

FIRE PREVENTION 1A (BRIDGE)

Approved and Adopted by the
Office of State Fire Marshal



Recommended for adoption by the Statewide
Training and Education Advisory Committee
and the
State Board of Fire Services



STUDENT SUPPLEMENT (Bridge)

January 2009



FIRE PREVENTION 1A

INTRODUCTION TO THE CALIFORNIA FIRE CODE

STUDENT SUPPLEMENT (BRIDGE)



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January 2009

RETIRED CURRICULUM

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RETIREED CURRICULUM

RETIRED CURRICULUM

Mission Statement

The mission of State Fire Training is to enable the California fire service to safely protect life and property through education, training, and certification.

California Fire Service Training and Education System

The California Fire Service Training and Education System (CFSTES) was established to provide a single statewide focus for fire service training in California. CFSTES is a composite of all the elements that contribute to the development, delivery, and administration of training for the California Fire Service. The authority for the central coordination of this effort is vested in the Training Division of the California State Fire Marshal's Office with oversight provided by the State Board of Fire Services.

The role of CFSTES is one of facilitating, coordinating, and assisting in the development and implementation of standards and certification for the California fire service. CFSTES manages the California Fire Academy System by providing standardized curriculum and tests; accredited courses leading to certification; approved standardized training programs for local and regional delivery; administering the certification system; and publishing Career Development Guides, Instructors Guides, Student Manuals, Student Supplements, and other related support materials.

This system is as successful and effective as the people involved in it are. It is a fire service system developed by the fire service, for the fire service... and we believe it is the best one in the country.

Acknowledgments

The State Fire Training Curriculum Development Division coordinated the development of the material contained in this guide. Before its publication, the Statewide Training and Education Advisory Committee (STEAC) and the State Board of Fire Services (SBFS) approved this guide. This guide is appropriate for fire service personnel and for personnel in related occupations that are pursuing State Fire Training certification.

Ruben Grijalva Director of CAL FIRE	
Kate Dargan State Fire Marshal	Tonya Hoover Assistant State Fire Marshal
Mike Richwine Chief, State Fire Training	Ron Coleman Chair, STEAC

Special acknowledgement and thanks are extended to the following members of CDF/State Fire Training Curriculum Development Division for their diligent efforts and contributions that made the final publication of this document possible.

Alicia Hamilton Fire Service Training Specialist III	Monica Miller Office Technician
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The material contained in this document was compiled and organized through the cooperative effort of numerous professionals within, and associated with, the California fire service. We gratefully acknowledge the individuals who served as principal developers for this document.

Keith Marshall Burlingame Fire Department (Retired)
Robert Marshall Gilroy Fire Department
Rocque Yballa Central County Fire Department

"We gratefully acknowledge the hard work and accomplishments of those before us who built the solid foundation on which this program continues to grow."

Course Outline

Course Objectives: To prepare the student to...

- a) Describe the responsibility and authority for fire prevention inspections and related activities.
- b) Explain and identify principles and procedures used to correct fire hazards.
- c) Identify and describe occupancy classifications and types of construction.
- d) Explain basic means of egress requirements.
- e) Evaluate the operational readiness of fire rated assemblies.
- f) Identify and describe general fire safety provisions.
- g) Explain public relations as it relates to fire prevention inspections.

Course Content: 40:00

Unit 1: Responsibility and Authority

1-1	Orientation And Administration	2:00
1-2	Terminology Relating To Responsibility And Authority	0:30
1-3	Legally Established Responsibilities And Empowerment	1:30
1-4	Legal Responsibilities Of The Inspector	2:00
1-5	Understanding, Reading, And Using The CFC.....	2:00
1-6	Historical Incidents And Their Affect On The Fire Code	1:00

Unit 2: Occupancy Classification and Building Construction

2-1	Terminology Relating To Occupancy Classification And Construction	2:00
2-2	Relationship Of Fire Protection To Building Construction And Occupancy	1:00
2-3	Classification Of Occupancies	3:00

Unit 3: Egress Requirements

3-1	Terminology Relating To Egress Requirements	0:30
3-2	Determining Adequate Means Of Egress.....	3:00
3-3	Means Of Egress Requirements	3:00
3-4	Maintaining The Egress System	1:00

Unit 4: Fire-Resistive Assemblies

4-1	Terminology Relating To Fire-Resistive Assemblies	0:30
4-2	Types Of Classes And Roof Coverings	1:00
4-3	Purpose And Location Of Fire-Resistance-Rated Building Construction And Components.....	1:30
4-4	Fire Doors And Windows	0:30

Unit 5: General Fire Safety Provisions

5-1	General Fire Safety	1:15
5-2	Fire Safety Requirements For Decorative Materials And Furnishings.....	1:00
5-3	Fire Drills And Emergency Evacuation Plans	0:30
5-4	High-piled Storage Requirements.....	1:00
5-5	Electrical Fire Hazards And Safety Devices.....	0:45

Unit 6: Principles and Procedures for Fire Inspections

6-1	Factors Relating To Life Safety	2:00
6-2	Conducting A Life Safety Assessment	1:30
6-3	General Fire Inspection Practices	1:15
6-4	Procedures For Correcting Fire Hazards And Modifications Of Requirements.....	1:15
6-5	Handling Fire Prevention Complaints.....	0:30

Formative Tests	2:00
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Certification Exam	1:00
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Texts and References

- Barclays Official California Code of Regulations Title 19, West Group
- Barclays Official California Code of Regulations Title 24, West Group
- California Fire Code, California Building Standards Commission, 2007 Edition
- California Health & Safety Code, Current Edition
- Fire Inspection and Code Enforcement, IFSTA, Sixth Edition
- Fire Officer's Handbook of Tactics, Fire Engineering, Second Edition
- Fire Protection Handbook, NFPA, Twentieth Edition
- International Fire Code, International Code Council, 2006 Edition
- Local agency policies and procedures
- NFPA 80, NFPA, 2003 Edition
- NFPA Inspection Manual, NFPA, Seventh Edition

Calendar of Events

DAY	TOPIC	TITLE	TIME	ACTIVITY	EVALUATION
Day 1	1-1	Orientation And Administration "Escape" video, NOVA	2:00	1-1-1	
	1-2	Terminology Relating To Responsibility And Authority	0:30	One of the following: 1-2-1 1-2-2 1-2-3	
	1-3	Legally Established Responsibilities And Empowerment	1:30		
	1-4	Legal Responsibilities Of The Inspector	2:00	1-4-1 1-4-2	
	1-5	Understanding, Reading, And Using The CFC	2:00	1-5-1 1-5-2	
	Day 1 Total			8:00	
Day 2			0:30		Test #1
	1-6	Historical Incidents And Their Affect On The Fire Code	1:00		
	2-1	Terminology Relating To Occupancy Classification And Construction	2:00	2-1-1 2-1-2	
	2-2	Relationship Of Fire Protection To Building Construction And Occupancy	1:00		
	2-3	Classification Of Occupancies	3:00	2-3-1 2-3-2	
				0:30	
Day 2 Total			8:00		
Day 3	3-1	Terminology Relating To Egress Requirements	0:30	3-1-1	
	3-2	Determining Adequate Means Of Egress	3:00	3-2-1	
	3-3	Means Of Egress Requirements	3:00	3-3-1	
	3-4	Maintaining The Egress System	1:00		
				0:30	
Day 3 Total			8:30		

FIRE PREVENTION 1A (BRIDGE)

Introduction To The California Fire Code

Calendar Of Events

DAY	TOPIC	TITLE	TIME	ACTIVITY	EVALUATION
Day 4	4-1	Terminology Relating To Fire-Resistive Assemblies	0:30	4-1-1	
	4-2	Types Of Classes And Roof Coverings	1:00		
	4-3	Purpose And Location Of Fire-Resistance-Rated Building Construction And Components	1:30		
	4-4	Fire Doors And Windows	0:30		
	5-1	General Fire Safety	1:15		
	5-2	Fire Safety Requirements For Decorative Materials And Furnishings	1:00		
	5-3	Fire Drills And Emergency Evacuation Plans	0:30		
	5-4	High-Piled Storage Requirements	1:00	5-4-1 5-4-2	
	5-5	Electrical Fire Hazards And Safety Devices	0:45		
			Day 4 Total	8:00	
Day 5			0:30		Test #4
	6-1	Factors Relating To Life Safety	2:00	6-1-1	
	6-2	Conducting A Life Safety Assessment	1:30	6-2-1	
	6-3	General Fire Inspection Practices	1:15		
	6-4	Procedures For Correcting Fire Hazards And Modifications Of Requirements	1:15		
	6-5	Handling Fire Prevention Complaints	0:30		
		Certification Exam	1:00		Exam
			Day 5 Total	8:00	

Topic 1-1: Orientation And Administration

Group Activity 1-1-1: Classmate BINGO

Time Frame: 0:20

Materials Needed:

- Classmates
- BINGO "card"
- Pen or pencil

Introduction: This activity provides you the opportunity to personally meet and talk with your fellow classmates and instructor(s), and learn a little something about them.

Directions:

1. Review the attached BINGO worksheet and the information needed for each square.
2. Find a classmate or instructor who meets a need and write their name in the appropriate square.
3. You may only use a person's name once. You may use yourself once for any square you meet or as a "free" square.
4. Yell "BINGO" if you black out the card before the time is up.
5. You have 20 minutes to complete as many squares as possible.

Classmate BINGO

C	L	A	S	S	
Is on a softball team	Plays a musical instrument	Has met a movie star	Has a birthday this month	Has <5 years on the job	M
Drives a red truck	Is a certified scuba diver	Has annual pass to an amusement park	Likes liver and onions	Is a volunteer fire fighter	A
Has been to Alaska	Children are all female	 Free!	Is a grandparent	Has an Associate's degree	T
Is not a native Californian	Is bilingual (not Spanish)	Children are all male	Has or had braces	Married <1 year	E
Has a pet reptile	Acted in the theater	Has >10 years on the job	Has a high school reunion this year	Has a Bachelor's degree	S

Introduction

As with any course of instruction, there are certain expectations to be anticipated. There are three major components to this course and those are the curriculum, the instructor, and you, the student.

The curriculum will consist of six units. In each of these units, you will be introduced to information necessary to lead and manage an engine company inspection. Finally, you will be given the opportunity to employ those techniques in various exercises and activities.

The instructor is the next component of this course. The instructor will guide you through the curriculum. It will be, in most cases, a learning experience for all involved. No instructor has seen everything or done it all. There is always room for growth. Your experience will be a valuable component of this course and can benefit all involved. We learn from experience. Both good and bad experiences teach us lessons. There are exercises and chances for sharing our experience built into this class just for the purpose of that growth.

The student is the next component. You will be expected to attend all sessions from start to finish. The material is designed to build upon itself as the course progresses and missing part of the information would jeopardize your ability to acquire the information necessary to pass the certification exam, as well as function as an inspector.

You will also be expected to put some out-of-class time into this course. Read the material provided and prepare for the tests, exercises and activities, and the certification exam. As with most classes, you will only get out as much as you put in.

There will be opportunities to work in group exercises as well as on individual activities. You will be asked to contribute in all of these activities. Learning from the curriculum, instructor, and each other is our goal in this course.

To be eligible to take the state certification exam, you must pass the course with an 80% minimum on quizzes and meet attendance requirements. The certification exam requires a minimum 70% passing rate.

My Progress Chart

FIRE PREVENTION 1A	BEGINNING DATE:		
	ENDING DATE:		
ACTIVITIES	COMPLETED	EVALUATED ITEMS	POINTS
Individual Activity 1-2-1, 1-2-2, or 1-2-3		TEST 1	
Individual Activity 1-4-1		TEST 2	
Individual Activity 1-4-2		TEST 3	
Individual Activity 1-5-1		TEST 4	
Individual Activity 1-5-2		Day 1 Attendance	
Individual Activity 2-1-1		Day 2 Attendance	
Group Activity 2-1-2		Day 3 Attendance	
Individual Activity 2-3-1		Day 4 Attendance	
Group Activity 2-3-2		Day 5 Attendance	
Individual Activity 3-1-1			
Individual Activity 3-2-1		PASS/FAIL	
Group Activity 3-3-1			
Individual Activity 4-1-1			
Individual Activity 4-2-1			
Individual Activity 5-4-1			
Individual Activity 5-4-2			
Individual Activity 6-1-1			
Individual Activity 6-2-1			

Topic 1-2: Terminology Relating To Responsibility And Authority

Student information for this topic is also found in Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 1 and Glossary.

Glossary of Terms

- Authority**Relates to the empowered duties of an official, in this case the inspector. The level of an inspector's authority is commensurate with the enforcement obligations of the governing body.
- Code(s)**Rules or laws used to enforce requirements for fire protection, life safety, or building construction.
- Discretionary acts**Involves the actions inspectors consider necessary to fulfill their responsibilities.
- Inspection**.....A formal examination of an occupancy and its associated uses or processes to determine its compliance with the fire and life safety codes and standards.
- Liability**.....To be legally obligated or responsible for an act or physical condition.
- Ministerial actions**Involves the manner in which the inspector carries out or performs an act or policy.
- Responsibility**An act or duty for which someone is clearly accountable.
- Right of entry**The rights set forth by the administrative powers that allow the inspector to inspect.
- Violation**.....An infringement of existing rules, codes, or laws.
- Violations**Routine (maintenance), Imminent (changeable), Transient.

Acronyms

- ADA**.....Americans with Disabilities Act
- AHJ**Authority Having Jurisdiction
The governmental agency with jurisdictional responsibility.
- Cal/OSHA**.....California Occupational Health and Safety Administration
- CBC**.....California Building Code
- CEC**.....California Electrical Code
- CFC**.....California Fire Code
- CMC**.....California Mechanical Code
- CPC**.....California Plumbing Code
- DSA**Division of State Architect
- NFPA**.....National Fire Protection Association
- OSFM**.....Office of State Fire Marshal
- OSHPD**.....Office of Statewide Health Planning and Development

Individual Activity 1-2-1: Responsibility And Authority Word Search

Time Frame: 0:15

Materials Needed:

- Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Glossary
- Fire Prevention 1A Student Supplement, SFT, 2009 Edition
- Pen or pencil

Introduction:

This activity provides you the opportunity to become familiar with the terms related to an inspector's responsibility and authority.

Directions:

1. Locate in the maze the appropriate word for the descriptions listed.
2. Circle the word once found.
3. You have 10 minutes to complete this activity.
4. Be prepared to discuss your answers with the class.

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TERMINOLOGY WORD SEARCH

1. The governmental agency with jurisdictional responsibility.
2. Relates to the empowered duties of an official, in this case the inspector.
3. California Building Code
4. California Electric Code
5. California Fire Code
6. California Mechanical Code
7. Rules or laws used to enforce requirements for fire protection, life safety, or building construction.
8. California Plumbing Code
9. A formal examination of an occupancy and its associated uses or processes to determine its compliance with the fire and life safety codes and standards.
10. To be legally obligated or responsible for an act or physical condition.
11. An act or duty for which someone is clearly accountable.
12. An infringement of existing rules, codes, and laws

J C O D E C A T U L I S M G P
 P U T N B C M H I T N A N N Y
 L Z R C Z E C A J H S R S X F
 T F G I U C B M C G P X M V D
 V Q U B S I Y P W I E Q C B A
 Z C H D L D O T S R C S C X A
 U C Q I G M I M I M T S F C E
 E I T N C J F C R R I J R G C
 W Y E G Q U M E T O O B R Y F
 N O I T A L O I V I N H R A C
 W Q T S M C M C C Y O T T O J
 P W M R Q E G I A P N N G U X
 Z M V H Z M F L W E C Y R Q A
 T B C H F U W I D X Z W E E L
 R E S P O N S I B I L I T Y X

Individual Activity 1-2-2: Responsibility And Authority Crossword

Time Frame:

0:15

Materials Needed:

- Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Glossary
- Fire Prevention 1A Student Supplement, SFT, 2009 Edition
- Pen or pencil

Introduction:

This activity provides you the opportunity to become familiar with the terms related to an inspector's responsibility and authority.

Directions:

1. Complete the puzzle using the clues.
2. You have 10 minutes to complete this activity.
3. Be prepared to discuss your answers with the class.

