

Maintaining Fire/Life Safety Systems in Schools

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December 1, 1958



Our Lady of Angels School

Chicago, Ill

92 children & 3 nuns died

Our Lady of Angels School Fire

- 2:25 pm Fire Discovered – Fire Department called at 2:42pm
- Stairs open to Basement where combustibles were stored
- Heat broke transom windows over doors filling rooms with smoke

Our Lady Of Angels School Fire

- Combustible interior finish, trim, and ceiling tiles
- Only 2 of 5 stairs were enclosed properly
- Exit capacity was insufficient
- Coats hung in corridors

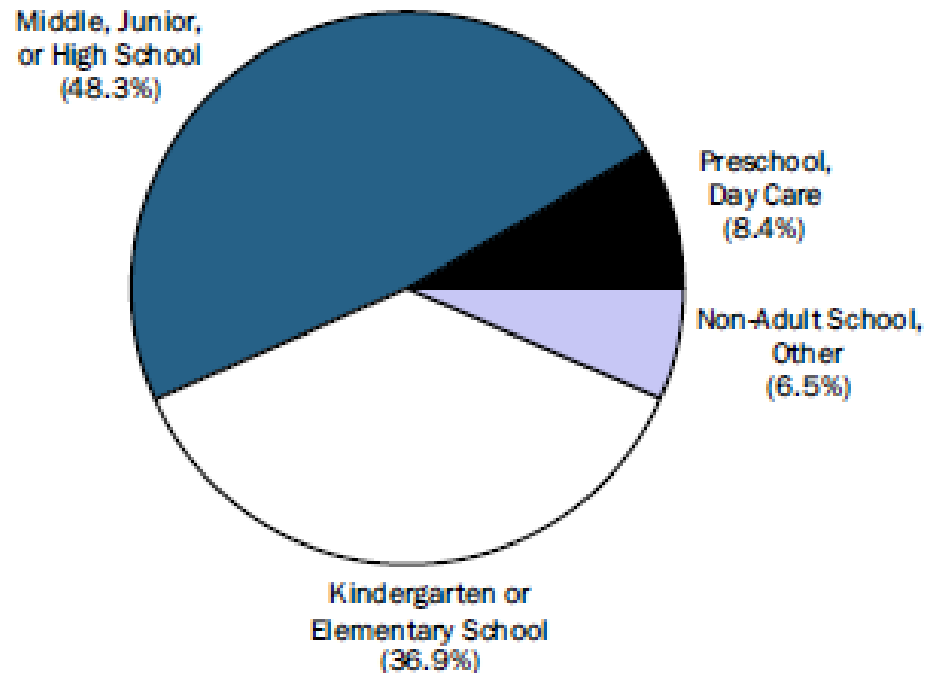
School Fires *cont'd*

- August 2006: Elementary school, Alaska
 - \$35 million loss
- May 2007: California High School, \$30 million
- November 1998: Elementary school, Texas, 16.3 million

FEMA

School Fires Report

FIGURE 3. ALL SCHOOL FIRES BY SCHOOL TYPE (NFIRS 2002)

