

# School Fire Safety



## A Guide for Educators

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## Introduction

Schools present unique fire and life safety risks. School fires fall into several categories. Cooking, heating, electrical and intentionally set fires are the leading causes. Although fatalities from school fires are thankfully rare - students and staff do suffer injuries. Preventing school fires means taking action in three areas. The first is emergency planning. The second is education for staff and students about what actions to take in case of fire. The third step is ensuring the school building is kept fire-safe. The requirements in these three areas are contained in the National Fire Code of Canada (NFC). The NFC has been adopted by legislation in Saskatchewan and applies to all school buildings and facilities.

## Emergency Planning

Every school must have a fire safety plan as part of their overall emergency planning. The plans include details on fire alarm procedures, building floor plans, staff duties in a fire emergency, exiting and holding fire drills – among many other details. The plans also help fire departments preplan their response to a school fire. Schools should work with their local fire departments when developing their fire safety plan.

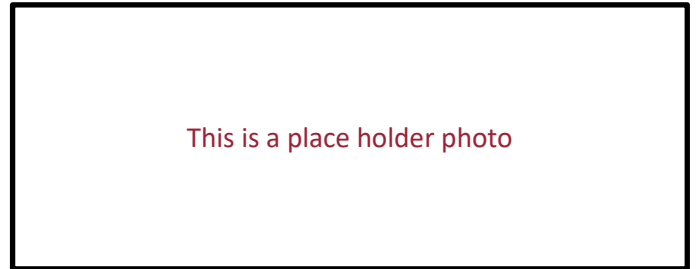
## Staff and Student Fire Safety Education

Training in fire safety should go beyond preparing students for fire drills. Keeping a school fire-safe is a day-to-day job. Staff and students need to know about the causes of fires and how they can prevent one at their school.

## Fire Code Compliance

Fire happens when a source of heat and a material that will burn come together. The amount of flammable and combustible material in any area of a school building must be controlled. Sources of heat and potential ignition must also be controlled.

## Decorative Materials



Decorative materials are considered to be anything applied over the existing wall or ceiling finishes. That includes everything from bulletin boards to things like posters, sports banners, maps, photographs and artwork. The NFC says all decorative materials must have the same resistance to the spread of fire as the walls and ceilings of the building.

Educators and parents agree; a visually enriched environment is good for students. That means posting student artwork, projects and notices as well as teaching materials. The problem, of course, is that these displays and notices are almost exclusively made of paper or other readily combustible materials, all with extremely high flame-spread characteristics. The challenge for educators is to achieve a situation where combustible materials may be posted in schools while maintaining an acceptable level of fire and life safety.

## More Information

The National Fire Protection Association (NFPA) has excellent materials to help educators in a wide range of fire safety topics.

Visit: <http://www.nfpa.org/safety-information>

## Classroom Walls

A 20% guideline has been adopted by many school boards. That means no more than 20% of the wall space in a classroom can be covered with decorative material. Floors and ceilings account for about 60% of the total surface area in a classroom. Of the remaining 40% about half is taken up with marker boards, windows and doors. The remaining 20% of the surface area in the room may be used for decorative materials. Areas on and around doors and windows must not be used. There is no exemption for seasonal decorations.

Bulletin boards are the preferred way to mount decorative materials. The boards can be sized so they don't exceed the 20% guideline. Decorations that stick out from bulletin boards should be avoided, they can spread fire much more quickly than paper items secured flat to the board surface.

## Ceiling Decorations

Ceilings in most classrooms are made up of suspended acoustic tiles. These tiles play a role in preventing the smoke from a fire getting into hidden spaces above the ceiling. Like every other surface in a classroom the tiles must be resistant to the spread of fire. Painting ceiling tiles with water-based paint will not affect how the tile resists fire. Oil paints and other combustible finishes may not be used. Any tile removed for painting must be replaced immediately with a temporary tile. The suspended ceiling must always be complete with no holes or missing tiles.

When a fire is located close to the floor or in a corner there are usually safe pathways out of the classroom - as long as the fire is caught early. But fires overhead, burning in suspended materials can quickly block escape. Suspended items will spread a fire across an entire room, dropping down burning material to ignite new fires on desks, furniture and other combustibles.

Nothing should be hung from the ceiling in any part of a school. This is particularly important in schools with fire sprinklers.

Material suspended from the ceiling will interfere with the proper function of the sprinklers, limiting their effectiveness.

Hanging decorative material will quickly spread a fire across an entire room. Burning debris will drop down onto students. Paper, furnishings and other combustibles will be ignited. Safe exit through classroom doors may be blocked.