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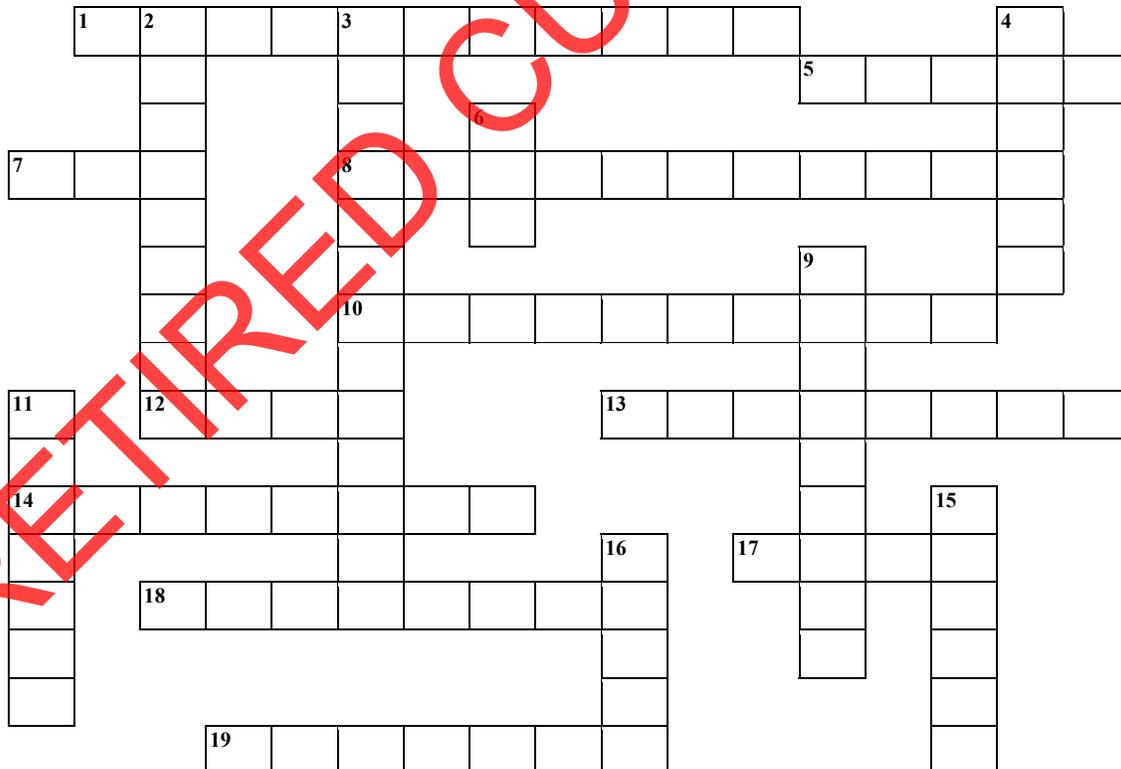
CLUES ACROSS

1. Issued to individuals who may engage in the use of pyrotechnics
5. This type of code is preferable over one that has been developed locally
7. California Building Code
8. Implemented when other methods fail
10. The legal means of discovering and correcting deficiencies that pose a threat from fire
12. This organization publishes a Life Safety Code, the Electrical Code, and a Fire Prevention Code
13. This type of model code regulates all new construction
14. Summons to appear before a specific court regarding fire code violations
17. This type of model code regulates the maintenance of buildings, systems, and equipment
18. Works with a model code to specify the installation of equipment or assemblies

19. May be issued by a court to allow the inspection of a business where entry has been refused

CLUES DOWN

2. Informs and instructs about fire-safe behavior
3. Aids prevention efforts by indicating problem areas
4. This may be attached to appliances unsafe for operation (two words)
6. California Fire Code
9. This type of notice may recommend correction and provide a time limit for compliance
11. May be issued to a business to generate revenue for the city
15. An official document that authorizes the performance of a specific activity
16. A jurisdiction must do this before a code can become law



Individual Activity 1-2-3: Responsibility And Authority Matching

Time Frame:

0:15

Materials Needed:

- Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Glossary
- Fire Prevention 1A Student Supplement, SFT, 2009 Edition
- Pen or pencil

Introduction:

This activity provides you the opportunity to become familiar with the terms related to an inspector's responsibility and authority.

Directions:

1. Review the worksheet and the terms that need to be defined.
2. Select the definition in Column 2 that most nearly matches a term in Column 1.
3. Write the number of the term from Column 1 in the parenthesis that precedes the appropriate response in Column 2.
4. You have 10 minutes to complete this activity.
5. Be prepared to discuss your answers with the class.

RETIRED

RESPONSIBILITY AND AUTHORITY MATCHING WORKSHEET

Column 1

Column 2

- | | | |
|-------------------|--------|---|
| 1. Authority | (____) | Action inspectors consider necessary to fulfill their responsibilities. |
| 2. Code | (____) | Acts that involve the manner in which the inspector carries out or performs an act or policy. |
| 3. Discretionary | (____) | An act or duty for which someone is clearly accountable. |
| 4. Inspection | (____) | An infringement of existing rules, codes, and laws. |
| 5. Liability | (____) | Formal examination of an occupancy and its associated uses or processes to determine its compliance with codes. |
| 6. Ministerial | (____) | Relates to the empowered duties of an official, in this case the inspector. |
| 7. Responsibility | (____) | Rules or laws used to enforce requirements for fire protection and life safety. |
| 8. Right of entry | (____) | The rights set forth by the administrative powers that allow the inspector to inspect. |
| 9. Violation | (____) | To be legally obligated or responsible for an act or physical condition. |

Topic 1-3: Legally Established Responsibilities And Empowerment

Student information for this topic is also found in the California Fire Code, CBSC, 2007 Edition, Preface, Chapter 1, Appendix Chapter 1 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 1.

State Adopted Regulations

California Code of Regulations, Title 24

Part 1 - Administrative Regulations

Part 2 - California Building Code

Part 3 - California Electrical Code

Part 4 - California Mechanical Code

Part 5 - California Plumbing Code

Part 8 - California Historical Building Code

Part 9 - California Fire Code (Only pertains to the building standards contained in the CFC as adopted by the OSFM as noted in the California Matrix Adoption Table)

Part 12 - California Referenced Standards Code

See the adoption table for those sections adopted by the OSFM.

California Code of Regulations, Title 19

Chapter 1 - General Fire and Panic Safety Standards

Chapter 2 - Tents, Awnings, and other Fabric Enclosures

Chapter 3 - Fire Extinguishers

Chapter 4 - Fire Alarm Systems and Devices

Chapter 5 - Automatic Fire Extinguishing Systems

Chapter 6 - Fireworks

Chapter 7 - Flammable Fabric Standards

Chapter 8 - Flame Retardant Chemicals, Fabrics, and Application Concerns

Chapter 9 - Explosives

Widmar vs. City of Marysville

Background

The City of Marysville¹, California, through its fire department, was aware of unsafe fire conditions at a four-story, multiple-occupant structure located in downtown Marysville. The fire department had inspected the building more or less regularly, at least annually, for 20 years prior to the fire. They knew, among other things, that the stairwells were not enclosed. It was failure to enclose the stairwells that was a primary factor in this case. The City had adopted the 1970 Uniform Building Code and 1971 Uniform Fire Code

¹ Excerpted from a presentation given by Mr. Jerry Duncan, Defense Attorney, City of Marysville, 1974.

including Appendix I. That appendix made those codes applicable to existing construction as well as new. This included enclosed stairwells, self-closing doors, rated fire walls, fire escapes, etc. The building that burned did not come close to meeting the requirements. Unfortunately, the Fire Chief, Deputy Chief, and Fire Inspectors generally were aware of the fact that these defects existed.

The Fire

On July 24, 1974, a fire occurred at the Downtown Apartments, originating on the third floor. The cause was never determined. Originally confined to an apartment, the fire spread after a passerby kicked in a door in search of possible victims. Twenty-five tenants escaped without incident. Two tenants, Mr. Widmar and Mrs. Edwards, however, did not escape. By the time Mr. Widmar realized what was happening; smoke and fire had spread up the two stairwells and had trapped him on the fourth floor. Mrs. Edwards got out, but for some reason went back in. Mr. Widmar was rescued later, but after he had suffered severe burns. Mrs. Edwards jumped.

The Lawsuit

The plaintiffs filed suit against the City of Marysville and Fire Chief Robert Miller. The trial concluded on April 21, 1978 in Sutter County. The jury awarded the plaintiffs \$325,000. Of that, the City of Marysville and Robert Miller owed \$134,000.

Why were they liable? Section 815.6, California Government Code, stated that if there is a law that requires a public entity to watch out for a particular problem, and the public entity fails to watch out for that problem, the entity is liable for what happens as a consequence of its failure, unless it can show that its failure was reasonable. Another point was made: if the fire department has a duty to warn (someone about a known danger) and has become involved (by inspections), then the fire department in fact must warn and fulfill its duty.

The Lessons

The jury could not have found liability if the City of Marysville had not inspected at all. It also could not have found liability if the City had inspected negligently. But it could (and did) find liability if the fire department inspected, found defects, then failed to enforce the law. This is mandatory duty. From a legal standpoint, one is much better off not inspecting at all, rather than inspecting, finding something, and failing to have it corrected. However, that is not our job as fire service professionals.

So What Can Be Done?

- ① Get current on all applicable fire safety laws and regulations.
- ② Follow through with the citation process.
- ③ If you have done all that you can do, pass the problem on to the next higher level (i.e., city attorney, district attorney, county counsel, board of supervisors).
- ④ Get the problem out of your department.
- ⑤ Warn the affected people by posting citations and notices on the building.
- ⑥ And, by all means, document everything you do.

Conducting the Inspection

- Building name and address are visible from the street
- Walk around the exterior of the building
- Check for housekeeping, fire department connection, hydrant locations, etc.
- Consider the access to the building
- Fire lane (if any) clear
- Contact owner or responsible party and discuss purpose of inspection
 - Annual
 - Complaint
- Start inspection
 - Top down or
 - Farthest end from the main entrance
- Walk through the building
 - Make notes
 - Brief owner or responsible party on any problems
 - End of inspection
 - Review any violations
 - Give date of re-inspection
 - Leave copy of inspection report
 - Answer any questions
 - Depart

RETIRED CURRICULUM

Topic 1-4: Legal Responsibilities Of The Inspector

Student information for this topic is also found in the California Fire Code, CBSC, 2007 Edition, Chapter 1 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 1.

Individual Activity 1-4-1: Legal Responsibilities Scavenger Hunt

Time Frame: 0:15

Materials Needed:

- California Fire Code, CBSC, 2007 Edition, Chapter 1
- Pen or pencil

Introduction: This activity provides you the opportunity to become familiar with the provisions of the CFC and the legal responsibilities of the inspector.

Directions:

1. Using the CFC Chapter 1, answer the following questions.
2. List the appropriate response and reference the code section where you found the answer.
3. You have 10 minutes to complete this activity.
4. Be prepared to discuss your answers with the class.

1. Who is responsible for enforcement of the fire code?

2. Can the fire code be used to regulate the fire hazards outside buildings?

3. Can the Fire Chief prevent a family from occupying their home after a fire has occurred there?

4. When a jurisdiction adopts the fire code, do they automatically adopt the UFC Appendix as well?

5. What is the name of the legal document used to gain entry into a building for the purposes of fire inspections?

6. What sort of crime is a person guilty of when they violate provisions of the fire code?

7. Does change in ownership of a business require issuance of a new fire code permit?

8. Would a permit be required to have a carnival?

RETIREDCURRICULUM

Individual Activity 1-4-2: CFC Scavenger Hunt

Time Frame: 0:15

Materials Needed:

- California Fire Code, CBSC, 2007 Edition, Chapter 1
- Pen or pencil

Introduction: This activity provides you the opportunity to become familiar with Chapter 1 of the CFC. It is essential that you understand the requirements and limits set forth in Chapter 1 concerning the administration of the CFC.

Directions:

1. Using the CFC Chapter 1, answer the following questions.
2. List the appropriate response and reference the code section where you found the answer.
3. You have 10 minutes to complete this activity.
4. Be prepared to discuss your answers with the class.

1. Which section addresses supplemental rules and regulations?

2. Who is authorized to approve an alternate method of protection?

3. Which section addresses appeals?

4. Can the Fire Chief issue a "Stop Order?"

5. Is the inspector authorized to seek an inspection warrant if denied entry?

6. Who can be issued a citation?

7. Must the fire code official have identification when inspecting a building?

8. What section allows for the appointment of a "Deputy Fire Code Official?"

9. Is it permissible to use applicable standards of NFPA or other nationally recognized standards where no applicable section is in the code?

10. When there are conflicting provisions between general and specific code requirements, which code section shall apply?

Topic 1-5: Understanding, Reading, And Using The California Fire Code

Student information for this topic is also found in the California Fire Code, CBSC, 2007 Edition, Table of Contents.

Individual Activity 1-5-1: California Fire Code Worksheet

Time Frame: 1:30

Materials Needed:

- California Fire Code, CBSC, 2007 Edition
- Pen and pencil

Introduction: This activity provides you the opportunity to develop your ability to use the CFC.

Directions:

1. In Part I, identify the CFC article where you would find regulations for the following topics.
2. In Part II, identify the topic covered for each of the sections listed.
3. You have 1 hour to complete this activity.
4. Be prepared to discuss your answers with the class.

PART I

_____	Exit requirements	_____	Trash
_____	Definitions	_____	Spontaneous ignition
_____	CFC 503.1	_____	Bonfires
_____	Fire hydrants	_____	CFC 101.3
_____	Emergency procedures	_____	Fire drills
_____	Water supply	_____	Address requirements
_____	CFC 1208.2	_____	CFC Appendix 105
_____	Tire storage	_____	Blocked exits
_____	Fire department access roads	_____	Decorations
_____	Fire lanes	_____	CFC 408.9.1
_____	CFC 1008.1.8	_____	Locked exits
_____	General safety precautions	_____	Aisles
_____	Fire escapes	_____	Gates
_____	Ovens	_____	Bars on windows
_____	Electrical hazards	_____	CFC 308

PART II

1. 503 _____
2. 503.2 _____
3. 307.4 _____
4. 315.2.3 _____
5. 703.1 _____
6. 1028 _____
7. 1028.4 _____
8. 906.1 _____

Individual Activity 1-5-2: Reference Standards

Time Frame: 0:15

Materials Needed:

- California Fire Code, CBSC, 2007 Edition, Chapter 45
- Pen or pencil

Introduction: This activity provides you the opportunity to become familiar with Chapter 45 to assist with finding reference standards in the absence of primary code provisions.

Directions:

1. Using CFC Chapter 45, answer the following questions.
2. You have 10 minutes to complete this activity.
3. Be prepared to discuss your answers with the class.

1. What is the address for the National Fire Protection Association?

2. What area does the Underwriters Laboratories Standard "UL 30-04" address?

3. What is the standard number for "Safe Welding and Cutting Practices in Refineries" written by the American Petroleum Institute?

4. How many referenced standards are listed under the American Society for Testing and Materials?

5. What is the name of the standard written by "ISO?"

Topic 1-6: Historical Incidents And Their Affect On the Fire Code

What follows is a brief synopsis of the incidents that have helped to shape laws and codes developed in the United States related to fire, panic and disaster regulations.

Great Chicago Fire

- October 8, 1871
- Estimated to have killed 200-300 people
- Major issues/lessons learned
 - Estimated to have destroyed 2,000 acres of the city
 - Memorialized through Fire Prevention Month each October

Iroquois Theater Fire- Chicago

- December 30, 1903
- 603 dead
- Major issues/lessons learned
 - Set the standard for theaters today
 - First panic device for doors developed as a result of the fire
 - Set the basis for fixed seating and egress

Triangle Shirtwaist Factory Fire- New York City

- March 25, 1911
- 148 dead
- Major issues/lessons learned
 - Blocked exits
 - High-rise access concerns

Cocoanut Grove Night Club Fire- Boston

- November 28, 1942
- Second worst fire in US history
- 492 dead
- Major issues/lessons learned
 - Experimentation on burn victims advanced burn treatments
 - Over capacity
 - Combustible decorations
 - Exiting

Our Lady Of Angels School- Chicago

- December 1, 1958
- 95 dead
- 100 injured
- Major issues/lessons learned
 - School fire alarms and corridors
 - NFPA President at the time Percy Bugbee said, "There are no new lessons to be learned from this fire; only old lessons that tragically went unheeded."

Beverly Hills Supper Club- Southgate, KY

- May 28, 1977
- 165 dead
- 70 injured
- Major issues/lessons learned
 - Overcrowding
 - Concealed combustible construction
 - No evacuation plan
 - No fire alarm or fire sprinklers
 - Many intervening rooms
 - Flame spread rating too high

MGM Grand Hotel – Las Vegas

- November 21, 1980
- 85 dead
- Major issues/lessons learned
 - Set the standard for high-rises

Tunnel Fire- Oakland, CA

- October 20, 1991
- 25 dead
- 150 injured
- 1520 acres burned
- Major issues/lessons learned
 - Many laws changed or created as the result of the fire
 - Standardized hydrants
 - Fire communications
 - Defensible space
 - Roof ratings

Twin Towers- New York City

- Major issues/lessons learned
 - Established Homeland Security
 - Established the National Response Plan
 - Requires everyone to have ICS training
 - Major impact on today's ICC Code development

Station Nightclub Fire, West Warwick, RI

- Feb 20, 2003
- 100 dead
- 96 dead night of fire
- 4 died from injuries
- Major issues/lessons learned
 - Panic
 - Blocked exits
 - Fire killed the patrons
 - Sprinklers now mandatory in many nightclubs

Hurricane Katrina

- Major issues/lessons learned
 - Further refined the National Response Plan, which eventually became the National Response Framework
 - Mutual aid plans developed in many places where it was previously nonexistent
 - Citywide egress studied

Topic 2-1: Terminology Relating To Occupancy Classification And Construction

Student information for this topic is also found in the California Fire Code, CBSC, 2007, Chapter 2 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapters 3, 5, 6, 8, and Glossary.

Glossary of Terms

- Change in use/occupancy**.....Changes made in the character or use of an occupancy that would place the building in a different division of the same group of occupancy or in a different group of occupancies.
- Construction classification**.....The rating given to a particular building based on the materials and methods used to construct it and their ability to resist the effects of fire.
- Fire load**.....The maximum amount of heat that can be produced if all the combustible materials in a given area burn.
- Fire-resistive rating**The amount of time a material or assembly of materials will resist a typical fire as measured on a standard time-temperature curve.
- Floor area**The area included within the surrounding exterior walls of a building excluding vent shafts and courts.
- High-rise**A building that has floors used for human occupancy located more than 75 feet above the lowest level of fire department vehicle access.
- Means of egress**A continuous path of travel from any point in a structure leading to a public way, composed of three parts: exit access, exit, and exit discharge.
- Mixed occupancy**Buildings that have two or more very different types of operations within them.
- Noncombustible**.....Incapable of supporting combustion under normal circumstances.
- Occupancy**The purpose for which a building, or part thereof, is used or intended to be used.
- Occupancy classification**The classifications given to structures by the model code used in that jurisdiction.
- Structural element**Components of a building that support the structure (walls, floors, ceilings, roofs).