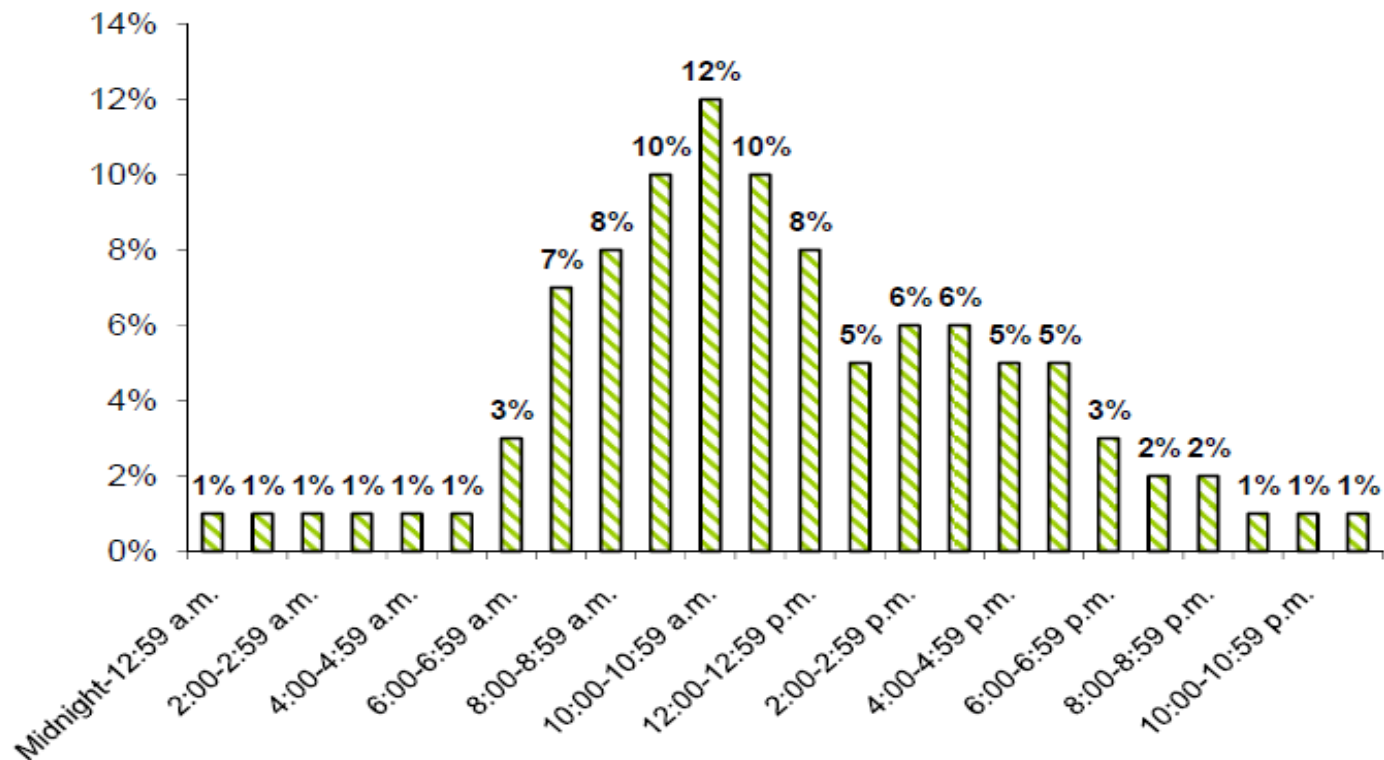


Source: NFIRS 5.0 only

NFPA

Structure Fires in Educational Properties

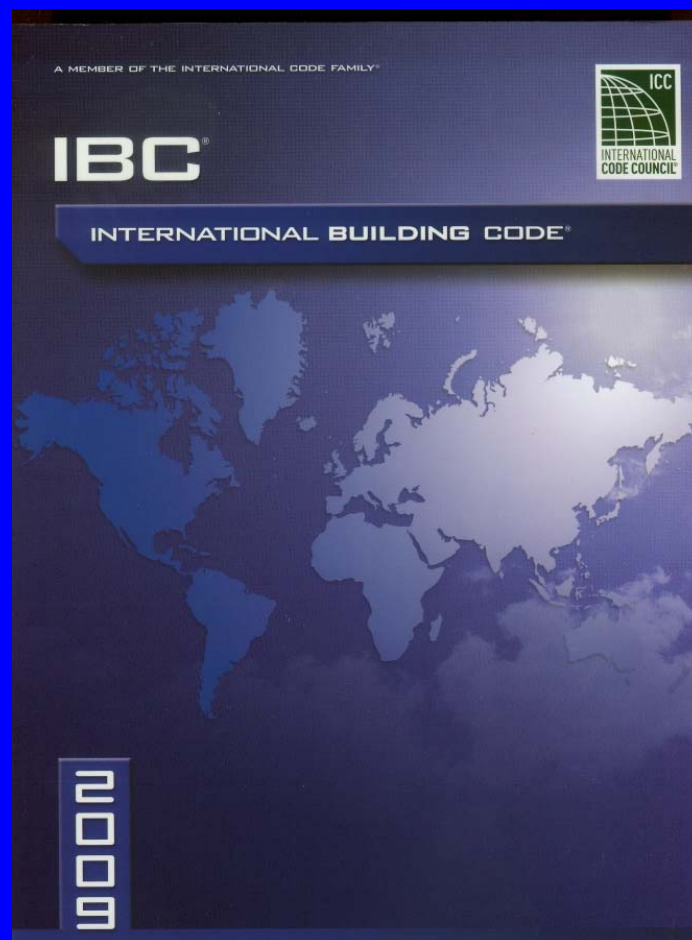
Figure 1A. Structure Fires in Day-Care Centers by Time of Day
2003-2006 Annual Averages



