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## Commentary

**Title:** School Decorations

**Issued:** December 2004

**Scope:** This document is intended to help fire inspectors and the local *authority having jurisdiction*<sup>1</sup> deal with questions concerning the amount and placement of combustible decorations in schools.

Schools present a unique life safety risk. Non-residential schools - the elementary and high schools found in almost every community - are classified as A-2 assembly occupancies. They are subject to a strict set of controls designed to ensure fire and life safety. Among other measures, the National Fire Code<sup>2</sup> (NFC) mandates that decorative materials on walls and ceilings must have a flame-spread rating no greater than the rating required for the interior finish.

### 2.3.1.3(1) Decorative Materials

Decorative materials on walls or ceilings shall have a *flame-spread rating* not greater than that required for the interior finish of the space in which they are located.<sup>3</sup>

*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. A strict interpretation of NFC Sentence 2.3.1.3 (1) means that no combustible materials at all would be allowed on the walls of classrooms and corridors in schools. This has not always been the case. Previous fire safety regulations allowed limited quantities of combustible materials on school walls. In older school buildings the number and placement of bulletin boards reflected the amount of decorative materials permitted. Those allowances ended with adoption of the 1995 edition of the NFC.

### Issues

This change has created difficulties for both school and fire officials. If fire safety was the only consideration, a rigid application of Sentence 2.3.1.3 (1) could be easily adopted. But 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.

Practically speaking, schools will continue to post decorative materials, regardless of the requirements of the National Fire Code. The challenge for both school officials and the local

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<sup>1</sup> *Authority having jurisdiction* means the municipal authority responsible for enforcement of fire safety regulations and/or fire suppression response.

<sup>2</sup> The National Fire Code has been adopted as the primary set of fire code regulations and has the force of legislation in Saskatchewan.

<sup>3</sup> Sentence 2.3.1.3 (1), *National Fire Code of Canada, 1995*, National Research Council of Canada.

authority having jurisdiction is to achieve a situation where combustible materials may be posted in schools while maintaining an acceptable level of fire and life safety. Fire officials should establish good working relationships with the schools they protect. There is a significant amount of misinformation concerning decorative materials in both the fire service and among educators.

A complete understanding, by all parties, that the current provisions of the NFC give fire inspectors the clear authority to order<sup>4</sup> the removal of all decorative materials which do not meet the requirements of Sentence 2.3.1.3 (1) is essential. Inspectors should also understand the practical limitations of this authority. Most schools will be extremely reluctant to comply with such an order. Issuing an order, before all other avenues are exhausted, will only end up creating needless confrontation. The local authority having jurisdiction may accept alternatives<sup>5</sup> to the measures mandated in the NFC if the alternatives maintain an acceptable level of fire and life safety. Working co-operatively with schools will let educators know that their desire to create a visually vibrant environment using decorative materials can be respected while, at the same time, the conditions required to establish fire and life safety are maintained.

## Guidelines

How much decorative material is too much? There is no hard-and-fast answer to this question. Each school must be assessed individually. The Office of the Fire Commissioner (OFC) has developed guidelines to assist in setting safe limits for decorative materials in schools. These guidelines were developed based on a review of reports of school fires and of the measures applied successfully in other jurisdictions. Different areas of a school building present different levels of risk.

- **Classrooms – up to 20% of the surface area**

Unique features set classrooms apart from other spaces in assembly occupancies.

- i.) Classrooms are usually supervised when occupied by students.
- ii.) A fire in a classroom will, in most cases, be quickly discovered while the building is occupied. When the school is not occupied a fire presents a greatly reduced life safety risk.
- iii.) Schools have well-developed plans for dealing with fire emergencies. Regular fire drills, student accountability systems and staff training all contribute to a high level of fire and life safety.
- iv.) Fire alarm systems are universally present. And, unlike the situation in many other assembly occupancies, staff and students react quickly and correctly when an alarm sounds.

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<sup>4</sup> Refers to the provisions of *Section 19 - Orders to Remedy a Contravention* and other applicable measures in the *Fire Prevention Act, 1992* and the *Saskatchewan Fire Code Regulations*.

<sup>5</sup> Subsection 1.1.2. - Equivalents, *National Fire Code of Canada, 1995*, National Research Council of Canada.

- v.) Construction features, like fire separation walls, doors with high fire-resistance ratings and a significant degree of compartmentalization combine to protect means of egress and work together to limit smoke and fire spread.
- vi.) The relative ease with which fires may be contained to one room or area makes for rapid sprinkler activation and quick response by smoke and heat detectors.

Floors and ceilings<sup>6</sup> are not typically used for displaying decorative materials and account for about 60% of the total surface area in a classroom. Of the remaining 40% about half is taken up with black boards, windows and doors. This leaves roughly 20% of the surface area free for other uses. Decorative materials are usually displayed only on those parts of a wall within easy reach of staff and students. This provides a further, self-imposed, limit on the amount of combustible materials put up in classrooms. When the human and physical features of the typical school classroom are considered, 20% of usable surface area for the posting of paper and other combustible materials makes a reasonable upper limit.