Glossary of Occupancy Classes

- Assembly**.....Group A occupancies shall include the gathering of 50 or more persons for such purposes as deliberation, education, instruction, worship, entertainment, amusement, drinking and dining, or awaiting transportation.
- Business**.....Group B occupancies shall include buildings, structures, or portions thereof, for office, professional or service type transactions, which are not classified as Group H occupancies.
Such occupancies include occupancies for the storage of records and accounts, and drinking and dining establishments with an occupant load of less than 50.
- Camp**....."Organized camp" means a site with program and facilities established for the primary purpose of providing an outdoor group living experience with social, spiritual, educational, or recreational objectives, for five days or more during one or more seasons of the year.
Does not include a motel, tourist camp, trailer park, resort, hunting camp, auto court, labor camp, penal or correctional camp nor does it include a child care institution or home-finding agency.
Also does not include any charitable or recreational organization that complies with the rules and regulations for recreational trailer parks provided for by subdivision (b) of Health and Safety Code Section 18301.
- Education**.....Group E occupancies shall include any building used for educational purposes through the 12th grade.
Any building or portion thereof used for day care purposes for more than six persons, not otherwise classified as residential day care.
- Factory/fabricating**.....Group F occupancies shall include the use of a building or structure, or a portion thereof, for assembling, disassembling, fabrication, finishing, manufacturing, packaging, repair, or processing operations that are not classified as Group H occupancies.
Shall include moderate hazard factory and industrial uses as well as low hazard and industrial occupancies.
- Hazardous**.....Group H occupancies shall include buildings or structures, or portions thereof, that involve the manufacturing, processing, generation or storage of materials that constitute a high fire, explosion or health hazard.

- Institutional**Group I occupancies shall include acute care hospitals, sanitariums, nursing homes for nonambulatory and ambulatory patients, health care centers for ambulatory patients receiving outpatient medical care, and mental hospitals, jails, prisons, and similar buildings.
- Mercantile**.....Group M occupancies shall include buildings, structures, or portions thereof, used for the display and sale of merchandise and involving stocks of goods, wares or merchandise incidental to such purposes and accessible to the public.
- Residential**Group R occupancies shall include hotel, motel, apartment, single-family dwellings and duplexes, residential care and residential care for the elderly and family day care not otherwise classified as education.
- Storage**Group S occupancies shall include the use of a building or structure, or a portion thereof, for storage not classified as a hazardous occupancy.
Storage occupancies shall include moderate hazard storage occupancies not classified as Group H occupancies and low hazard storage occupancies.
- Utility**Group U occupancies shall include private garages, carports, sheds, agricultural buildings, fences over 6 feet high, tanks, and towers.

RETIRED CURRICULUM

Group Activity 2-1-1: Occupancy Classification And Types Of Construction

Time Frame: 0:30

Materials Needed:

- Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Glossary
- Fire Prevention 1A Student Supplement, SFT, 2009 Edition
- Pen and pencil

Introduction: This activity provides you the opportunity to identify the different occupancy types and relate to how important this information is to an inspector.

Directions:

1. Review the worksheet and the terms that need to be defined.
2. Find a classmate who knows the definition of one of the terms.
3. After listening to the student's definition, write the definition given, using your own words, on the worksheet.
4. Have the student providing the definition sign the worksheet.
5. You may not talk to any student more than once.
6. You have 20 minutes to complete this activity.
7. Be prepared to discuss your answers with the class.

RETIRED

Occupancy Classification And Types Of Construction Worksheet

	Term	Definition	Someone Who Knows
1.	Construction classification		
2.	Occupancy classification		
3.	Fire resistive rating		

Occupancy Classification And Types Of Construction Worksheet

	Term	Definition	Someone Who Knows
4.	Fire load		
5.	Mixed occupancy		
6.	Noncombustible		

Occupancy Classification And Types Of Construction Worksheet

	Term	Definition	Someone Who Knows
7.	Means of egress		
8.	Assembly		
9.	Business		

RETIRED CURRICULUM

Occupancy Classification And Types Of Construction Worksheet

	Term	Definition	Someone Who Knows
10.	Camp		
11.	Education		
12.	Factory/fabricating		

Occupancy Classification And Types Of Construction Worksheet

	Term	Definition	Someone Who Knows
13.	Hazardous		
14.	Institutional		
15.	Mercantile		

RETIRED CURRICULUM

Occupancy Classification And Types Of Construction Worksheet

	Term	Definition	Someone Who Knows
16.	Residential		
17.	Storage		
18.	Utility		

RETIRED CURRICULUM

Individual Activity 2-1-2: Occupancy Classification And Construction Terminology

Time Frame:	0:30
Materials Needed:	<ul style="list-style-type: none">• <u>Fire Inspection and Code Enforcement</u>, IFSTA, Sixth Edition, Glossary• <u>Fire Prevention 1A Student Supplement</u>, SFT, 2009 Edition• Pen or pencil
Introduction:	This activity provides you student the opportunity to identify the different occupancy classifications and construction types and relate to how important this information is to an inspector.
Directions:	<ol style="list-style-type: none">1. Review the worksheet and the terms that need to be defined.2. Select the definition in Column 2 that most nearly matches a term in Column 1.3. Write the number of the term from Column 1 in the parenthesis that precedes the appropriate response in Column 2.4. You have 20 minutes to complete this activity.5. Be prepared to discuss your answers with the class.

RETIRED

Occupancy Classification and Construction Terminology Worksheet

Column 1

Column 2

- | | | |
|------------------------------|--------------------------|---|
| 1. Assembly | <input type="checkbox"/> | A building that has floors used for human occupancy located more than 75 feet above fire department access. |
| 2. Business | <input type="checkbox"/> | A building that has two or more very different types of operations within them. |
| 3. Camp | <input type="checkbox"/> | A building with materials that constitute a high fire, explosion, or health hazard. |
| 4. Education | <input type="checkbox"/> | Acute care hospitals, sanitariums, nursing homes for ambulatory and nonambulatory patients |
| 5. Factory | <input type="checkbox"/> | Any building used for educational purposes through the 12 th grade. |
| 6. Fire load | <input type="checkbox"/> | Area included within the surrounding exterior walls of a building excluding vent shafts and courts. |
| 7. Fire resistive | <input type="checkbox"/> | Buildings used for assembling and disassembling products. |
| 8. Floor area | <input type="checkbox"/> | Buildings used for the display and sale of merchandise. |
| 9. Hazardous | <input type="checkbox"/> | Buildings, structures, or portions thereof, for office, professional, or service type transactions. |
| 10. High-rise | <input type="checkbox"/> | Classifications given to structures by the model code used in that jurisdiction. |
| 11. Institutional | <input type="checkbox"/> | Components of a building that support the structure (walls, floors, ceilings, roofs). |
| 12. Means of egress | <input type="checkbox"/> | Continuous path of travel from any point in a structure leading to a public way. |
| 13. Mercantile | <input type="checkbox"/> | Gathering of 50 or more persons for such purposes as deliberation, education, instruction, and worship. |
| 14. Mixed occupancy | <input type="checkbox"/> | Hotels, motels, apartments, single-family dwellings, and duplexes. |
| 15. Noncombustible | <input type="checkbox"/> | Incapable of supporting combustion under normal circumstances. |
| 16. Occupancy classification | <input type="checkbox"/> | Maximum amount of heat that can be produced if all the combustible materials in a given area burn. |
| 17. Residential | <input type="checkbox"/> | Occupancies used for storage not classified as a hazard occupancy. |
| 18. Storage | <input type="checkbox"/> | Private garages, carports, sheds, agricultural buildings, fences over six feet high, and tanks. |
| 19. Structural element | <input type="checkbox"/> | Rating that indicates the amount of time a material or assembly of materials will resist a typical fire. |
| 20. Utility | <input type="checkbox"/> | Site with program and facilitates established for the primary purpose of providing outdoor group living. |

Topic 2-2: Relationship Of Fire Protection To Building Construction And Occupancy

Student information for this topic is found in Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapters 3 and 6.

RETIRED CURRICULUM

Topic 2-3: Classification Of Occupancies

Student information for this topic is also found in the California Fire Code, CBSC, 2007 Edition, Section 202, General Definitions – Occupancy Classifications and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 5.

Individual Activity 2-3-1: Classification Of Occupancies

Time Frame: 0:15

Materials Needed:

- California Fire Code, CBSC, 2007 Edition, Section 202, General Definitions – Occupancy Classifications
- Pen or pencil

Introduction: This activity provides you the opportunity to classify various occupancies.

Directions:

1. Using information taken from the table, identify the group classification for the following occupancies.
2. You have 10 minutes to complete this activity.
3. Be prepared to discuss your answers with the class.

Type Of Occupancy	Group Classification
1. Restaurant with occupant load of 77	_____
2. Day-care center for 30 children, all over 2½ years old	_____
3. Nursery for 24-hour care of 2-year-olds	_____
4. A stadium	_____
5. State prison	_____
6. Welding shop	_____
7. Woodworking shop	_____
8. Restaurant with an occupant load of 32	_____

Type Of Occupancy	Group Classification
9. Service station	_____
10. Repair garage with welding	_____
11. Condominium	_____
12. Nursing home for nonambulatory patients	_____
13. 8-foot high fence	_____
14. Fiberglass shop where flammable liquids are used	_____
15. Fire station	_____
16. Clubhouse with an occupant load of 75	_____
17. College classroom with 49 occupants	_____
18. 15-story office building	_____
19. Electroplating shop using three 1250-gallon acid tanks	_____
20. 150,000 square foot retail store	_____

RETIRED CURRICULUM

Group Activity 2-3-2: Rotating Review

Adapted from Cooperative Learning
Dr. Spencer Kagan
Kagan Cooperative Learning
San Clemente, California 4/97

Time Frame:

0:40 - 1:00

Materials Needed:

- Conference pad (minimum 11 sheets)
- Colored marker (one color for each group)
- Tape

Introduction:

This activity provides you the opportunity to develop the ability to identify and understand the 11 general occupancy classifications.

Directions:

1. The class will be divided into 11 groups and given a blank sheet and colored marker.
2. Write the general occupancy classification your group is given at the top of your sheet.
3. Tape your sheet on a solid surface, leaving enough room for the group to work.
4. Your group has **one minute** to write as many facts on the occupancy classification as you can. The instructor will call "STOP" when the time is up.
5. Rotate to the next sheet, taking your colored marker with you.
6. Your group has **two minutes** to read and discuss what the previous group has written. Put a question mark (?) by any item with which the group disagrees or has a question. The instructor will call "STOP" when the time is up.
7. Your group has **one minute** to write as many **additional** facts on the occupancy classification as you can. Do not let the same person do all the writing. Rotate this assignment. The instructor will call "STOP" when the time is up.
8. Rotate to the next sheet.
9. Continue this procedure until each group has progressed through all occupancy classifications and is back to its original sheet.
10. "Clean up" your sheet, answer questions, and remove or add material.
11. Select a group leader to present your group's occupancy classification facts to the class.

Topic 3-1: Terminology Relating To Egress Requirements

Student information for this topic is also found in the California Fire Code, CBSC, 2007 Edition, Chapters 2 and 10 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 6.

Individual Activity 3-1-1: Word Search

Time Frame: 0:15

Materials Needed:

- California Fire Code, CBSC, 2007 Edition, Chapters 2 and 10
- Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 6
- Fire Prevention 1A Student Supplement, SFT, 2009 Edition
- Pen or pencil

Introduction: This activity provides you the opportunity to become familiar with the terms related to egress requirements.

Directions:

1. Locate in the maze the appropriate word for the descriptions listed.
2. Circle the word once found.
3. You have 10 minutes to complete this activity.
4. Be prepared to discuss your answers with the class.

TERMINOLOGY WORD SEARCH

1. The portion of the means of egress between the occupants' location in the building or structure to the exit.
2. The area between the exit and the public way or safe dispersal area.
3. Can be side hinged swing type, balanced, or pivoted.
4. Portion of the means of egress between the exit access and the exit discharge or public way.
5. Panic _____.
6. Lighting the means of egress.
7. Based upon all portions of the building being occupied at the same time.
8. Inhabitant.
9. What a person may do when they cannot get the door open easily.
10. Object that identifies the exit.
11. _____ distance.
12. Street or other approved route of travel.

E G L R E S S S Y H I T S T E
 M Q B E A C R O S A L N D Z R
 J L V F V G W N S R L A Q U O
 D I S C H A R G E D U P P F O
 P K C T Y N R A C W M U E H D
 M A I Z G D C T C A I C I Y C
 W X N I H M S T A R N C V R X
 E Y S I Z Y U F M E A O Y W I
 T R E X C R D G O H T V V E T
 V Z M Q Y Q Y L E A I S L L T
 C O M X C Q D G E E O T F I U
 U M O M A G G S M P N F B L C
 E O X F C D L U Y E B J O H W
 Q R K T O G X X O K D A J B N
 K G Q H R Q W S O Z D F T G P

Topic 3-2: Determining Adequate Means Of Egress

Student information for this topic is also found in the California Fire Code, CBSC, 2007 Edition, Chapter 10 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 6.

Individual Activity 3-2-1: Determining Occupant Load And Minimum Egress Requirements

Time Frame: 0:20

Materials Needed:

- California Fire Code, CBSC, 2007 Edition, Chapter 10
- Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 6
- Fire Prevention 1A Student Supplement, SFT, 2009 Edition
- Pen or pencil

Introduction: This activity provides you the opportunity to determine occupant load and minimum egress requirements so the occupants can safely and quickly exit a building.

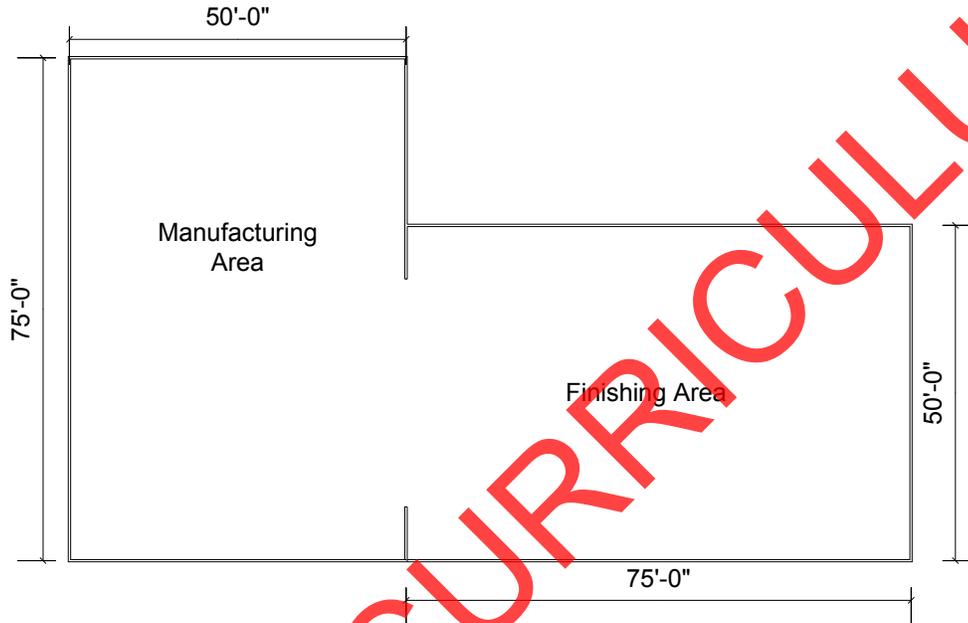
Directions:

1. Using information from the texts listed above, answer the following questions.
2. You have 15 minutes to complete this activity.
3. Be prepared to discuss your answers with the class.

1. Your fire company has been assigned to perform an inspection in a building that was formerly a warehouse and has recently been turned into a nightclub. The public area of this facility is a room that measures 100' x 150' with no fixed seats. The Fire Marshal has asked your company to determine the legal occupant load. Determine both the occupant load and minimum number of exits required.

$$\frac{\text{Square footage} = \underline{\hspace{2cm}}}{\text{Factor to be used} = \underline{\hspace{2cm}}} = \underline{\hspace{2cm}} \text{ Persons} \quad \underline{\hspace{2cm}} \text{ Exits}$$

2. You have been given architectural plans for a new building being construction within your jurisdiction. The building will be a manufacturing facility for charcoal grills and meat smokers. Given the following diagram of the building, determine the legal occupant load for the facility.



Determine the Total Floor Area = _____ Persons _____ Exits
Occupant Load Factor

3. You are assigned to determine the occupant load on a new youth-oriented entertainment facility being constructed within your jurisdiction. The building's principal room is 100' x 250'. Depending on the day of operation, this room is used as either a skating rink or a dance hall.

- Determine floor area of the principal room: _____
- Determine the occupancy factor if it were a skating rink without a deck: _____
- Determine the occupancy factor if it were a dance hall: _____

Using the highest occupancy factor, answer the remaining questions.

- What is the general classification of this occupancy? _____
- What is the minimum number of exits required by the CFC? _____
- Why? _____

4. As a code enforcement official, you are given plans for a new restaurant with an attached clothing store in your jurisdiction. You are assigned to determine the occupant load for this structure. The restaurant portion of the building is 100' x 125' and contains tables and chairs that are not fixed. The clothing store portion is 75'x 75'.

Floor Area of Restaurant = _____	Floor Area of Clothing Store = _____
Occupant Factor = _____	Occupant Factor = _____
Occupant Load of Restaurant = _____	Classification of Restaurant = _____
Occupant Load of Store = _____	Classification of Store = _____
Total Occupant Load = _____	

5. Identify and assess an egress system with the following components using .2 for level exits and .3 for stairwells. Use the following measurements: the alley= 12', the hallway = 42", and the exit door = 36"

How wide is the exit (inches)? _____	What is the capacity? _____
How wide is the exit (inches)? _____	What is the capacity? _____
How wide is the exit discharge (inches)? _____	What is the capacity? _____
How many people can safely use the means of egress system based on the information given? _____	

RETIRED CURRICULUM

Topic 3-3: Means Of Egress Requirements

Student information for this topic is also found in the California Fire Code, CBSC, 2007 Edition, Chapter 10 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 6.