## Hallways and Corridors

Hallways are usually the only means of exit from a school. Decorative material should be kept to a minimum – in any case no more than 10% of the wall area. Materials should also be kept at least 1m (3 feet) from room doorways and exit doors. Care must be taken not to obscure exit signs. Materials put up in locked glass-fronted wall display cabinets do not count in the 10% calculation because they are safe from ignition.

It is essential that hallways not be blocked by furniture, appliances or combustible materials. In no case may the width of a hallway be reduced to less than the width of the exit doors serving the hallway.

Exit doors, fire alarm pull stations, fire extinguishers and hose cabinets must remain unobstructed and free of decorations.

## Intentionally set fires

Student fire-play accounts for about 25% of fires in elementary schools and up to 40% of fires in high schools. Care should be taken to remove decorative materials from areas where students can gather unobserved by staff. Many schools have policies that prohibit students from bringing matches and lighters to school.

Even the smallest intentionally set fire must be reported to the local fire department and police. Positive, skilled intervention - particularly with very young fire setters - is essential.

## Electrical Equipment

For a fire to start a source of heat must be brought into contact with something that will burn. There doesn't have to be open flame. An overheated extension cord left in contact with a stack of papers will dry out the paper over time, eventually igniting a fire. All fire safety measures in schools are designed to keep potential sources of ignition away from combustible materials.

## Extension Cords

Misuse of electrical cords and devices is a pressing concern. Overloaded power bars and outlets can be found in most classrooms. There are many more electronic devices in classrooms now than just a few years ago. Lamps, aquariums, battery chargers and even decorative light strings are now found in schools. Most often these devices are plugged into extension cords or power bars. Drawing too much current from an outlet can lead to overheating, providing a source of ignition.

Extension cords may not be used as permanent wiring. These cords are intended for temporary use. They can become damaged or over-heated and lead to a fire. Of particular concern are cords run up walls and across ceilings or those located under or behind furniture. Computers, monitors, lamps and other equipment should be plugged directly into a wall outlet or into a single power bar. No outlet should supply more than one power bar. Power bars must have a circuit breaker and an on/off switch.

There's only so much power to go around. Trying to draw too much electricity from an outlet will heat the wires. Problems appear where the current draw is the highest - like at a power bar or at the plugs of an extension cord. Carefully touch cords to see if they are warm. If so - unplug and reduce the load.

## Lamps and Appliances

Many lamps designed for use in the home are not safe for use in school classrooms. Lamps and other lighting devices must meet several requirements.

Lamps should be permanently mounted or used where they cannot be knocked over. To be acceptable the bulb protector and/or shade must be non-combustible. Halogen and other high-heat lamps may not be used.

Lamps will have a label indicating a maximum wattage for incandescent bulbs. Never use a bulb with a higher wattage rating than indicated on the lamp. Don't use lamps with a rating higher than 60 watts. Lamps must not be plugged into extension cords. Low-heat LED bulbs are the preferable choice.

Compact florescent light bulbs (CFL's) are in common use. CFL packaging will indicate an equivalent wattage rating compared to an incandescent bulb. Again, never use a bulb with a higher wattage rating than indicated on the lamp. When CFL's fail they often produce some smoke. If you see smoke unplug the lamp and allow 20 minutes for the CFL bulb to cool before replacing it.

Decorative light strings, like Christmas lights should not be used. They cannot be hung from ceilings or surface mounted in contact with any combustible material like poster board.

Cooking appliances cannot be used in classrooms or hallways. Microwaves, hot plates and other cooking appliances must be used only in rooms or areas set aside for cooking.

## Furnishings

The NFC sets standards for the fire safety of fabrics and upholstery. Most furniture, carpets and draperies used in homes don't meet these requirements. In schools all fabrics must have a flame resistance rating. Acceptable materials will have a tag indicating they meet the appropriate Underwriter's Laboratories of Canada (ULC) standard. Fire resistance ratings are most often achieved by a combination of safe fabrics and use of flame retardant treatments. Over time the retardants break down and have to be renewed.

## Housekeeping

Classroom supplies must be kept in closed cabinets or out of reach of students. Material stored on top of bookcases or cupboards must be no closer than 1m (3 feet) from the ceiling. In sprinklered buildings a 0.5m (18 inches) clearance must be kept around and below sprinkler heads. Clutter should be kept to a minimum. Many intentional school fires are set in accumulations of paper and other refuse. Collections of paper also play a role in many electrical fires. Proper storage, away from sources of ignition greatly reduces the risk of a classroom fire.

The need for good housekeeping applies to custodial and maintenance work as well. Flammable and combustible materials must be stored in appropriate rooms. Cleaning materials and other combustibles must not be stored in furnace, mechanical or electrical rooms. Gasoline and propane may not be stored inside school buildings.