- **Corridors – up to 10% of the surface area**

School corridors are the *only means of escape* from most areas. There are several important points to consider when setting limits for the amount of decorative material allowed.

- i.) School emergency plans<sup>7</sup> list corridors as the primary route to exits. The fire drills practiced by staff and students reinforce the use of corridors. The use of escape routes other than corridors is sometimes included in emergency plans. However, alternate exit routes are not usually discussed with staff and students and their use is rarely, if ever, practiced during fire drills.
- ii.) Smoke and fire spread in corridors is much more difficult to control than in classrooms or other areas of the school. Particularly during the early stages of evacuation, doors in fire separations and exterior exit doors are all likely to be open at the same time as students file out of the building. The draft effect created would not only cause a corridor fire to burn more vigorously; it would speed the spread of smoke.
- iii.) Fires in schools most often happen in areas that are less well supervised than classrooms. The most common areas of origin are service rooms and mechanical spaces. Equipment or electrical malfunctions are the most common causes of these fires. In areas open to students, fires tend to happen in washrooms<sup>8</sup> and corridors. They are usually the result of fire-play.
- iv.) During periods of instruction, when most students and staff are in classrooms, a fire is less likely to be discovered quickly in a corridor or other unsupervised area.

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<sup>6</sup> The display of combustible materials on ceilings should be strongly discouraged. The rapid development of heat and smoke from burning materials overhead is a significant life risk and will greatly hamper safe exiting from the area.

<sup>7</sup> See the Technical Commentary *Emergency Planning* at the OFC web site: <http://www.cps.gov.sk.ca/Safety/fire/>.

<sup>8</sup> Most schools prohibit posting decorative materials in washrooms.

Limiting the amount of paper and other combustible material on the walls in corridors to no more than 10% of the total surface area will usually maintain an acceptable degree of fire and life safety, while still allowing the school to display notices, student work and decorations. Inspectors should remember that fire safety in school corridors is not limited to fires starting in the corridor. A fire starting in any area of the building may extend to corridors. Any combustible materials in the corridor will support and extend the fire.

- **Essential safety considerations**

Some of the decorative material in corridors and classrooms is put up for long-term or permanent display. These materials can be locked in display cases or protected behind sheets of glass or plastic. Materials that are protected from ignition do not have to be included in the 20% or 10% calculations. Inspectors should consider suggesting installation of display cases and other means of protection, particularly in corridors. There are several additional safety considerations.

- i.) Sheets of paper or fabric (such as flags and banners) are less likely to ignite when they are secured tightly to a flat surface. Curled or unsecured edges present a greater ignition risk. So does the use of three-dimensional decorative materials. Combustible materials extending out from a wall encourage horizontal fire spread. Ensure all decorative materials are mounted flush to wall surfaces and bulletin boards.
- ii.) Groups of displayed items should be separated by adequate space, particularly in corridors, to limit horizontal fire spread from one set of decorative materials to the next.
- iii.) Decorative materials should not be placed any closer than 1m (3 feet) from exit doorways in order to avoid the exit becoming unusable should the material ignite. For the same reason, decorative materials should not be allowed on fire separation or exit doors.
- iv.) Paper and fabrics tend to dry out over time and become easier to ignite. This is particularly true when the materials are exposed to direct sun light. Encourage schools to change displays regularly.
- v.) Flame-retardant papers and fabrics are available for decorations intended for display over long periods. These materials are usually expensive and difficult for inspectors to identify. A display case or other form of protection is often both easier to use and more cost-effective.
- vi.) Once the amount of combustible material that will be allowed on walls is established, the allowances should be listed in the school emergency plan and reviewed with staff regularly<sup>9</sup>.

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<sup>9</sup> Several schools in Saskatchewan have incorporated monitoring the amount decorative materials on walls into their courses. Students, assisted by teachers, measure the wall area of classrooms and corridors then calculate the amount of combustible material displayed. The students diagram the walls and calculate the percentages involved as part of their math studies. Local fire officials have become involved by visiting the classrooms to provide a fire-safety lesson about the risks posed by decorative materials.

- vii.) There is often a significant increase in the amount of combustible material put up in classrooms and corridors during holiday periods. Inspectors should plan to visit schools at the beginning of classes and during the Halloween, Christmas and Easter/Spring Break periods to ensure maximum limits for decorative materials are not being exceeded.

### Conclusion

Inspectors and fire officials should remember that the recommendations in this document are just that; recommendations. A review of fire loss statistics and the best practices from other North American jurisdictions has helped establish what should be **safe upper limits** for the amount of combustible materials on school walls. There will likely be situations where lower limits are called for. In some cases strict accordance with Sentence 2.3.1.3 (1) of the NFC may be required.

Experience has shown that establishing a good working relationship with school officials is the key to establishing safe and acceptable levels for decorative materials. A good working relationship is also essential for creating a situation where schools will continue to comply with the set limits over the long-term. Many inspectors have found that taking time to fully explain the fire and life safety risk posed by combustible materials on school walls is the first step in gaining co-operation from school authorities.