Group Activity 3-3-1: Exiting Requirements

Time Frame: 1:00

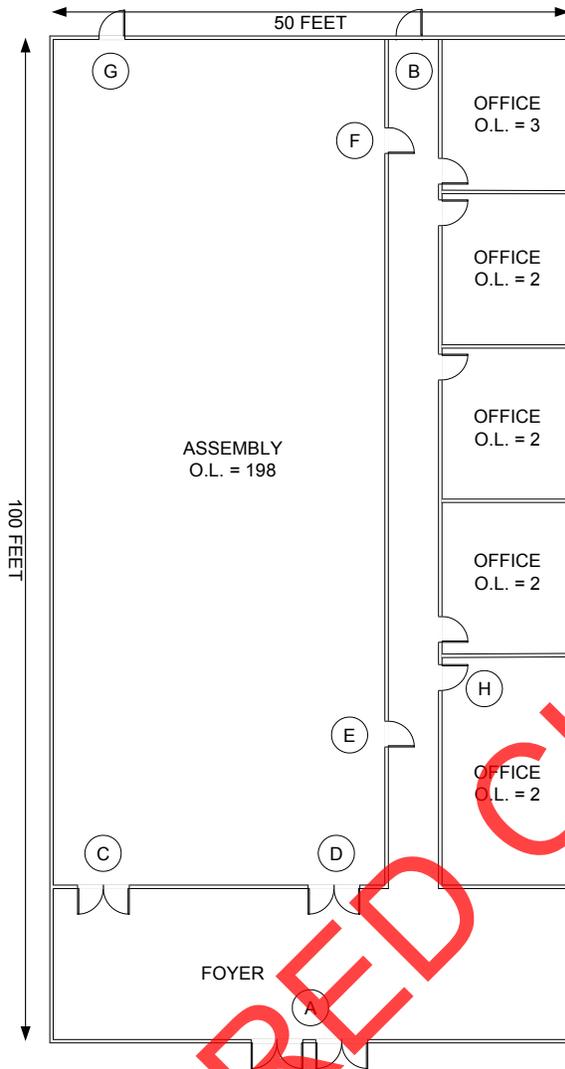
Materials Needed:

- California Fire Code, CBSC, 2007 Edition, Chapter 10
- Pen or pencil

Introduction: This activity provides the students the opportunity to determine exit requirements so the occupants can safely and quickly exit a building.

Directions:

1. In your group, review the six diagrams and answer the questions for each.
2. You have 45 minutes to complete this activity.
3. Be prepared to discuss your answers with the class.



XYZ CHURCH
5,000 Square Feet

LEGEND
DB = Deadbolt
NK = Not Known
PH = Panic Hardware
SR = Self-Releasing

Occupancy Classification(s): _____

Number Of Exits Required: _____

	From Room	From Building
--	------------------	----------------------

Type of Door Lock/Latch: _____

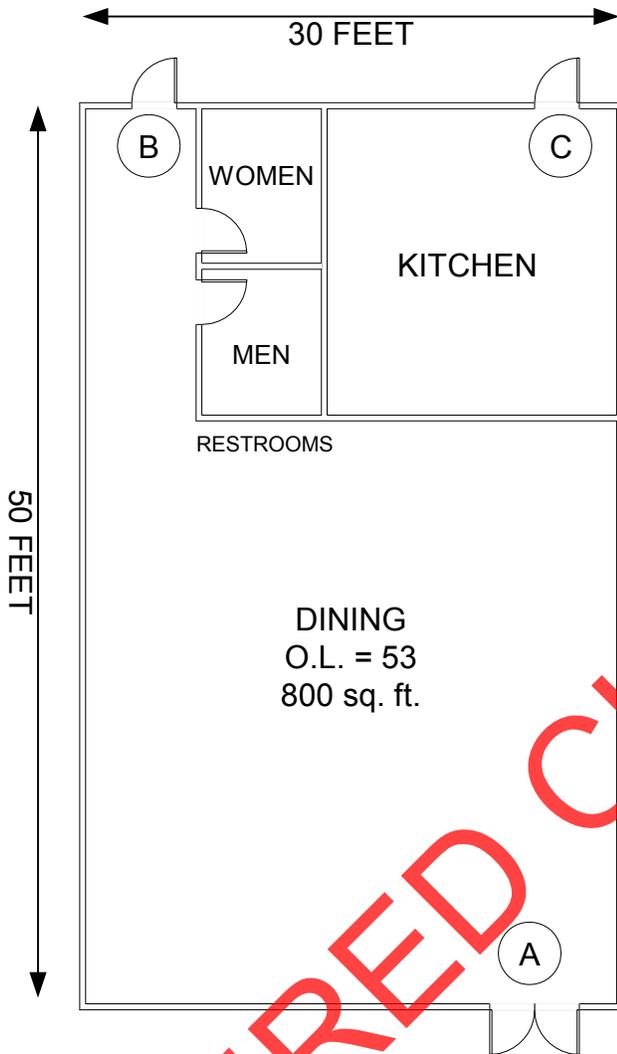
A B C D E F G

Door Swing In Direction Of Travel Required?

A B C D E F G H

Exit Signs Required? _____

Emergency Lights Required? _____



AMY'S BREAKFAST BUNGALOW
1,500 Square Feet

LEGEND
DB = Deadbolt
NK = Not Known
PH = Panic Hardware
SR = Self-Releasing

Occupancy Classification(s): _____

Number of Exits Required: _____

Type of Door Lock/Latch: _____

A B C

Door Swing In Direction Of Travel Required? _____

A B C

Exit Signs Required? _____

Emergency Lights Required? _____



JESSE'S USED
RECORDS & TAPES
1,500 Square Feet

LEGEND
DB = Deadbolt
NK = Not Known
PH = Panic Hardware
SR = Self-Releasing

Occupancy Classification(s): _____

Number of Exits Required: _____

Type of Door Lock/Latch: _____

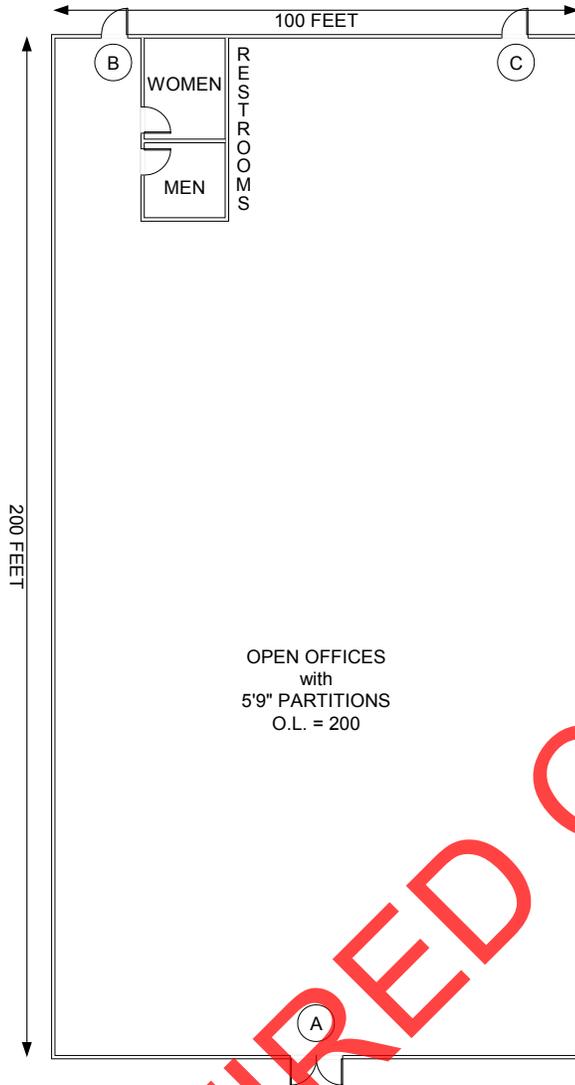
A B C

Door Swing In Direction Of
Travel Required? _____

A B C

Exit Signs Required? _____

Emergency Lights Required? _____



TIM'S DATA CENTER
20,000 Square Feet

LEGEND
DB = Deadbolt
NK = Not Known
PH = Panic Hardware
SR = Self-Releasing

Occupancy Classification(s): _____

Number of Exits Required: _____

Type of Door Lock/Latch: _____

A B C

Door Swing In Direction Of
Travel Required?

A B C

Exit Signs Required? _____

Emergency Lights Required? _____

Topic 4-1: Terminology Relating To Fire-resistive Assemblies

Student information for this topic is also found in Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 3 and Glossary.

Glossary of Terms

- Astragal**..... A strip of door material that overlaps the other door to seal the gap between them.
- Bitumen**..... Any of various mixtures of hydrocarbons (asphalt) often together with their nonmetallic derivatives that occur naturally or are obtained as residues after heat-refining natural substances (petroleum).
- Brands**..... Large, flying, burning embers that are lifted by a fire's thermal column and carried away with the wind.
Small burning pieces of wood or charcoal used to test the fire resistance of roof coverings and roof deck assemblies.
- Coordinator**..... A device to ensure that the door without the "astragal" closes first.
- Roof covering** The final outside cover that is placed on top of a roof deck assembly. Common roof coverings include: composite or wood shake shingles, tile, slate, tin, and asphalt tarpaper.
- Roof deck** The bottom components of the roof assembly that support the roof covering.
- Roof deck construction**..... Plywood, wood studs (2"x4" [50mm x 100mm]), and larger lathe strips.
- Roofing assembly** Roof deck, substrate or thermal barrier, insulation, vapor barrier, underlayment, interlayment, base plies, roofing plies, and roof covering that is assigned a roofing classification.
- Roofing assembly, fire retardant**, Listed as a Class A, Class B, or Class C roofing assembly.
- State Responsibility Area (SRA)**..... Areas in which financial responsibility of preventing and suppressing fire has been determined by the State Board of Forestry to be primarily the responsibility of the State.

- Very High Fire Hazard Severity Zone** Areas consistent with statewide criteria: fuel loading, slope, fire weather, and other relevant factors.
- Wood shakes**..... Split or sawn tapered or nontapered pieces of approved durable wood.
Taper-sawn pieces of approved preservative treated wood.
- Wood shingle** Tapered pieces of approved durable wood, sawn on both sides.

RETIRED CURRICULUM

Individual Activity 4-1-1: Terminology Crossword

Time Frame:

0:20

Materials Needed:

- Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Glossary
- Fire Prevention 1A Student Supplement, SFT, 2009 Edition
- Pen or pencil

Introduction:

This activity provides you the opportunity to become familiar with the terms relating to fire-resistive assemblies.

Directions:

1. Complete the puzzle using the clues.
2. You have 15 minutes to complete this activity.
3. Be prepared to discuss your answers with the class.

RETIRED CURRICULUM

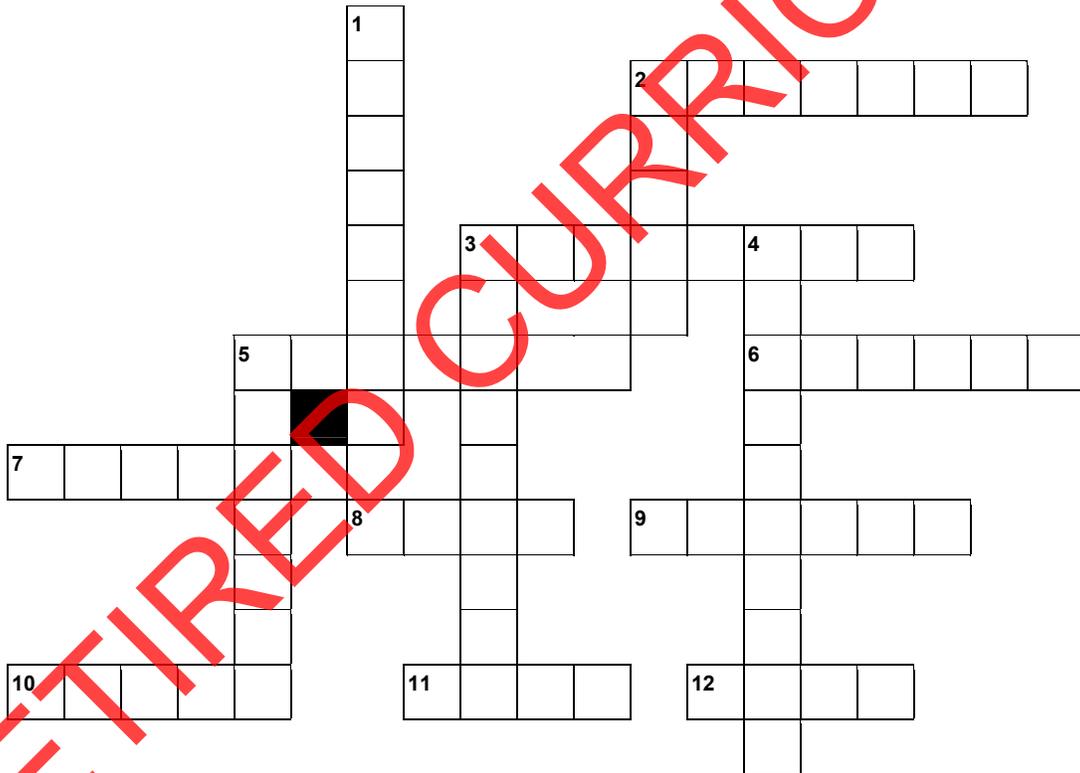
CLUES ACROSS

2. Roof deck material
3. Wrapping
5. Hydrocarbons
6. Made with tapered wood
7. Risk
8. Foundation
9. Burning embers
10. Steam

11. Area on a ship
12. Crown

CLUES DOWN

1. Harshness
2. Layers
3. Common roof covering
4. Padding
5. Blockade



Topic 4-2: Types And Classes Of Roof Coverings

Student information for this topic is also found in Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 3.

California Building Code

1505.1.1 Roof Coverings within Very High Fire Hazard Severity Zones

The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair, or replacement of the roof of every existing structure, shall be a fire-retardant roof covering that is at least Class A. **Exception:** The requirements shall not apply in any jurisdiction that adopts the model ordinance approved by the State Fire Marshal pursuant to Section 51189 of the government code or an ordinance that substantially conforms to the model ordinance and transmits a copy to the State Fire Marshal.

1505.1.2] Roof Coverings within State Responsibility Areas

The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair, or replacement of the roof of every existing structure, shall be a fire-retardant roof covering that is at least Class B. **Exception:** Areas designated as Moderate Fire Hazard Severity Zones.

1505.1.3 Roof Coverings in All Other Areas

The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair, or replacement of the roof of every existing structure, shall be a fire-retardant roof covering that is at least Class C.

1505.1.4 Roofing requirements in a Wildland-Urban Interface Fire Area

Roofing Requirements for structures located in a Wildland-Urban Interface Fire Area shall also comply with Section 704A.1

Table 1505.1^a Minimum Roof Covering Classification For Types of Construction

Construction Type	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
Roof Class	B	B	B	C	B	C	B	B	C

^a Unless otherwise required in accordance with Chapter 7A

Individual Activity Sheet 4-2-1: Roof Assembly Classifications

Time Frame:	0:30
Materials Needed:	<ul style="list-style-type: none"> • <u>Fire Prevention 1A (Bridge) Student Supplement, SFT, 2009 Edition, Page 58</u> • Pen or pencil
Introduction:	This activity provides you the opportunity to develop your ability to match the correct roof covering to the construction type and occupancy.
Directions:	<ol style="list-style-type: none"> 1. Identify the required roof covering assembly classification using the CBC Table found in your student supplement 2. You have 20 minutes to complete this activity. 3. Be prepared to discuss your answers with the class.

Occupancy	Construction	Roof Classification
F-1		
A-4		
H-1		
R-2		
R-3 (In State Responsibility Area)		
R-3 (In a Very High Fire Hazard Severity Zone)		
I-3		
B		
S-1		
M		
S-1		
A-2		
E		
S-1 (In SRA)		
U		

Topic 4-3: Purpose And Location Of Fire Rated Building Construction and Components

Student information for this topic is found in the California Fire Code, CBSC, 2007 Edition, Chapter 7 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 3.

RETIRED CURRICULUM

Topic 4-4: Fire Doors And Windows

Student information for this topic is also found in Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 3.

Inspecting Fire Doors

- Verify the rating is appropriate (frame should exceed or equal door rating)
- Note and report any problems (doors without ratings or inappropriate ratings)
- Door hardware and opening pressure
 - Panic hardware
 - When serving 50 or more people or hazardous areas
 - Maximum 15 pounds pressure opening force
 - Integrated latches and locks when serving less than 50 people
 - Maximum 30 pounds pressure opening force
 - Note and report all failures
- Observe door swing and opening characteristics
 - Door swing in the direction of egress when serving 50 or more people or hazardous areas
- Observe door closing operation
 - Doors should completely close and latch in sequence
 - No wedges or door stops
 - Note and report any failures
- Observe condition of doors
 - Unobstructed, undamaged
 - Distinct from surrounding walls
 - Approved hold open devices only (remove wedges, report attached door stops)
 - Glass is rated/wired and maintained
- Check proximity of storage to doors and windows
 - Indoors: Check for obstructions
 - Outdoors: Dumpsters more than 5 feet from window and door openings
- Fusible link detector-operated doors
 - Warning! Do not operate the fusible link
 - Annual testing by competent person
 - Request written verification

- Tin clad doors
 - Check operations
- Corridor doors
 - Check smoke seals
- Fire door signs in place per CFC §1111.2.3
 - "Fire Door - Do Not Obstruct"
 - Require as needed

Fire Door Ratings

Door Rating	Location	Glass	Smoke Gaskets	Auto/Self-Closing
3-hour	4-hour area separation walls	None allowed	No requirement	Automatic closing
1½-hour	2-hour walls	Maximum 100 square inches Factory installed frame Field installed glass	No requirement	Automatic or self-closing
1 hour	1-hour walls	Maximum 100 square inches Factory installed frame Field installed glass	No requirement	Automatic or self-closing
¾-hour	Exterior openings	Maximum 9 SF	No requirement	Automatic or self-closing
20-minute door	Separate rooms from rated corridors Prevents smoke mitigation	Maximum 9 SF Wired Glass	Smoke tight gaskets	Automatic or self-closing

Topic 5-1: General Fire Safety

Student information for this topic is found in the California Fire Code, CBSC, 2007 Edition, Chapters 3, 5, 6 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 6.

RETIRED CURRICULUM

Topic 5-4: High-piled Combustible Storage

Student information for this topic is also found in the California Fire Code, CBSC, 2007 Edition, Chapter 23.

