

# NFPA-45

## Standard on Fire Protection for Laboratories Using Chemicals

National Fire Protection Association  
<http://www.nfpa.org/>

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### HISTORY OF FIRE PROTECTION FOR LABORATORIES USING CHEMICALS

NFPA-45 was officially adopted in 1975. After the document had been in use for several years, review led to the inclusion of more extensive requirements for laboratory ventilation systems and larger explanatory appendices, including explosion hazards and protection, and the concept of the laboratory unit. In 1991, a variety of technical and editorial changes were made, including revisions to the automatic fire extinguishing systems section, along with minor changes to the fire loss prevention procedures section and the laboratory ventilation systems requirements. This standard applies to laboratory buildings, laboratory units, and laboratory work areas in which chemicals, as defined, are handled or stored in quantities greater than the minimums specified in this standard.

### SCOPE & APPLICATION

The standard contains requirements, but not all-inclusive requirements, for handling and storage of chemicals where laboratory-scale operations are conducted. The provisions of this document are considered necessary to provide a reasonable level of protection from loss of life and property from fire and explosion, reflecting situations and the state of the art prevalent at the time the standard was issued.

### PURPOSE

The purpose of this standard is to provide basic requirements for the protection of life and property through prevention and control of fires and explosions involving the use of chemicals in laboratory-scale operations. Ensure the fire safe design and operation of instructional, educational, and industrial laboratories using chemicals. NFPA-45 outlines the maximum allowable quantities of liquids and gases, as well as, requirements for laboratory ventilating systems and hoods.

### CHANGES IN THE NFPA-45, 2000 EDITION

- Modified laboratory separation requirements, including more stringent requirements for non-sprinklered laboratories. Non-sprinklered laboratories of Class A or B and Class C (over 10,000 square feet) are now prohibited.
- Expanded requirements and advisory information for compressed and liquefied gases. Maximum quantity requirements are clarified based on four listed gas classifications.
- Modified laboratory ventilating systems and hood requirements, updated to address the use of VAV (Variable Air Volume) laboratory ventilation systems
- Clarified text regarding multiple or manifold exhaust ducts within buildings

### REFERENCE SOURCES

- ANSI/ASHRAE-110, *Method of Testing Performance of Laboratory Fume Hoods*
- NFPA-45, Standard on Fire Protection of Laboratories Using Chemicals
- NFPA-496, *Purged and Pressurized Enclosures for Electrical Equipment*
- API Recommended Practice 752, *Management of Hazards Associated with Location of Process Plant Building*
- OSHA 29 CFR 1910.119, *Process Safety Management of Highly Hazardous Chemicals*
- OSHA 29 CFR 1910.1450, *Occupational Exposure to Hazardous Chemicals in Laboratories*

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