Source: NFIRS and NFPA Survey

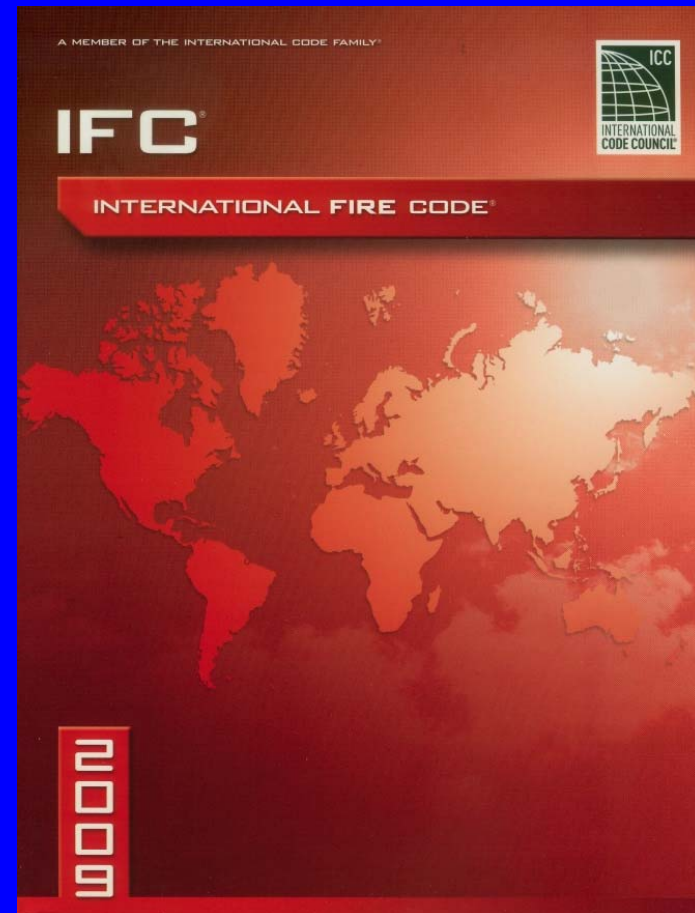
What is a Building Code?

- Typical building code regulates construction, alterations, maintenance, repair, and demolition of buildings
- Estimates vary, but up to 70+% of building codes are fire related