Individual Activity 5-4-1: Class I Commodity

Time Frame: 0:15

Materials Needed:

- California Fire Code, CBSC, 2007 Edition, Chapter 23, Table 2306.2
- Pen or pencil

Introduction: This activity provides you the opportunity to determine needed requirements for all storage areas.

Directions:

1. Using Table 2306.2, identify the requirements for the following storage area.
2. You have 10 minutes to complete this activity.
3. Be prepared to discuss your answers with the class.

Class I Commodity

Area is 2,455 Square Feet

1. Automatic fire extinguishing system
2. Fire detection system
3. Building access
4. Smoke and heat removal
5. Curtain boards

Individual Activity 5-4-2: Class III Commodity

Time Frame:	0:15
Materials Needed:	<ul style="list-style-type: none">• <u>California Fire Code</u>, CBSC, 2007 Edition, Chapter 23, Table 2306.2• Pen or pencil
Introduction:	This activity provides you the opportunity to determine needed requirements for all storage areas.
Directions:	<ol style="list-style-type: none">1. Using Table 2306.2, identify the requirements for the following storage area.2. You have 10 minutes to complete this activity.3. Be prepared to discuss your answers with the class.

Class III Commodity

Area is 502,100 Square Feet

1. Automatic fire extinguishing system _____
2. Fire detection system _____
3. Building access _____
4. Smoke and heat removal _____
5. Curtain boards _____
6. Can any additional requirements be included? _____

Topic 5-5: Electrical Fire Hazards And Safety Devices

Student information for this topic is found in the California Fire Code, CBSC, 2007 Edition, Chapter 6, Section 605 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 4.

RETIRED CURRICULUM

Topic 6-1: Factors Relating To Life Safety

Student information for this topic is also found in Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapters 1, 2, and 5.

A Guide to Life Safety Risk Assessment

Acknowledgements

This guide to fire safety risk assessment was derived from a document produced by a working group of representatives from the Chief and Assistant Chief Fire Officers' Association (Scotland) Fire Safety Committee, Her Majesty's Fire Service Inspectorate for Scotland and The Scottish Office Construction and Building Control Group.

Status of the Guide

This guide does not have statutory force but presents a set of standards intended to assist in the achievement of consistency of inspection and enforcement.

Introduction

General

The guide has been developed to provide a simple and reliable method of assessing life safety in buildings and follows normal practice in considering the life risks, the hazards, and the precautions available to mitigate the hazards. It permits an assessment as to whether an acceptable level of safety has been achieved, or if there is a need for improvements.

The guide does not attempt to set new standards for life safety, and reference is made to existing technical standards, codes, and guidance documents. In order to provide a general-purpose guide it is accepted that some buildings will present more complex or difficult problems for assessment and that in such cases this guide will only serve as the first stage of any assessment.

It is not intended to provide fire authorities with a means of determining the frequency of inspections necessary for different risk categories of premises. However, the findings of the risk assessment are likely to be one factor in determining the frequency of inspections.

Method

The guide consists of eight worksheets and a summary sheet. Each worksheet should be used in every assessment, and one summary sheet completed for each premise assessed. Worksheet 1 examines the life risk in the premises; worksheets 2 and 3 consider the possible fire hazards; and worksheets 4 to 8 consider what fire precautions, if any, have been provided. In evaluating the hazards and precautions, reference is made in the worksheets to current "benchmark" guidance against which the assessment is to be made. As this "benchmark" guidance is not repeated on the worksheets, it is essential that the assessors are familiar with it.

Excellent precautions are those that are above the "benchmark" standard and may serve to mitigate some hazards or particular life risk problems. Precautions that are at the "benchmark" should be what are normally expected to be present in accordance with our codes and standards. Precautions that are below the "benchmark," but can be brought up to the "benchmark" standard by housekeeping, are not a serious concern and just require reminders about importance of housekeeping. Sub-standard precautions, which are at an unacceptable level, will require remedial work, possibly a more detailed assessment, and maybe even enforcement action.

A worked example of the summary sheet is included in this guide. (A removable blank summary sheet is also provided for fire authorities to reproduce as required.)

People Qualified To Use the Guide

A competent person is one who has sufficient technical training and actual experience, or technical knowledge and other qualities to understand fully the dangers involved and the statutory and other provisions mentioned in paragraph above.

Worksheet 1: Life Risk

Before considering hazards and precautions, it is important to establish the level of life risk within the building, and in particular to identify any unusual problems.

Assess the occupants and identify if there are any life risk problems. In particular:

(A) Sleeping Risk

- Hotels
- Boarding houses
- Houses in multiple occupation
- Shared residential accommodation
- Prisons
- Other residential institutions

(B) Mobility Risk - A high proportion of the occupants are disabled, have their mobility impaired, have learning difficulties, are elderly, or are very young. As there will be some disabled people in every building this is only relevant when the percentage with mobility impairment is greater than that in the normal population.

- Day centers for the elderly
- Nurseries
- Prisons

(C) Familiarity Risk - A high proportion of the occupants are neither staff nor long-term residents.

- Shops
- Hotels
- Cinemas

(D) Numbers Risk - Likely to be large numbers of people assembled during the normal use of the building (using 50 or more people as a "benchmark").

- Ice rinks
- Schools
- Shopping centers

Where the premises are likely to be used for different activities leading to different levels of life risk, then it may be necessary to undertake separate risk assessments.

This will be particularly the case where premises might be subject to license applications for specific events.

Record findings on the summary sheet of any risks that have been identified.

- Sleeping
- Mobility
- Familiarity
- Numbers

Worksheet 2: Ignition Sources

For there to be a fire, there must be an ignition source and a fuel. The first hazard to be assessed is therefore the ignition sources within the building.

Assess the hazard posed by ignition sources.

- Cooking equipment
- Electrical hazards
- Open flames
- Space heating appliances
- Process risk
- Machinery
- Outside contractors (hot work)
- Arson
- Vandalism
- Smoking materials

Where the premises are subject to a variety of different uses then it might be necessary to carry out more than one risk assessment.

Assessment should be against the standards set out in the reference documents that serve as a "benchmark." Some of the codes that apply to this worksheet include:

- 2007 CFC Chapter 3 - General Safety Precautions
- 2007 CFC Chapter 26 - Hot Work
- 2007 CFC Chapter 6 - Electrical Equipment and Wiring

Record findings on the summary sheet of the level of hazard:

- Benchmark: Acceptable or minimum standard.
- Below benchmark: Can be reduced to acceptable by housekeeping measures.
- Compensation: Requires compensation.
- Substandard: -Is unacceptable even with mitigation.

Worksheet 3: Combustible Materials

The second hazard to be assessed is the level of combustible materials that might serve as fuel either within the building or as part of the building structure.

Assess the hazard posed by combustible materials. This should cover both the combustible materials within the building and any combustible materials used in the construction of the building. In particular:

(A) Contents Flammable Materials (in storage or in use):

- Highly flammable materials (especially liquids)
- Bulk storage of goods
- Fabrics
- Furnishings
- Furniture
- Waste

(B) Building Structure

- Combustible construction
- Combustible wall coverings

Where the premises are subject to a variety of different uses then it might be necessary to carry out more than one risk assessment.

Assessment should be against the standards set out in the reference documents that serve as a "benchmark." These are some of the codes and standards that apply to this worksheet:

- 2007 CFC Chapter 3 - General Safety Precautions
- 2007 CFC Chapter 13 - Prevention of Dust Explosion
- 2007 CFC Chapter 23 - High-Piled Combustible Storage
- 2007 CFC Chapter 26 - Hot Work
- 2007 CFC Chapter 27 - Hazardous Materials
- 2007 CFC Chapter 28 - Aerosol Products
- 2007 CFC Chapter 29 - Combustible Fibers
- 2007 CFC Chapter 30 - Compressed Gases
- 2007 CFC Chapter 32 - Cryogenic Fluids
- 2007 CFC Chapter 33 - Explosive Materials
- 2007 CFC Chapter 34 - Flammable and Combustible Liquids
- 2007 CFC Chapter 38 - Liquefied Petroleum Gas

Record findings on the summary sheet of the level of hazard:

- Benchmark: -Acceptable or minimum standard
- Below benchmark: Can be reduced to acceptable by housekeeping measures
- Compensation: Requires compensation
- Substandard: -Is unacceptable even with mitigation

Worksheet 4: Prevention and Management

Turning to the precautions, the first to be considered is the prevention of fire and the fire safety management of the building.

Assess the fire prevention and fire safety management measures.

- Fire safety management methods
- Fire safety training (both means of escape and first aid fire fighting)
- Fire drills
- Fire emergency plan
- Housekeeping standards
- Assigned responsible person
- Record keeping
- Security and protection measures from arson
- Previous history of fires
- Self-assessment of fire risk
- Past inspection results; on-going prevention and inspection practices or policies
- Maintenance and recording of fire safety features (detection, alarm, extinguishers, lighting etc)
- Hot work procedures (or other special permits to work)
- First aid fire fighting equipment

Where the premises are subject to a variety of different uses then it might be necessary to carry out more than one risk assessment.

Assessment should be against the standards set out in the reference documents that serve as a "benchmark." These are:

- 2007 CFC Chapter 1 - Section 105. Permits
- 2007 CFC Chapter 3 - General Safety Precautions
- 2007 CFC Chapter 4 – Emergency Procedures
- 2007 CFC Chapter 9 - Fire Protection Systems and Equipment
- 2007 CFC Chapter 10 - Maintenance of Means of Egress and Emergency Escape

Record findings on the summary sheet of the level of precautions.

- Excellent: Above benchmark standard
- Benchmark: Acceptable or minimum standard
- Below Benchmark: Below benchmark standard due to bad housekeeping
- Substandard: Unacceptably below benchmark standard

Worksheet 5: Communications

If ignition occurs, the first priority is to detect the fire and to initiate an alarm. If this is successful then the occupants can begin to escape and the fire brigade can respond to the alarm. It is also possible that some of the structural fire precautions may be dependent upon the successful detection of the fire (e.g. fire shutters).

Assess the means of communication in the event of fire.

- Manual fire detection (i.e. reliant upon the actions of the occupiers or a guy named manual)
- Automatic fire detection
- Fire alarm system, and monitoring status
- Fire safety signs (directional and warning)
- Alerting and signaling provisions (what to do in the event of fire)

Assessment should be against the standards set out in the reference documents that serve as a "benchmark." These are the fire code sections relevant to this worksheet:

- 2007 CFC Chapter 4 - Emergency Procedures
- 2007 CFC Chapter 9 - Fire Protection Systems and Equipment
- NFPA 72 - National Fire Alarm Code
- CCR Title 19

Record findings on the summary sheet of the level of precautions.

- Excellent: Above benchmark standard
- Benchmark: Acceptable or minimum standard
- Below Benchmark: Below benchmark standard due to bad housekeeping
- Substandard: Unacceptably below benchmark standard

Worksheet 6: Structural Precautions

Whether detection is successful or not, the structural precautions should help to control the spread of the fire. If they are successful, they buy time for people to escape.

Assess the structural fire precautions.

- Fire resistance and non-combustibility
- Separation and compartmentation
- Concealed spaces (void spaces)
- Protection of openings and fire stopping
- Distance of sides of buildings from boundaries
- Requirements for special purpose groups (shared residential accommodation)
- Single story commercial buildings and shops
- Provision of sprinkler and other auto-suppression systems

Assessment should be against the requirements of the building code in force at the time of the building's erection, alteration, or change of use, and these should be regarded as the "benchmark" standards. All buildings should have received an occupancy certificate showing compliance with the building code in force at the time of their construction or at the time of the last change of use. The current fire code standards that are relevant to this worksheet:

- 2007 CFC Chapter 3 - General Safety Precautions
- 2007 CFC Chapter 14 - Fire Safety During Construction, Alteration, or Demolition of a Building

If the building being assessed has certificate of occupancy, and has not been changed/altored since that date, the presumption should be that the structural "benchmark" standard has been met, or possibly exceeded. Assessors should be aware that buildings may have been subject to relaxations granted by the local authority. Relaxations may or may not be granted with additional conditions setting other fire safety requirements (for example automatic detection). In the case of relaxations, the local fire authority should be consulted and a check should be made of their records. If the building does not have a certificate of occupancy, or if there is evidence that it has been altered, or has undergone a change of use since the certificate was issued, then this may indicate an unacceptable level of protection. It has to be remembered that there is no obligation on a building owner to upgrade a building to comply with the most recent requirements of the building code, provided there has been no change of use. In most jurisdictions, the inspector should refer the occupancy to the proper department (Building) for reclassification. If the assessment reveals that the means of escape are prejudiced by bad housekeeping (e.g., holes in compartment walls, missing fire doors etc), this should be noted and enforcement actions initiated. Conditions causing severe impairment of the egress system should be corrected in the inspector's presence, or the facility closed until such time that compliance is obtained.

Record findings on the summary sheet of the level of precautions.

- Excellent: Above benchmark standard
- Benchmark: Acceptable or minimum standard
- Below Benchmark: Below benchmark standard due to bad housekeeping
- Substandard: Unacceptably below benchmark standard

Worksheet 7: Means of Escape

Once the occupants have been given warning of the existence of a fire, they can attempt to escape.

Assess the means of escape

- Exits
- Escape routes
- Travel distances
- Design for horizontal escape
- Design for vertical escape
- Doors across escape routes
- Internal fire spread
- Galleries

- Places of special fire risk
- Mechanical ventilation systems
- Emergency lighting

Special care should be taken with auditoria and air-supported structures. Assessment should be against the requirements of the building codes in force at the time of the building's erection, alteration, or change of use, and these should be regarded as the "benchmark" standards. All buildings should have received a completion certificate of occupancy showing compliance with the building code in force at the time of their construction or at the time of the last change of use. The current fire code standards relevant to this worksheet are:

- 2007 CFC Chapter 10 - Maintenance of Means of Egress and Emergency Escapes
- 2007 CFC Index - Places of Assembly

If the building being assessed has certificate of occupancy, and has not been changed/alterd since that date, the presumption should be that the structural "benchmark" standard has been met, or possibly exceeded. Assessors should be aware that buildings might have been subject to relaxations granted by the local authority. Relaxations may or may not be granted with additional conditions setting other fire safety requirements (for example automatic detection). In the case of relaxations, the local fire authority should be consulted and a check should be made of their records. If the building does not have a certificate of occupancy, or if there is evidence that it has been altered, or has undergone a change of use since the certificate was issued, then this may indicate an unacceptable level of protection. It has to be remembered that there is no obligation on a building owner to upgrade a building to comply with the most recent requirements of the building code, provided there has been no change of use. In most jurisdictions, the inspector should refer the occupancy to the proper department (Building) for reclassification. If the assessment reveals that the means of escape are prejudiced by bad housekeeping or p, (e.g., holes in compartment walls, missing fire doors etc) this should be noted and enforcement actions initiated. Conditions causing severe impairment of the egress system should be corrected in the inspector's presence, or the facility closed until such time that compliance is obtained.

Record findings on the summary sheet of the level of precautions.

- Excellent: Above benchmark standard
- Benchmark: Acceptable or minimum standard
- Below Benchmark: Below benchmark standard due to bad housekeeping
- Substandard: Unacceptably below benchmark standard

Worksheet 8: Operational Facilities for Fire Fighting

Once the alarm has been given to the fire department or fire brigade, they can play a major role in the safety of life within the building.

Assess the facilities for fire fighting.

- Access for fire appliances
- Water supply (mains supply, open water supply, etc.)

- Remote rural areas
- Height of building (dry/wet rising mains, fire fighting lifts, fire fighting stairs and bridge-heads, etc.)
- Expected time of arrival of the fire brigade
- Accessibility for ladders

Assessors should check with the fire authority records to establish if a particular fire fighting strategy has been agreed and what this might require. This will be particularly significant in historic buildings, but may also affect other buildings with particular risks or occupancies.

Assessment should be against the standards set out in the reference documents that should serve as a "benchmark." These are:

- CFC 2007 Chapter 5 - Fire Department Access and Water Supply

Record findings on the summary sheet of the level of precautions.

- Excellent: Above benchmark standard
- Benchmark: Acceptable or minimum standard
- Below Benchmark: Below benchmark standard due to bad housekeeping
- Substandard: Unacceptably below benchmark standard

A Guide To Fire Safety Risk Assessment

Summary Sheet

Building: _____
 Owner/Occupant: _____
 Location: _____
 Assessors: _____ Signature: _____
 Shift/Badge: _____ Date of Assessment: _____

Notes

Record Finding

Worksheet 1: Life Risk	Sleeping	
	Mobility	
	Familiarity	
	Numbers	
Worksheet 2: Ignition Sources	Benchmark	
	Below Benchmark	
	Compensation	
	Substandard	
Worksheet 3: Combustible Materials	Benchmark	
	Below Benchmark	
	Compensation	
	Substandard	
Worksheet 4: Prevention and Management	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 5: Communications	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 6: Structural Precautions	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 7: Means of Escape	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 8: Operational Facilities for Brigade Fire Fighting	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	

Excellent: Comfortably exceeds "benchmark" standards and therefore of no concern. May mitigate some hazards marked for compensation.
Benchmark: Meets minimum standard. No concern.
Below Benchmark: No serious concern. Just reminders about the importance of housekeeping.
Compensation: No concern if all precautions are excellent or to "benchmark" standard.
Substandard: Serious concern and remedial/enforcement action is required.

