

You Have Safety Questions? We Have Safety Answers!

« « « **By the STAO Safety Committee.**

QUESTION # 8: *In reading safety journal articles published by NSTA, they continually make reference to approved safety goggles. What is required in Ontario science laboratories as far as eye safety is concerned i.e. do goggles have to have the ANSI stamp? Are safety glasses fine?*

RESPONSE: It is important to select an APPROPRIATE form of eye protector for the classroom activity involved. For example, safety glasses, even when fitted with side shields, would be essentially useless as eye protectors when working with liquid

corrosives that might splash. Similarly, vented goggles may not be appropriate if there is a potential exposure to fumes from volatile solvents, etc.

In the USA, the American National Standards Institute (ANSI) develops the standards for personal protective equipment, along with several other safety-oriented and industrial organizations. In Canada, this work is performed by the Canadian Standards Association. Eye protectors are normally certified to be compliant with ANSI's Z87.1 standard for occupational eye protection, while product for

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use in Canada is certified to the CSA Z94.3 standard. Certification markings for either or both standards should appear on both the packaging and the device.

Under Ontario regulations governing occupational health and safety, employees must be provided with and use appropriate eye protectors that are certified to the Z94.3 standard. This would apply to teachers and other Board staff. Due diligence dictates that similar products should be provided for the use of students, although clearly the OHS Act and its regulations do not apply to them.

QUESTION # 9: *It is my understanding that fire blankets are not to be in science laboratories as improper use has lead to increased injuries. Is this the case and, if so, why do so many labs still have fire blankets?*

RESPONSE: The *MOE Safety Memo # 12* entitled "Fire Safety in School Activities" – issued in 1983 clearly labeled 'Effective until revoked or modified' addresses the issue of fire blankets. Specifically it states that "Fire blankets and fire extinguishers should always be prominently displayed and easily accessible". To date this has not been revoked or revised despite other authorities, including the Office of the Ontario Fire Marshal, recommending fire blankets NOT be used. Most authorities now endorse the STOP, DROP and ROLL procedure.

STAO recommends that if fire blankets are provided they should be of the water gel type. CAUTION! Fire blankets which have been in schools for a number of years (> 10) probably contain asbestos. Both the blanket and container should be disposed of.

QUESTION # 10: *Are two exits necessary in science laboratories? Is there a size limitation to this? If so, what happens if schools do not have this in place?*

RESPONSE: A minimum of two exit doors are required "where the area of the room is more than 100 m² and it is a hazardous classroom in elementary or secondary school" (*Ontario Building Code* Section 3.3.1.5 e). There is also a requirement with respect the maximum travel distance from the furthest point in the room to the exit door which may necessitate two exits. Most architects will provide two exits for any new science lab under construction irrespective of size, recognizing that one exit could become inaccessible in the event of a fire.

It is my understanding that older school facilities which do not meet the present Building Code requirements are 'grandfathered'. However, any new construction or renovation carried out in the past few years, or in the future, should conform.

QUESTION # 11: *Are there any regulations regarding the presence of peroxide formers in school science laboratories? If not, are these chemicals necessary to meet the expectations of a secondary science chemistry course? How do you test for the presence of peroxide on peroxide formers?*

RESPONSE: We are not aware of any provincial regulations regarding the presence of peroxide formers, such as ethers and cyclohexene, in science labs. Some School Boards have restricted the use of ethers and cyclohexene because of their extreme flammability and the possibility of explosive peroxides being formed.

Testing for Peroxide: Add a crystal of potassium iodide to about 1 mL of

ethanoic acid in a test tube and shake. Add an equal volume of the liquid to be tested. An immediate yellow colouration indicates the presence of peroxide and red or brown colours indicate a dangerous level. It is best to carry out a blank test using ethanol for comparison.

QUESTION # 12: *Are there any regulations regarding the presence of alkali metals, such as sodium and potassium, in school science laboratories? If not are these metals necessary to meet the expectations of a secondary school science chemistry course?*

RESPONSE: There are no regulations regarding the presence of alkali metals in science labs. Dropping potassium, sodium and lithium into water is rightly a popular teacher demonstration. This can be done perfectly safely providing all necessary precautions are taken. We realize that some Boards have banned this activity but question that decision.

QUESTION # 13: *Do 'Flammables Storage Cabinets' and 'Corrosives Storage Cabinets' need to have separate ventilation than what already exists in the room?*

RESPONSE: Legally, these cabinets do not require separate ventilation if the chemical storage area in which they are housed already has adequate ventilation. However, the STAO Safety Committee recommends that flammable liquids should be stored in an approved, vented fire resistant 'Flammables Cabinet'. Corrosive liquids should be stored in a vented (blue) acid cabinet.

The STAO Safety Committee welcomes enquiries, with respect to safety issues, from STAO members. Please send your questions to the Safety Committee Chair. Your questions may be published in Crucible. Anonymity, however, will be guaranteed.