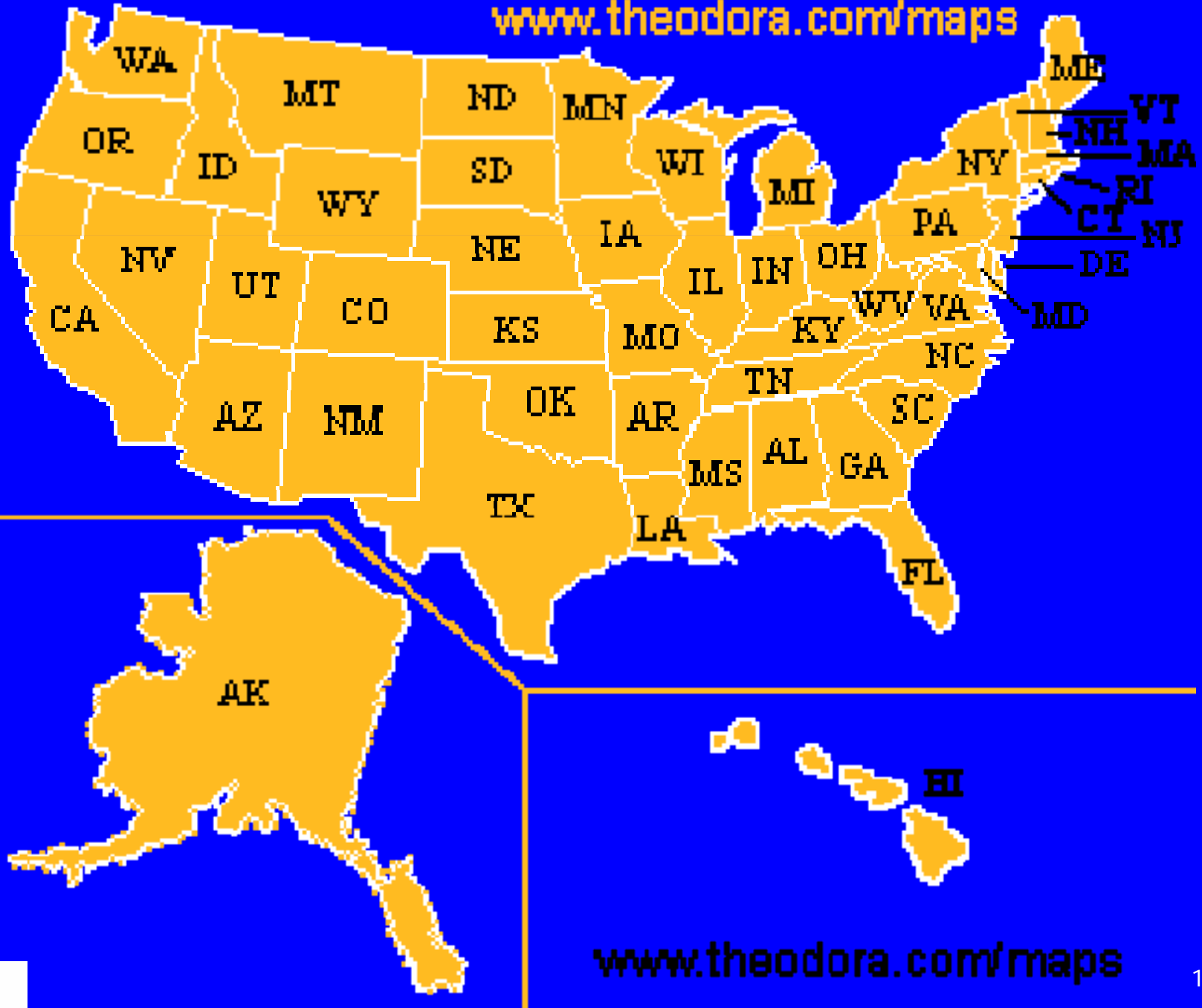


What is a Fire Code?

- Fire codes generally address the safe operation of buildings, including:
 - Maintenance of egress & fire systems
 - Storage & handling of hazardous materials
 - Fire drills



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Determining Local Code Requirements

- Local Building Department
 - Applicable codes & local amendments
- Local Fire Marshal's Office
 - Applicable codes & local amendments
- State Fire Marshal's Office
 - Applicable codes & local amendments



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The Philadelphia Fire Code

§F-1.1 The "2003 International Fire Code" as published by the International Code Council is hereby adopted as the Fire Code of the City of Philadelphia, with such additions, deletions and amendments as set forth in §F-1.2.



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The Philadelphia Fire Code ... *cont'd*

F-106.1 Maintenance of safeguards. Where any device, equipment, system, condition, arrangement, level of protection, or any other feature is required for compliance with the provisions of this code, or otherwise installed, such device, equipment, system, condition, arrangement, level of protection, or other feature shall thereafter be continuously maintained in accordance with this code and applicable referenced standards.



- Department of Labor & Industry – effective 12/31/2009
 - *International Building Code [IBC] – 2009*
 - *International Fire Code [IFC] – 2009*
 - *International Mechanical Code [IMC] - 2009*

IFC - 2009

107.1 Maintenance of safeguards.

Whenever or wherever any device, equipment, system, condition, arrangement, level of protection, or any other feature is required for compliance with the provisions of this code, or otherwise installed, such device, equipment, system, condition, arrangement, level of protection, or other feature shall thereafter be continuously maintained in accordance with this code and applicable referenced standards.