A Guide To Fire Safety Risk Assessment

Summary Sheet

Building: FACTORY

Owner/Occupant: BRONCO ELECTRONICS

Location: 85452 LAREDO AVENUE STOCKTON CALIFORNIA 95575

Assessors: N. PAVDALE Signature: N. Paudale

Shift/Badge: C/396 Date of Assessment: MARCH 18, 2001

Notes

Record Finding

Notes	Record Finding
Worksheet 1: Life Risk The building has a workforce of 93 persons on the day shift, with 65 persons on the night shift. High occupancy numbers required for production purposes.	Sleeping Mobility Familiarity Numbers ✓
Worksheet 2: Ignition Sources Outdated propane heaters used in winter, with gas-supplied overhead heaters also being Used. Electric heating used in the manufacturing process.	Benchmark ✓ Below Benchmark ✓ Compensation Substandard
Worksheet 3: Combustible Materials Solvents in use but stored in highly flammable store outside. Only the required Quantities are brought into the building for processing purposes. Automatic smoke Detection and ventilation systems installed.	Benchmark ✓ Below Benchmark Compensation ✓ Substandard
Worksheet 4: Prevention and Management The fire safety log book was not up to date with no record of training or maintenance Of fire safety equipment. Housekeeping of a poor standard.	Excellent Benchmark Below Benchmark Substandard ✓
Worksheet 5: Communications Existing fire alarm and automatic detection system was not being maintained and Inappropriate to the building use. Fire exit signs in poor condition with only one fire Action notice visible in the building.	Excellent Benchmark Below Benchmark Substandard ✓
Worksheet 6: Structural Precautions Several holes made in walls to provide access for pipe work. Some walls had been removed To facilitate the manufacturing process. No completion certificate was available.	Excellent Benchmark Below Benchmark Substandard ✓
Worksheet 7: Means of Escape Means of escape was to the required standard at the time of construction (1980). However, there Is clear evidence of alterations and the means of escape require upgrading.	Excellent Benchmark Below Benchmark Substandard ✓
Worksheet 8: Operational Facilities for Brigade Fire Fighting The building consists of ground floor only access for the fire department at the front, Rear, and one side. Water supplies and pressure are good. The factory is located in a Retained station area.	Excellent Benchmark ✓ Below Benchmark Substandard

Excellent:	Comfortably exceeds "benchmark" standards and therefore of no concern. May mitigate some hazards marked for compensation.
Benchmark:	Meets minimum standard. No concern.
Below Benchmark:	No serious concern. Just reminders about the importance of housekeeping.
Compensation:	No concern if all precautions are excellent or to "benchmark" standard.
Substandard:	Serious concern and remedial/enforcement action is required.

Individual Activity 6-1-1: Human Behavior

Time Frame:	0:30
Materials Needed:	<ul style="list-style-type: none">• Pen or pencil
Introduction:	This activity provides you student the opportunity to relate human behavior with life safety.
Directions:	<ol style="list-style-type: none">1. Answer briefly each of the following questions.2. You have 20 minutes to complete this activity.3. Be prepared to discuss your answers with the class.

1. You are at the opening of a new movie. The theater is full. As the movie runs, the theater begins to fill with smoke. The movie continues to run. What will the audience do and why?

2. You are at the opening of a new movie. The theater is full. As the movie runs, the theater begins to fill with smoke, and you hear a faint bell ringing. The movie continues to run. What will the audience do and why? Will their behavior differ from Question 1? Why or why not?

3. You are at the opening of a new movie. The theater is full. As the movie runs, the theater begins to fill with smoke, and you hear a faint bell ringing. The movie continues to run. Someone screams, "A fire!" What will the audience do and why? Will their behavior differ from Questions 1 and 2? Why or why not?

4. You are at the opening of a new movie. The theater is full. As the movie runs, the theater begins to fill with smoke, and you hear a faint bell ringing. The movie continues to run. Someone screams, "A fire!" Another person, at the exit near the screen screams, "Oh no! We are locked in!" What will the audience do and why? Will their behavior differ from Questions 1, 2, and 3? Why or why not?

5. Design a sequence of events involving a fire in a theater filled with people. What elements will ensure the proper response from the audience and why?

Topic 6-2: Conducting A Life Safety Assessment

USFA Technical Report on Chicken Processing Plant Fires

Imperial foods, Hamlet, NC (1991)

Twenty-five fatalities and 54 people injured in varying degrees. 30,000 square foot building in a poultry processing plant with open work areas, sealed concrete slab floor, ceramic tile walls, and ceilings of Formica-type finish. Interior kept cool.

Origin and Cause

The conveyor to a cooker had the hydraulic line repaired that burst when brought up to full pressure. Hydraulic fluid expelled at 800 to 1,500 psi and was ignited by heating gas plumes of cooking vat.

Fire Spread

Immediate and very rapid spread of heavy black smoke throughout the building.

Evacuation

Fireball and rapid spread of smoke caused disorderly evacuation attempts. Several exit doors locked, drove employees to seek refuge in cooler or seek other exits. Rapid build-up of toxic gases killed personnel attempting to escape.

Detection and Alarm

Plant Operations Manager found phone line already inoperable, ran to vehicle and drove to fire station.

Response

Rapid response by combination department and people from immediate community including medical personnel who ran from nearby hospital. Search and rescue delayed by heavy smoke and heat. Ample mutual aid from neighboring communities, including helicopter transport of victims to regional medical facilities.

Code Enforcement

During the 11-year operation of the plant, no inspection conducted by North Carolina Occupational Safety and Health Administration.

Critical Incident Stress

Debriefings provided through Pee Dee Council of Government. Many fire service personnel involved in incident knew or were related to the victims.

Overview

The morning work shift of employees at the Imperial Foods Processing Plant in Hamlet, North Carolina, had just begun when a fire occurred, at approximately 8:15 a.m. on September 3, 1991. The rapid spread of heavy smoke throughout the structure ultimately resulted in 25 fatalities and 54 people being injured in varying degrees. Of the people who died, 18 were women and seven were men.

A similar type fire occurred at a chicken processing plant in North Little Rock, Arkansas on June 7, 1991 but with no fatalities or injuries. Following the description of the Hamlet fire below, the North Little Rock fire is summarized along with the factors in the different outcomes of these two fires.

The Building

Imperial Foods occupied a one-story brick and metal structure that over the years had been used for various food product operations. Reportedly, the previous operation had been for dairy products. As such, the interior work areas had walls, ceilings, and floors conducive for that type of operation. This meant that these three surface areas were of materials that could be washed down. The floor was a sealed concrete slab, the walls were ceramic tile, and the ceilings were a Formica type finish. The total square footage was approximately 30,000. For the layout of the plant, see Appendix A.

Imperial Foods operations did not include the slaughter of poultry. Rather, poultry parts were shipped to the plant, which prepared and cooked the chicken. The cooked chicken would then be distributed to various markets for use in restaurants.

The plant had a total employment of approximately 200 people, with a normal shift having around 90 employees. Preparation of the poultry products included trimming, marinating, cutting, and mixing. The prepared meat would then be cooked, quick-frozen, packed, and prepared for shipping. Storage areas varied from large drive-in coolers to quick-freezing units.

The plant layout allowed easy movement of products from one area to another by electrical forklift pallet movers. The entryways between the various preparation areas were for the most part open while some entrances had a curtain of plastic strips to assist in holding refrigerated air in the rooms. The freezers and coolers had standard refrigeration doors.

The preparation areas were for the most part cooled or refrigerated in order to prevent food spoilage. Accordingly, door openings were designed in a manner to seal in the structure, with door seals similar to those on a refrigerator. This was necessary to assist in maintaining a constant temperature in work areas.

Day to day the contents inside the building did not represent a major fuel load problem. The only combustible products were items such as paraffin-coated shipping boxes and wood pallets. Therefore, the probability of having an extensive fire was considered remote.

The bulk of the food processing operations was performed in the south three-fourths of the complex. The north one-fourth was predominantly for storage and loading. The main operations areas by virtue of their cooled, open rooms did present a problem in that there were no smoke or heat barriers between work areas. This meant that in the event of any type of fire, there would be nothing to impede the travel of heat and smoke. Furthermore, the predominance of hard, smooth surfaces meant there was little available material to absorb heat and smoke.

There were exterior personnel doors throughout the structure. These included the main entrance on the east side; the southeast loading and trash compacting dock, doors from the break room and the equipment room to the outside; and a door from the packing room which led to the north one-fourth of the building complex. However, the locations of some of these exits and their sizes would in all probability have excluded them from being considered appropriate as part of an evacuation plan.

The Fire

The area identified on the Floor Plan in Appendix A as the Processing Room is the room where the fire incident occurred. This area is centrally located within the building complex. Any incident occurring in this area could adversely affect much of the building operations and personnel.

Poultry products that had already gone through the various marinating and mixing procedures were taken by conveyor to a cooking vat in the Processing Room, which contained soybean oil. The oil was maintained by a thermostat control at a constant temperature of 375°F plus or minus 15°F.

A maintenance worker who survived the fire indicated that the hydraulic line that drove the conveyor had developed a leak. The hydraulic line was turned off and drained of fluid. Then the maintenance worker disconnected the leaking line and replaced it with a factory prepared line.

The factory prepared line, however, was found to be too long and would have dragged on the floor, possibly causing people working in the area to trip. So the maintenance worker reportedly asked for and gained permission to cut the factory prepared hydraulic line to an appropriate length, replaced the end connector with their own connector, and put the line back in place. This line has been described as a 3/4-inch flex line rated to carry 3,000 psi. Information from plant personnel indicated normal pressure was kept at approximately 800 psi, but it would at times fluctuate as high as 1,200 to 1,500 psi.

The hydraulic line was brought back to operating pressure. Shortly afterward, it separated at the repaired connector point. The connector was some four to six feet above floor level with hydraulic fluid being expelled at a pressure of 800 to 1,500 psi. It obviously began to splatter off the concrete floor. Droplets were bouncing back onto the gas heating plumbs for the cooking vat, which turned them into vapor. The vapors then were going directly into the flame. The vapors had a much lower flashpoint than the liquid hydraulic fluid and therefore rapidly ignited.

In sum, the pressurization of the hydraulic fluid combined with the heat was causing an atomizing of the fuel that in all probability caused an immediate fireball in and around the failed hydraulic line and the heating plumbs.

The ignition of the fuel caused an immediate and very rapid spreading of heavy black smoke throughout the building. Seven workers were trapped between the area of origin and any escapable routes.

Measurement of the system during the investigation after the fire indicated 50 to 55 gallons of hydraulic fluid fueled the fire before electrical failure shut the system down. (Investigators stated that if the hydraulic system was fully charged and its reservoirs filled to capacity it would have held 110 gallons of 32-weight ISO hydraulic fluid.)

In addition to the hydraulic fluid, the fire reached a natural gas regulator that in turn failed and caused an induction of natural gas to the fire increasing the intensity and buildup of toxic gases.

The fires in both this incident and the North Little Rock incident were centered around the cooking vat areas and expanded outward from there. In both incidents, the vats ultimately did ignite in latter stages of the fire, but in the initial stages, the vats did not ignite. The vats in both locations have a hood-mounted system over them with built-in CO₂ heads. Nevertheless, after considerable burning with secondary fall down, the oil in both vats did eventually ignite and burn.

Witness reports indicate much of the plant was enveloped in less than two minutes. Workers throughout the plant found their visibility eliminated and oxygen quickly consumed. Hydrocarbon-charged smoke, particularly as heavy as this, is extremely debilitating to the human body and can disable a person with one or two breaths. This was confirmed as autopsies conducted on all of the fatalities found that virtually all died of smoke inhalation as opposed to direct flame injury.

Survivors indicate there was no real organization in the plant's evacuation, and this was confirmed by the locations of the bodies. Several employees in the central part of the structure moved to the trash compactor/loading dock area near the southeast corner of the building. It was here they found one of the personnel doors to the outside locked. A trailer was backed into the loading dock cutting off all exiting through this area. One woman became trapped between the compactor seat and the building wall while trying to squeeze through an opening. A number of remaining people in this area went into a large cooler adjacent to the loading dock, but failed to pull the sealed door shut thus allowing smoke infiltration into the cooler. The cooler had the largest single fatality count area with 12 deceased people being removed from this room along with five injured people.

The second largest fatality area was the seven trapped in the processing room between the fire and any escape route. Three additional bodies were found in the trim room area, one of whom was a route salesperson that had been filling food machines in the break room. The exterior personnel door in the break room was the other door locked from the outside.

Fire Suppression and Emergency Medical Services

Upon discovery of the fire, the operations manager of the plant attempted to call the alarm to the Fire Department, but found that phone lines were already inoperable. (Imperial Foods was not equipped with pull-station alarms, nor does the town have 911.) He then ran to his vehicle parked outside and drove some three to five blocks to the fire station.

The initial equipment left the station at 8:24 a.m. and was on the scene three minutes later. Fire Chief David Fuller indicated the first smoke he observed was grayish-yellow in color. He stated that Hamlet has two paid firefighters on duty at all times with 28 volunteers. Of the 28 volunteers, 22 responded to the scene. (See Appendix B for Fire Department Incident Report.) He also stated there is a county mutual aid agreement and that Captain Calvin White immediately called for the Rockingham Fire Department to stand in at the station. Lieutenant David Knight indicated that upon their arrival on the scene they immediately encountered three DOAs and 15 to 18 casualties. Their first actions were to administer first-aid and attempt victim rescue. Once they had backup companies on the scene, the fire was attacked. Extremely heavy volumes of smoke prevented them from pinpointing the seat of the fire in the early stages. AFFF foam was used to extinguish the vats that eventually caught fire. Upon seeing the magnitude of the incident, additional mutual aid assistance was called in, including the East Rockingham, Cordova, and North Side Fire Departments.

In addition, two EMS units were initially brought in by volunteers with a third unit added later. Shortly afterward, a call was made to the County Sheriffs Office to call all available EMS units to the scene. These consisted of two from Rockingham, three from the county, one from Cordova, one from Ellerbe, and one from Hoffman. In addition, there were helicopters from Winston-Salem, Chapel Hill, Duke, and Charlotte

that took patients from the hospital in Hamlet to the various burn units. The helicopters did not operate from the scene.

Chief Fuller stated that the City of Hamlet did not have its own inspectors and relied on one of the county's three inspectors. The county has an inspector for building codes, another for electrical and another for plumbing. These inspectors are primarily for new construction or remodeling. Hamlet construction codes reference the Southern Building Code. Chief Fuller stated the local code requires "periodic" inspections but do not specify a schedule or frequency.

The original building at Imperial Foods was built in the early 1900s. Today no one appears to know what codes existed when the plant was first built. Chief Fuller indicated there had been several fires in the plant over the years, some before Imperial Foods took over the facility. Imperial was operating the plant in 1983 when one of the previous fires occurred after which a CO₂ system and hood over the cooker was installed. Subsequently, they were required to install a CO₂ system by the county inspector.

Fire fighters immediately began a search and rescue operation but were met by considerable heat and fire coming from the processing area. They had to withdraw and reposition to initiate their attack on the fire through the equipment room that was next to the processing room. The fire was brought under control at approximately 10:00 a.m.

Search and rescue efforts continued during the fire suppression with injured people and fatalities being located from the first entry at approximately 8:45 a.m. with the final victim being located shortly after 12:00 noon. Concern for the integrity of the roof structure prevented earlier discovery of victims in the processing room area.

Treatment of casualties was being carried out during the entire incident until all were removed from the fire ground. Word of the incident's severity spread through the community quickly, and virtually everyone involved with medical care in the area responded to the plant site. The Hamlet hospital is approximately six blocks from Imperial Foods.

Chief Fuller was asked to evaluate the handling of the incident with reference to fire suppression, rescue, and EMS to which he indicated he felt there were more than adequate numbers of personnel and equipment given the layout of the incident site. As it was, he stated there were minor problems of some EMS equipment running over charged hose lines. There was some problem later in the fire suppression with air for the SCBA supply because tanks were being used to assist injured victims as well as supplying fire personnel. Chief Fuller stated the entire incident centered around one problem -- lack of enforcement of existing codes.

Disaster Plan

Hamlet does have a disaster plan in place that coincides with the county plan. This fire occurred so rapidly and was so serious that all of the resources planned for were immediately brought to the scene. Under the plan, the mayor is in charge of media relations and this became an enormous task, which was handled well even though much greater demands were being made upon them than had ever been planned for.

Stress Management

The Hamlet Fire Department personnel suffered severe stress and emotional reactions because the community was small and the firefighters knew many of the victims. A critical incident stress debriefing

was arranged through the Pee Dee Council of Government (Region H). Five counselors were brought in and 50 to 60 people attended the counseling sessions.

Code Enforcement History

Much discussion has taken place about the lack of inspections conducted by the North Carolina Department of Occupational Safety and Health Administration (OSHA) at the Imperial Food operations. In fact, during the 11-year operation of this plant, NCOSHA had never inspected the facility.

Tyson Foods, North Little Rock, Arkansas

During the course of the investigation of the Hamlet, North Carolina fire, information was received that another company had experienced a similar fire at a plant in Arkansas. Further inquiries revealed that indeed a similar fire had occurred at a Tyson Foods, Inc. facility in North Little Rock, Arkansas, on June 7, 1991, but with dramatically different results.

Tyson Foods, Inc. is the largest producer of poultry products worldwide. Corporate officials strongly believe that their safety program is what made the difference between their fire and the Hamlet, North Carolina fire. This company has over the years enacted many proactive fire safety programs.

Their operation and plant type in North Little Rock is similar in product production but larger than the Hamlet plant. The fire that occurred on June 7, 1991 was in the same plant area as the Hamlet fire in that it broke out in the hydraulic system of their cooker (also made by Stein and Associates, as was the one in Hamlet).

Unlike the Hamlet fire though, the hydraulic failure occurred within fixed plumbing. A flange type nut over time had the threads stripped because of vibration and when the threads failed, hydraulic fluid was expelled at approximately 800 psi. As with the Hamlet fire, the fluid was immediately in an atomization state. This was occurring within the gas heating plume areas and fire ignited. The resulting fire created a heavy black smoke and, as seen in Hamlet, virtually coated everything it spread to.

The Tyson plant, however, had in place numerous safety factors that averted disaster. They enforced life safety codes to include not only plant design but also practiced emergency drills.

Tyson Foods has a fire safety director who has implemented evacuation programs throughout the company's entire operations. These programs involved both hourly personnel and management staff in safety committees. They have formed fire brigades and have a program called the Incipient Fire Force, which involves all personnel and has a common goal to educate and train all employees in loss prevention and to take proper action should an emergency occur.

