented with well-organized, thoughtful facts

Chapter 40 How to Get Action—Developing a 3-Year Plan Develop a detailed three-year plan that explains to the administration exactly what needs to be done to improve safety. It's not enough to identify problems—you must present solutions!