IFC – 2009 *cont'd*

107.2 Testing and operation.

Equipment requiring periodic testing or operation to ensure maintenance shall be tested or operated as specified in this code.

107.2.1 Test and inspection records.

Required test and inspection records shall be available to the fire code official at all times or such records as the fire code official designates shall be filed with the fire code official.



Fire Safety
is a
System of
Protection

EXIT
ACCESS

AUDIBLE
ALARMS

KITCHEN
HOOD

DRILLS

TRAINING

HAZARDS

FIRE DOORS

PLANNING

PLANNING

DEAD
END

EXITS
STAIRS

MAINTENANCE
RECORDS

CORRIDORS

DOORS

SPRINKLERS

FIRE
DAMPERS

INTERIOR
FINISH

FIRE ALARM

DOOR SWING

EXIT SIGNS

HVAC

SHUT-DOWN

SMOKE
DAMPERS

EGRESS

DETECTION

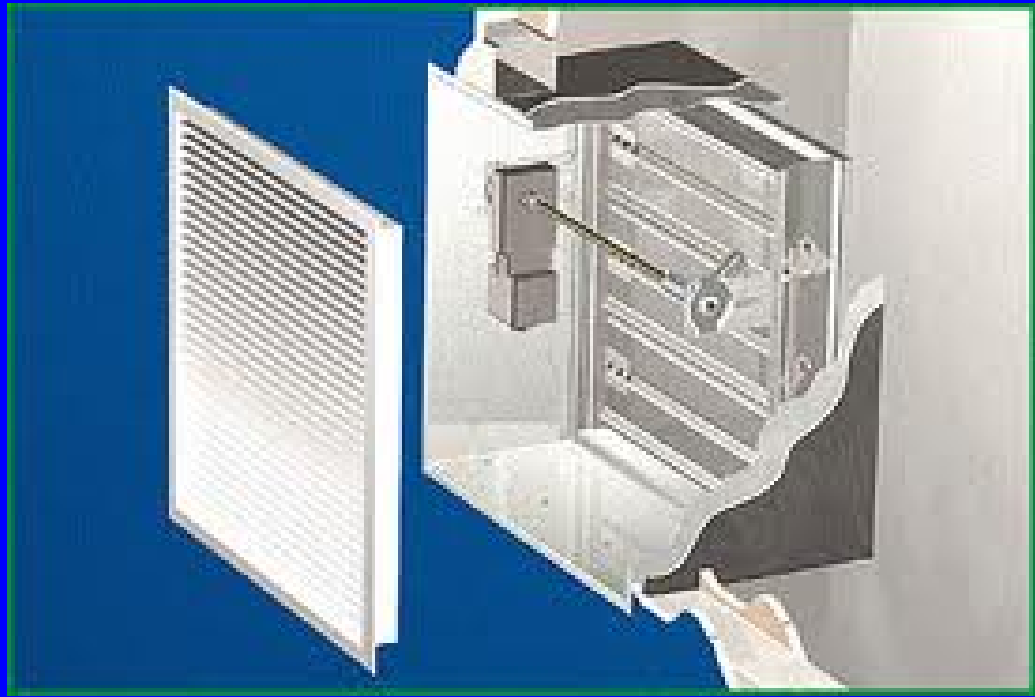
DRILLS

EXIT
DISCHARGE

Fire & Smoke Damper Testing

- *NFPA 80, Standard for Fire and Other Opening Protectives*
 - Addresses the inspection, testing, and maintenance of fire dampers
- *NFPA 105, Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives*
 - Addresses the inspection, testing, and maintenance of smoke dampers

Fire Dampers & Smoke Dampers





Test & Inspection Requirements

- Initial acceptance
- 1 year after installation
- Every 4 years thereafter

Initial Installation

- Damper operated (fully closed)
- If a dynamic damper (designed to close under the forces created by moving air) it is to be tested that way
- Any deficiencies corrected
- Report with date, damper location, Inspector, & condition

Inspection

- Operate damper to assure it closes properly
- Latch, if provided, works properly
- Confirm there is not problems with rust, misaligned parts, interference with the damper or actuator, misalignment

Inspection *cont'd*

- Report should include:
 - Damper location
 - Date
 - Inspector
 - Condition

Questions ?