On June 7, there were 115 people working at the North Little Rock plant with some 12 to 14 people in the packaging area above the production room where the fire occurred. The plant design was such that the minimal number of people needed to operate the cookers were the only ones in the actual ignition area. The cookers were in rooms with 2-hour fire rated walls and ceilings, and the cookers were fed by conveyors through small openings. When the worker on the cooker that ignited discovered the fire, he first reached for an extinguisher but immediately realized it was spreading too fast and sounded the alarm.

Within three minutes, everyone was out of the plant and supervisors immediately identified all employees by name to make certain all were accounted for. No injuries of any kind occurred. Upon fire equipment

arriving at the scene, fire brigade members, wearing haz mat protective clothing and SCBA equipment, met the firefighters and guided them through the plant to the seat of the fire.

The initial response came from Station 4 of the North Little Rock Fire Department. Backup came from the North Little Rock central station and the Little Rock Fire Department. They were on the scene for approximately 9½ hours.

23 fire service personnel responded with a total of six engines, one piece of aerial equipment, and three other types of vehicles.

As with the Hamlet fire, heavy, black smoke quickly permeated the entire facility. The firewalls surrounding the cookers no doubt gave the people evacuating more lead-time -- this was part of their prefire planning in that the cookers were designed to be isolated as much as possible from the remainder of the plant. In addition, Tyson allows absolutely no combustible materials such as wood pallets or paraffin-coated cardboard boxes inside the cooker rooms.

These types of operations are viewed as a wet industry for the most part. Accordingly, much of the facilities are not sprinklered. Tyson's safety personnel did not feel that sprinklers would have contributed to the prevention of loss of life due to the nature of the hydraulic fluid-fueled fire. They do, however, have sprinkler protection in all areas that are non-wet operations.

Damages to the structure amounted to approximately \$8 million and the plant was down for 13 weeks. The additional loss in production, wages, cleanup, etc. was approximately \$4 million making the total loss approximately \$12 million. However, upon getting back to production, the remodeling of the plant eliminated certain inefficiencies and implemented numerous safety features beyond what they already had. The plant currently has 215 employees, which is slightly less than the work force at the time of the fire.

Fire Protection Equipment and Safety Programs

The plant now has shut off valves designed for each cooker. These valves have four functions in that they are calibrated to the hydraulic fluid velocity or flow of what each cooker needs or uses. Should there be 1) a sudden free flow of fluid, 2) a drop in line pressure, or 3) an electrical failure, the valve will shut the hydraulics down. It is also tied into the CO₂ system. In addition, they have mandated that if a system is installed by an outside manufacturer, then training must come from the manufacturer on maintenance of the item.

In addition to the shut off valves, Tyson had remote hydraulic shut down switches installed at strategic locations throughout the plant and next to pull alarms. Any one of these emergency switches being activated immediately shuts down ALL hydraulics in the plant.

Emergency lights were in place above all exits. At the time this report was prepared, Tyson officials were considering adding a second emergency light lower to the floor as an extra assist should there be a sudden induction of wet, heavy smoke, as experienced at the June 7 fire.

They already had negative air flow pressure systems for ammonia releases, which are activated by sensors. They indicate rapid heat rise sensors could be added to exhaust heat and/or smoke.

Tyson Foods requires that each of their facilities have a minimum of two fire drills a year; most of their plants do it on a quarterly or monthly basis. When a drill is conducted, production is affected and some food products may have to be discarded to meet USDA inspections. Even so, Tyson Foods makes this

mandatory. They have a formal safety policy, and, in addition, each plant has a required Monthly Fire Inspection Checklist they must submit to corporate headquarters. (See Appendix D.) The checklist covers many areas and must be signed off by the Fire Brigade Chief and Facility Manager. This type of checking helps them to detect deficiencies before they develop into problems. This was recently demonstrated in one of their Texas plants when a monthly checklist noted a drop in water pressure to their sprinkler system. Upon further inspection, they found that the city had changed their water usage classification and dropped their flow and pressure. Without a monthly checklist, this might not have been detected for months or until an emergency occurred.

Tyson Foods has a daily inspection of CO₂ systems. In addition, they use permits that must be issued before any operation such as cutting and welding takes place. They also have lock-out, tag-out procedures that, simply stated, means before any repaired system is put back to use it is tested. Had they discovered the failed flange nut at the North Little Rock plant before the fire, they would have replaced the failed area, brought it back to operating pressure, and made sure it would hold before turning gas back on to the heating plumbs.

Tyson Foods has incentive/reward programs to encourage all personnel to be on the lookout for added safety ideas. The incentive bonuses are based on paperwork turned in a timely manner, site visitations/inspections, and their participation in documented safety training. Tyson's has installed within their breakrooms suggestion boxes for any complaints or suggested improvements. These are checked daily and responded to by the management staff of that facility.

Tyson Foods has Crisis Management Manuals in place at each of their facilities. Plant management is very familiar with each phase of those manuals and they in turn disseminate the information to each employee. Tyson Foods officials feel their emphasis on life safety also leads to protection of property and continuity of operations.

As a matter of coincidence, the last thing stated by one of the Tyson safety officers was that the rules and safety codes to protect personnel and property are already written and in existence, but for them to be effective they must be enforced. This was one of the final statements of Chief Fuller at the Hamlet Fire Department as well.

Lessons Learned

❶ Life Safety Codes Must Be Enforced

Life safety codes cover a broad range of topics but the main goals to be achieved are to 1) plan building layouts/construction to reduce hazards and have available the proper number of exits; 2) provide detection and adequate suppression equipment where needed; and 3) train and educate personnel in loss prevention and the proper action to take in the event of emergencies. The blatant problem of having exit doors locked on a continuous basis is clearly one that must be addressed by enforcement officials. Enforcement is as essential as the code requirements themselves. Enforcement can be by state or local officials. And in some cases, as with Tyson Foods, industry itself takes its own initiatives in both code enforcement and proactive fire safety programs in its plants.

❷ Cooking: Areas Must Be Separately Partitioned from Other Employee Work Areas

Any time there is a food processing plant cooking operation, with moving parts and high-pressure equipment, the risk factor is greatly increased that a fire will occur at some time. As such, it is

imperative that the cooker operations be partitioned off from the remainder of the building, and workers, as much as possible. The rebuilt Tyson plant designed their cookers to be inside 2-hour fire-rated walls with openings for incoming and outgoing food. Safety doors were installed and the minimal number of needed employees was all that were inside the cooker room. In addition, absolutely no combustible products were allowed inside the room.

③ **Building Exits in Wet Type Operations Should Have Double Emergency Lighting, One Positioned above the Door and One Low to the Floor**

A fast developing, heavy smoke was present in both of these fires. The work areas are kept cool according to USDA regulations for food preservation, so the relative humidity is high. These are described as wet operations. When heat-charged smoke is injected into this cool, damp air, it banks down more quickly than normal. People are taught from an early age that in the event of fire they should get as close to the floor as possible to maximize safe evacuation. Heavy smoke such as was experienced in these incidents obscures the upper lights at the emergency exits. Additional emergency lights in protective cages near floor level would assist personnel in locating exits. Consideration might also be give to having strobe lights as part of the emergency lighting system.

④ **High Pressure Equipment Maintenance and Repairs Must be Limited to Factory Trained Personnel and Specifications**

Operations such as these plants have extensive hydraulic systems. They operate at considerable pressures and, as in these two cases, are integral parts of cooking processes. Moving parts and high pressures will naturally increase the likelihood of failure. Maintenance must be a constant ongoing process. For maximum safety, maintenance personnel must be trained by the factory representatives. If any parts are replaced, they must conform to factory specifications or not be used. If a maintenance division alters any part of the high-pressure system, their alterations must meet or exceed factory specifications.

⑤ **High Pressure Equipment in Probable Incident Areas Should Have Built-in Catastrophic Shutdown Valves**

Inlying valves have been designed that are sensitive to multiple functions for high-pressure hydraulic equipment. These valves are calibrated to the prescribed hydraulic fluid velocity or flow of the equipment needed. The vales will automatically shut down fluid flow if there is 1) a sudden free flow, 2) a drop in line pressure, or 3) an electrical failure. In addition, these valves can be linked to the Co₂ fire suppression systems.

⑥ **Negative Air Flow Systems in These Facilities Could Enhance Safety by Being Modified to Also Accomplish Smoke Evacuation**

Many plants similar to those in the Hamlet and North Little Rock fires have negative air flow systems in the event of an accidental ammonia release. These are activated by sensors and can purge the area of toxic fumes very quickly. If, in addition to the gas sensor, a rapid rise heat sensor was added, these systems could pull the heavy, wet smoke away from the lower levels in the event of a fire.

⑦ **State and Federal Inspectors from Various Departments Should be Cross-trained**

Much has been said about the lack of inspections done before the Imperial Foods tragedy. The State OSHA inspector force was small in numbers and simply could not cover all of the industry. Yet, there

were USDA inspectors frequently present because of their responsibilities over the food processing industry. While it may not be possible to teach USDA personnel all aspects of an OSHA inspector's responsibilities, certainly they could be encouraged to recognize major problems while carrying on their assigned duties and alert the state OSHA office or other appropriate authorities including plant management.

⑧ **Establish a "Worry Free" Line of Communications for Industry Employees**

Although it has not been acknowledged firsthand and was told only through the media, reports have surfaced that workers inside the Hamlet Plant were afraid to say anything about safety conditions due to fear of being fired. In order to eliminate this type of possible problem, communications with plant management or regulatory authorities should be established. States may wish to establish agencies/systems such as a known individual reporting deficiencies could then be protected.

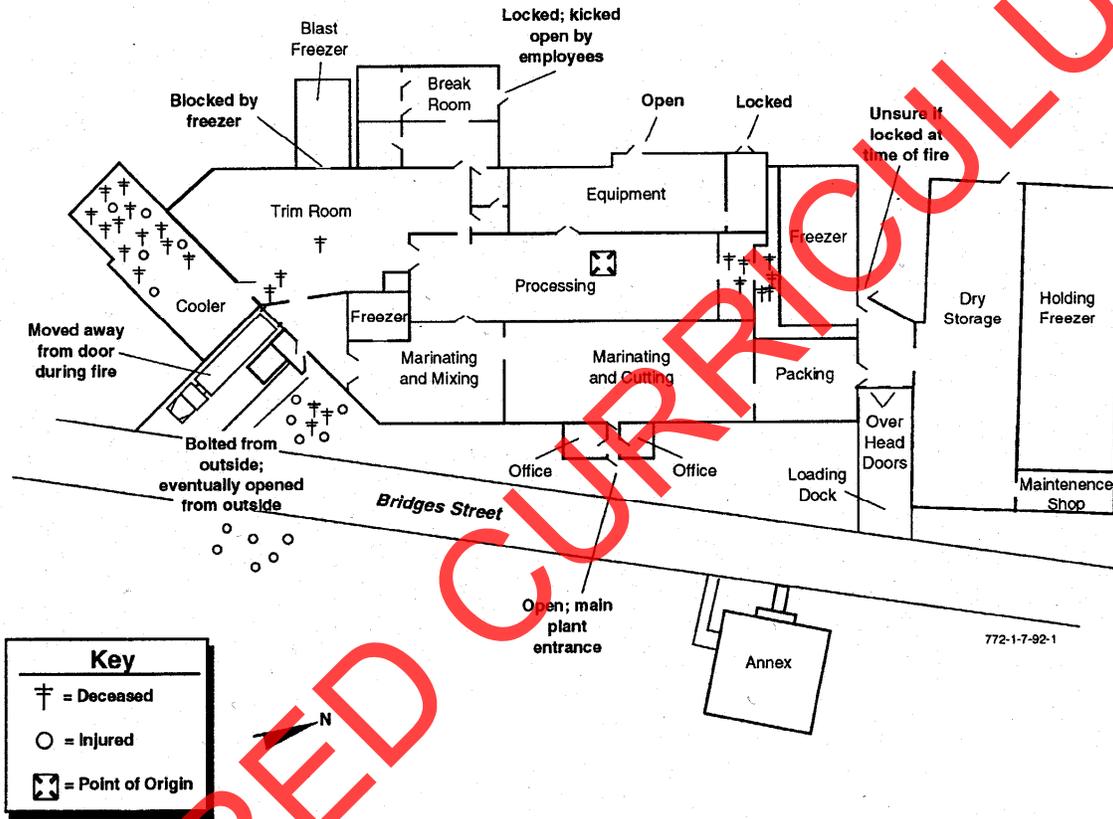
⑨ **The Number of OSHA Safety Inspectors Must Be Increased**

As with many governmental departments, OSHA has had their budgets cut and funds have been directed to other areas. The tragedy of the Hamlet fire demonstrates vividly why cuts should not take place within the area of code inspections and enforcement. In North Carolina (and in other states as well), the number of staff should be based on the number of inspectable properties and time it takes to meet inspection schedules.

⑩ **Emergency Exit Drills Must be Incorporated into Industry Policies**

The posting of emergency routes and exits throughout a structure simply will not suffice. The actual practice of the routes and exits must be done. The exit drills should include a system to number and identify employees in order to make certain that everyone has been evacuated. The drills should be conducted often enough that employees will be constantly aware of emergency procedures. The actual practice of drills paid off for Tyson Food as they had all 115 employees out of the building within three minutes and all were accounted for, through a system of employee identification.

Imperial Foods Plant Floor Plan



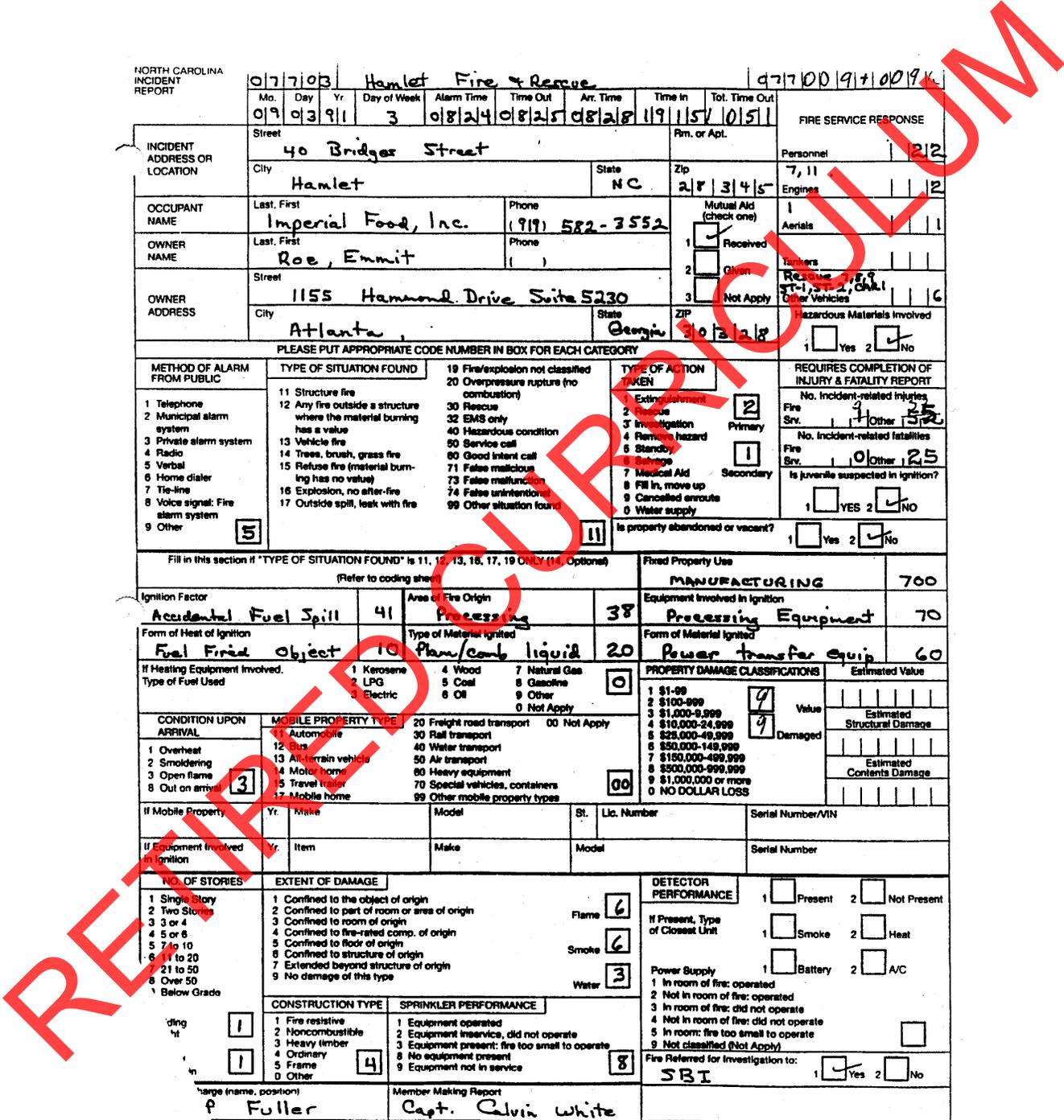
FIRE PREVENTION 1A (BRIDGE)

Introduction To The California Fire Code

Topic 6-2: Conducting A Life Safety Assessment

Hamlet, North Carolina Fire Department Incident Report

NORTH CAROLINA INCIDENT REPORT		07/03 Hamlet Fire & Rescue		9770091009K	
Mo.	Day	Yr.	Day of Week	Alarm Time	Time Out
07	03	91	3	0824	0825
Time In	Arr. Time	Time In	Tot. Time Out	FIRE SERVICE RESPONSE	
119	1157	0151	Personnel 212		
Street			Fm. or Apt.		
40 Bridges Street					
City		State	Zip	Personnel	
Hamlet		NC	28345	7, 11	
Last, First		Phone	Mutual Aid (check one)	Engines	
Imperial Food, Inc.		(919) 582-3552	1 <input checked="" type="checkbox"/> Received	1	
Last, First		Phone	2 <input type="checkbox"/> Check	Aerials	
Roe, Emmitt		()	3 <input type="checkbox"/> Not Apply	1	
Street		City		Ladders	
1155 Hammond Drive Suite 5230		Atlanta		2, 8, 9	
State		ZIP	Other Vehicles		
Georgia		30122	1		
Hazardous Materials Involved		1 <input type="checkbox"/> Yes 2 <input checked="" type="checkbox"/> No			
PLEASE PUT APPROPRIATE CODE NUMBER IN BOX FOR EACH CATEGORY					
METHOD OF ALARM FROM PUBLIC	TYPE OF SITUATION FOUND	19 Fire/explosion not classified	TYPE OF ACTION TAKEN	REQUIRES COMPLETION OF INJURY & FATALITY REPORT	
1 Telephone	11 Structure fire	20 Overpressure rupture (no combustion)	1 Extinguishment	No. incident-related injuries	
2 Municipal alarm system	12 Any fire outside a structure where the material burning has a value	30 Rescue	2 Rescue	Fire Srv. 1 Other 35	
3 Private alarm system	13 Vehicle fire	32 EMS only	3 Investigation	No. incident-related fatalities	
4 Radio	14 Trees, brush, grass fire	40 Hazardous condition	4 Remove hazard	Fire Srv. 0 Other 25	
5 Verbal	15 Refuse fire (material burning has no value)	50 Service call	5 Standby	Is juvenile suspected in ignition?	
6 Home dialer	16 Explosion, no after-fire	60 Good intent call	6 Salvage	1 <input type="checkbox"/> YES 2 <input checked="" type="checkbox"/> NO	
7 Tie-line	17 Outside spill, leak with fire	71 False malicious	7 Medical Aid	Is property abandoned or vacant?	
8 Voice signal: Fire alarm system		80 Good intent call	8 Fill in, move up	1 <input type="checkbox"/> Yes 2 <input checked="" type="checkbox"/> No	
9 Other		99 Other situation found	9 Cancelled enroute		
5	11		0 Water supply		
Fill in this section if "TYPE OF SITUATION FOUND" is 11, 12, 13, 15, 17, 19 ONLY (14 Optional)					
Ignition Factor		Area of Fire Origin	Fixed Property Use		
Accidental Fuel Spill 41		Processing 38	MANUFACTURING 700		
Form of Heat of Ignition		Type of Material Ignited	Equipment Involved in Ignition		
Fuel Fired Object 10		Flam/comb liquid 20	Processing Equipment 70		
If Heating Equipment Involved, Type of Fuel Used		PROPERTY DAMAGE CLASSIFICATIONS	Form of Material Ignited		
1 Kerosene 4 Wood 7 Natural Gas		1 \$1-99	Power transfer equip 60		
2 LPG 5 Coal 8 Gasoline		2 \$100-999			
3 Electric 6 Oil 9 Other		3 \$1,000-9,999			
0 Not Apply		4 \$10,000-24,999			
CONDITION UPON ARRIVAL		MOBILE PROPERTY TYPE	Estimated Value		
1 Overheat	1 Automobile	20 Freight road transport 00 Not Apply	Value		
2 Smoldering	12 Bus	30 Rail transport	Estimated Structural Damage		
3 Open flame	13 All terrain vehicle	40 Water transport	Damaged		
4 Out on arrival	4 Motor home	50 Air transport	Estimated Contents Damage		
3	5 Travel trailer	60 Heavy equipment			
	7 Mobile home	70 Special vehicles, containers			
		99 Other mobile property types			
If Mobile Property	Yr. Make	Model	St.	Lic. Number	Serial Number/VIN
If Equipment Involved	Yr. Item	Make	Model	Serial Number	
NO. OF STORIES	EXTENT OF DAMAGE	CONSTRUCTION TYPE	SPRINKLER PERFORMANCE	DETECTOR PERFORMANCE	
1 Single story	1 Confined to the object of origin	1 Fire resistive	1 Equipment operated	1 <input type="checkbox"/> Present 2 <input type="checkbox"/> Not Present	
2 Two stories	2 Confined to part of room or area of origin	2 Noncombustible	2 Equipment in service, did not operate	If Present, Type of Closest Unit	
3 3 or 4	3 Confined to room of origin	3 Heavy timber	3 Equipment present; fire too small to operate	1 <input type="checkbox"/> Smoke 2 <input type="checkbox"/> Heat	
4 4 or 6	4 Confined to fire-rated comp. of origin	4 Ordinary	8 No equipment present	Power Supply	
5 5 or 8	5 Confined to floor of origin	5 Frame	9 Equipment not in service	1 <input type="checkbox"/> Battery 2 <input type="checkbox"/> A/C	
6 6 to 10	6 Confined to structure of origin	0 Other		1 In room of fire: operated	
7 7 to 20	7 Extended beyond structure of origin			2 Not in room of fire: operated	
8 21 to 50	9 No damage of this type			3 In room of fire: did not operate	
9 Over 50				4 Not in room of fire: did not operate	
Below Grade				5 In room: fire too small to operate	
				9 Not classified (Not Apply)	
				Fire Referred for Investigation to:	
				SBI 1 <input checked="" type="checkbox"/> Yes 2 <input type="checkbox"/> No	
Charge (name, position)	Member Making Report				
P Fuller	Capt. Calvin White				



Tyson Foods Safety Policy, Monthly Fire Inspection Checklist and Other Fire Safety Program Materials

TYSON FOODS INC. SAFETY POLICY	
INCIPIENT FIRE FORCE	
Description: Corporate Safety Policy relative to a Fire Force and Fire Protection within the Tyson organization.	
Scope: This policy covers ALL Tyson facilities.	
<p>Individual Plant Requirements:</p> <ol style="list-style-type: none"> 1. An Incipient Fire Force will be established at all Tyson facilities. 2. Emergency Action and Fire Prevention Plans will be prepared at each facility and copies submitted to Loss Control. 3. Exit drills will be conducted at least semi-annually or when Evacuation plans are revised. 4. Alarm systems will be installed per Section 1910.165 of OSHA. 5. The Fire Force will conduct quarterly training sessions. 6. Records will be kept as to training sessions, alarm tests, sprinkler tests, and fire hazard inventories. 7. All fires will be reported to Loss Control as soon as practicable and a follow-up written report made. 8. Fire extinguishers will be inspected monthly and records kept. 9. Each facility will obtain and install an adequate number of fire extinguishers and hose stations as required. 10. Monthly fire inspections will be conducted and copies of those inspections will be forwarded to Loss Control not later than the 30th of each month. 	
Approved:	Date:

As Tyson Foods continues to expand and change, fire protection becomes more complex and difficult. New processes and products bring new fire hazards. Processing equipment and facilities have become even larger and more expensive. Their loss has a greater impact on production and the bottom line. Greater

values are concentrated in single buildings. Products are stored higher and higher in warehouses. More and more personnel are concentrated and exposed to greater hazards.

Fire detection and prevention equipment is hard pressed to keep pace with the new hazards. As a result, the risk of very large losses is increased—losses which can threaten the entire plant or even the entire business organization. Maintaining these risks within reasonable bounds is a major challenge to management.

Good fire protection does not just happen; it is the result of corporate policies and related fire prevention programs. Good organization, with responsibilities clearly assigned and specific duties spelled out, will result in implementation of effective programs.

The two primary ways to manage fire risks are to prevent fires and to limit or control their size.

An effective program receives its driving force and continuing motivation from top management, but strong interest extending down through various levels of management and supervision to the individual employee is needed for the program to succeed.

The objectives of a satisfactory fire prevention and control program can be stated very simply:

- To plan and construct low hazard buildings, processes, and equipment.
- To provide adequate fire Control and Suppression equipment where needed.
- To educate and train employees in loss prevention and proper action in emergencies.

In planning new facilities, decisions made during the planning stages largely determine the degree of fire risk the facility will present after it is built. The important considerations are in the following areas:

- Safety to life
- Protection of property
- Continuity of operations

CUTTING & WELDING PERMIT

Applies Only to Area Specified Below

Date: _____

Building: _____ Floor: _____

Nature of the job: _____

The above location has been examined. The precautions checked below have been taken to prevent fire. Permission is granted for this work.

Permit expires: _____

Date: _____ Time: _____

Signed: _____

Fire Safety Supervisor

Time Started: _____ Time Finished: _____

Final Checkup

Work area and all adjacent areas to which sparks and heat might have spread (such as floors above and below and on opposite side of walls) were Inspected for at least 30 minutes after the work was completed and were found fire safe.

Signed: _____

After signing, return permit to person who issued it.

PRECAUTIONS

The Department supervisor or an appointee should inspect the proposed work area and check precautions taken to prevent fire.

- Sprinklers in service.
- Cutting and welding equipment in good repair.

PRECAUTIONS WITHIN 35 FEET OF WORK

- Floors swept clean of combustibles.
- Combustible floors wet down, covered with dark sand, metal, or fireproof sheets.
- No combustible materials or flammable liquids.
- Combustibles and flammable liquids protected with fireproof tarpaulins or metal shields.
- All wall and floor openings covered.
- Fireproof tarpaulins suspended beneath work to collect sparks.

WORK ON WALLS OR CEILINGS

- Construction noncombustible and without combustible covering or insulation.
- Combustibles moved away from opposite side.

WORK ON ENCLOSED EQUIPMENT

- Tanks, containers, ducts, dust collectors, etc.
- Equipment cleaned of all combustibles.
- Containers purged of flammable vapors.
- Inlets & outlets locked out & plugged.

FIRE WATCH

- To be provided during and for 30 minutes after operation. Recheck after 2 hours.
- Supplied with extinguishers or small hose.
- Trained in use of equipment and in sounding alarm.

Signed: _____

Monthly Fire Inspection Checklist

Facility: _____ Date: _____

- 1) Fire extinguishers
 - a) Was each unit examined? _____
 - b) Were all refills completed? _____
 - c) Were units easily accessible? _____
 - d) Condition of units _____

- 2) Smoking regulations
 - a) List "smoking" areas _____

 - b) Nonsmoking areas posted? _____
 - c) Regulations enforced? _____

- 3) Volatile and combustible materials
 - a) Were these materials needed where found? _____
 - b) Are materials safely stored and handled? _____
 - c) Are safety containers used and in good condition? _____
 - d) Any stored under stairwells? _____
 - e) Any excessive amounts? _____

- 4) Fire drills
 - a) Date held _____
 - b) Was drill expected? _____
 - c) Number of persons in drill _____
 - d) Was signal clear to all persons? _____

Comments: _____

5) Hose stations

- a) Was a hose attached to each outlet? _____
- b) Was a nozzle attached to each hose? _____
- c) Is hose properly racked? _____
- d) What condition are the hoses in? _____
- e) Date tested _____

6) Sprinkler systems

- a) Valves open? _____
- b) Stand pipes inspected? _____
- c) Sprinkler heads unobstructed? _____
- d) Sprinkler heads painted? _____
- e) Sprinkler heads or piping corroded? _____
- f) Sprinkler heads loaded with dirt? _____
- g) Sprinklers obstructed by new partitions? _____
- h) New section requiring sprinklers? _____
- i) Flow test conducted? _____

Water Pressure

Pressure with Drain Valve Open

7) City water

- a) Is city water in commission? _____
- b) Gage pressure _____

8) Steam piping

- a) Are all pipes and coils one inch clear of woodwork and supported safely? _____
- b) Ducting of exhaust in safe condition? _____

9) Wiring and electrical equipment

- a) Are all panel boards, switch and fuse cabinets clean? _____
- b) Are all outlet box covers in place? _____
- c) Are all fuse and switch box covers in place? _____
- d) Is there any temporary wiring? _____

If so comment on location: _____

10) Housekeeping

- a) List locations where housekeeping was not satisfactory: _____

- b) Will these be cleaned up? _____

11) Detection systems

- a) Heat detectors in operable condition? _____
- b) Smoke alarms in operable condition? _____

12) Manual fire alarms

- a) Are stations un-obstructed? _____
- b) Are stations operational? _____

13) Vent hood systems

- a) Semiannual inspections completed? _____
- b) Are they clear of grease accumulation? _____

14) Exits

- a) Are there an ample number? _____
- b) Continuously lighted and/or visible? _____
- c) Are doors opened easily? _____
- d) Are doors unlocked? _____
- e) Are doors unobstructed? _____

f) Has emergency lighting been tested? _____

g) Are there at least two remote exits? _____

15) Building exterior

a) Are stated fire lanes un-obstructed? _____

b) Are fire hydrants easily accessible? _____

c) Are sprinkler valves in open position? _____

d) Are fire exits blocked? _____

16) Inspections

a) Are end-of-work-day inspections being done? _____

17) Fire department brigade training

a) Are monthly training sessions being conducted? _____

18) Construction areas

a) Check for fire hazards _____

b) Check for block exits of fire lanes _____

Comments: _____

I Hereby Certify that I Have Inspected the Above Listed Items as Shown by the Comments Thereon. (To Be Completed By the 20th of Each Month)

Fire Chief

Date

Facility Manager

Date

**Tyson Fire Safety
(Fry Department)**

The following is a list of controls in place at virtually all locations with fry operations. Hydraulic line interlock valve installation should be completed company-wide within 2 weeks. Supervisor training on fire extinguisher operation is being updated.

- Fryer suppression system has a 200-pound CO₂ automatic extinguishing system with 3-minute discharge.
- Fryer gas-line interlock electronically shuts off natural gas supply in the event of a fire.
- Fryer hydraulic line interlock shuts off hydraulic fluid flow in the event of a ruptured line. (These are currently being installed.)
- Quarterly suppression system maintenance.
- Available, strategically located portable fire extinguishers.
- Supervisors trained to use extinguishers.
- Automatic fire alarm systems not installed in all locations.
- Fire retardant room construction.
- Exits located for quick access.
- Exit instructions communicated and posted.
- Exits maintained clear, unlocked, and adequately marked.
- Plant fire force team –on site – regular training and monthly meetings.
- Emergency response equipment (respirators, chemical suits, etc.) on site.
- Written "crisis management" plan on site.
- Routine inspections – in house.
- Local fire department inspection/consultation.

Individual Activity 6-2-1: Life Safety Assessment

Time Frame: 0:30

Materials Needed:

- Fire Prevention 1A Student Supplement, SFT, 2009 Edition
- Pen or pencil

Introduction: This activity provides you the opportunity to relate human behavior with life safety.

Directions:

1. Briefly answer each of the following questions.
2. You have 20 minutes to complete this activity.
3. Be prepared to discuss your answers with the class.

1. What is the CFC classification for chicken processing plants?

2. What are the hazards and safeguards that are common in food processing facilities?

Hazards	Safeguards

3. Identify the occupant characteristics of both the Imperial Foods employees and the Tyson Foods employees.

4. Compare and contrast the factors that influenced the human behavior in both incidents.

Imperial Foods	Tyson Foods

5. Evaluate the role that time played in both fires. Were the intervals for action and critical times the same in both fires? Why or why not?

6. What were the sources of risk that affected these fires?

Imperial Foods	Tyson Foods

7. Identify the elements that affected the fire growth and hazards of these fires.

Imperial Foods	Tyson Foods

8. Complete a life safety risk assessment sheet (following two pages), worksheets 1-8, for both the Imperial Foods and Tyson Foods occupancies.

Imperial Foods Fire Safety Risk Assessment

Summary Sheet

Building: _____
 Owner/Occupant: _____
 Location: _____
 Assessors: _____ Signature: _____
 Shift/Badge: _____ Date of Assessment: _____

Notes

Record Finding

Worksheet 1: Life Risk	Sleeping	
	Mobility	
	Familiarity	
	Numbers	
Worksheet 2: Ignition Sources	Benchmark	
	Below Benchmark	
	Compensation	
	Substandard	
Worksheet 3: Combustible Materials	Benchmark	
	Below Benchmark	
	Compensation	
	Substandard	
Worksheet 4: Prevention and Management	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 5: Communications	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 6: Structural Precautions	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 7: Means of Escape	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 8: Operational Facilities for Brigade Fire Fighting	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	

Excellent: Comfortably exceeds "benchmark" standards and therefore of no concern. May mitigate some hazards marked for compensation.
Benchmark: Meets minimum standard. No concern.
Below Benchmark: No serious concern. Just reminders about the importance of housekeeping.
Compensation: No concern if all precautions are excellent or to "benchmark" standard.
Substandard: Serious concern and remedial/enforcement action is required.

Tyson Foods Fire Safety Risk Assessment

Summary Sheet

Building: _____
 Owner/Occupant: _____
 Location: _____
 Assessors: _____ Signature: _____
 Shift/Badge: _____ Date of Assessment: _____

Notes

Record Finding

Worksheet 1: Life Risk	Sleeping	
	Mobility	
	Familiarity	
	Numbers	
Worksheet 2: Ignition Sources	Benchmark	
	Below Benchmark	
	Compensation	
	Substandard	
Worksheet 3: Combustible Materials	Benchmark	
	Below Benchmark	
	Compensation	
	Substandard	
Worksheet 4: Prevention and Management	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 5: Communications	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 6: Structural Precautions	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 7: Means of Escape	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	
Worksheet 8: Operational Facilities for Brigade Fire Fighting	Excellent	
	Benchmark	
	Below Benchmark	
	Substandard	

Excellent: Comfortably exceeds "benchmark" standards and therefore of no concern. May mitigate some hazards marked for compensation.
Benchmark: Meets minimum standard. No concern.
Below Benchmark: No serious concern. Just reminders about the importance of housekeeping.
Compensation: No concern if all precautions are excellent or to "benchmark" standard.
Substandard: Serious concern and remedial/enforcement action is required.

Topic 6-3: General Fire Inspection Practices

Student information for this topic is found in the California Fire Code, CBSC, 2007 Edition, Chapters 3, 5, 6 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 2.

RETIRED CURRICULUM

Topic 6-4: Procedures For Correcting Fire Hazards And Modifications Of Requirements

Student information for this topic is found in the California Fire Code, CBSC, 2007 Edition, Appendix Chapter 1 and Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapters 1 and 2.

RETIRED CURRICULUM

Topic 6-5: Handling Fire Prevention Complaints

Student information for this topic is found in Fire Inspection and Code Enforcement, IFSTA, Sixth Edition, Chapter 1.

RETIRED CURRICULUM