

# Q FIRE MARSHALS QUARTERLY



INTERNATIONAL FIRE MARSHALS ASSOCIATION • Summer 2001

## Principles of Fire Protection Engineering Course

The International Fire Marshals Association (IFMA) and the Society of Fire Protection Engineers (SFPE) are offering the Principles of Fire Protection Engineering course on September 10–13, 2001, in Baltimore, Maryland.

The Principles of Fire Protection Engineering course is open to all individuals interested in gaining or refreshing their basic-to-intermediate knowledge of the principles of fire protection engineering. Who should attend? Individuals who have design, enforcement, or advisory responsibilities; fire protection engineers; architects; fire prevention personnel; and others concerned with fire protection. The course will be offered in three options to allow greater flexibility in meeting your educational needs.

The four-day option covers all 10 subjects. Session 1 two-day option covers subjects 1–5. Session 2 two-day option covers subjects 6–10.

The Principles of Fire Protection Engineering course consists of 10 sessions over a total period of four days. The sessions involve the following engineering subject areas:

- 1. Combustion and Ignition Phenomenon**—Theories of diffusion flame combustion, fire dynamics, suppression theory, and suppression agents.
- 2. Fire Endurance Evaluation**—Review of the development and application of standard and innovative fire endurance test procedures for building assemblies including doors, windows, walls, floors, and ceilings.
- 3. Construction and Structural Features**—Performance of basic construction materials in the fire environment; the fire compartment involvement process and the concept of designing building compartmentalization.
- 4. Materials Applications**—Evaluation procedures for flame spread, smoke production, and toxicity of interior finish, floor coverings, and furnishings.

- 5. Fire Protection Design Evaluation**—Procedures for the evaluation of fire safety; smoke management systems design principles and evaluation techniques.
- 6. Life Risk Analysis**—Human tenability limits; human behavior variables in fire incidents including convergence clusters, social inhibition-facilitation, altruism, and non-adaptive actions.
- 7. Detection and Alarm Systems**—Review of the types of detectors and the laboratory evaluation test procedures; reliability and installation design characteristics.
- 8. Sprinkler System Developments**—Characteristics of design and approval of the various types of sprinklers and water mist nozzles with application implications.
- 9. Design of Water Suppression Systems**—Design of sprinkler and water mist systems with review of standard procedures and innovative research applications.
- 10. Egress and Exits**—Basic theoretical code concepts with examination of egress components and design variables.

The Principles of Fire Protection Engineering course has received approval to receive continuing education units (CEUs). SFPE will award CEUs to all participants who successfully complete this course, at no additional cost.

The registration fees are as follows:

#### *Four-day option*

\$365, enforcers; \$440, members of IFMA, NFPA, or SFPE; \$540, nonmembers

#### *Two-day option*

\$195, enforcers; \$245, members of IFMA, NFPA, or SFPE; \$345, nonmembers

Lunch is included in the course fee. You are responsible for your travel and lodging expenses. There are no refunds on cancellations within 30 days of the scheduled course date.

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## IFMA Executive Board

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## IFMA Chapters

### Alabama Chapter

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### West Virginia Chapter

Edwin Blehschmidt, President  
(304) 293-4952, fax (304) 293-7281

## Fire Marshals Quarterly

(617) 984-7424, fax (617) 984-7056  
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Editor: Steven F. Sawyer  
Assistant Editor: Janet Murphy

We encourage you to send items of interest to:

IFMA Executive Secretary  
NFPA International  
1 Batterymarch Park, P.O. Box 9101  
Quincy, MA 02269-9101

## Principles of Fire Protection Engineering Course continued from cover

IFMA and SFPE reserve the right to cancel courses due to limited registration.

Classes will be held at the following location.

Mt. Washington Conference Center  
5801 Smith Avenue  
Baltimore, MD 21209  
(410) 578-7674 or (800) 488-8734

Room reservations should be made directly with the hotel. A room rate of \$116 (USD) + tax/day has been reserved for participants. You must advise the hotel you are a part of the SFPE educational group in order to secure the listed rates. The cut-off date for advanced reservations is August 1, 2001. Reservations received after the cut-off date are subject to availability.

September 10–13, 2001, IFMA/SFPE Principles of Fire Protection Engineering Registration Form (Please print or type.)

You can register now and we will bill you later (please include purchase order); or if you prefer, you can send in the complete registration fee with this form.

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone #: \_\_\_\_\_

Fax #: \_\_\_\_\_

Social Security #: \_\_\_\_\_

Enforcer

IFMA Member

NFPA Member—NFPA #: \_\_\_\_\_

SFPE Member—SFPE #: \_\_\_\_\_

Please register me and bill me later. Enclosed is a purchase order.

Purchase Order #: \_\_\_\_\_

**For additional information or if you wish to sponsor a course, please contact:**

Julie Maskas  
Society of Fire Protection Engineers  
7315 Wisconsin Avenue, Suite 1225W  
Bethesda, MD 20814  
Phone: (301) 718-2910 Fax: (301) 718-2242  
E-mail: education@sfpe.org

or

Steven F. Sawyer  
Executive Secretary IFMA  
1 Batterymarch Park  
Quincy, MA 02269-9101  
Phone: (617) 984-7424 Fax: (617) 984-7056  
E-mail: ssawyer@nfpa.org

Enclosed is a check for the registration fee. *Please make checks payable to SFPE.*

Charge the registration fee to my credit card.

MasterCard  Visa

Card #: \_\_\_\_\_ Card Exp. Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Please enroll me in the **four-day** option September 10–13, 2001; registration fee: \$365, enforcers; \$440, members; \$540, nonmembers.

Please enroll me in **Session 1** two-day option September 10–11, 2001; registration fee: \$195, enforcers; \$245, members; \$345, nonmembers.

Please enroll me in **Session 2** two-day option September 12–13, 2001; registration fee: \$195, enforcers; \$245, members; \$345, nonmembers.

Please mail to Julie Maskas, SFPE, 7315 Wisconsin Avenue, Suite 1225W, Bethesda, MD 20814. No refunds on cancellations within 30 days of the scheduled course date.

## Oregon Fire Marshals Association Becomes IFMA Chapter 19!!!!

We would like to welcome the Oregon Fire Marshals Association as our newest chapter. They were granted chapter status in March making them Chapter 19. Congratulations!!!!

## Fire Investigation Summary

### *Church Fire Lake Worth, Texas, February 15, 1999*

*By Robert F. Duval, Senior Fire Investigator, NFPA*

On February 15, 1999, at approximately 10:42 a.m., a fire occurred in a church in Lake Worth, Texas. The fire resulted in the deaths of three fire fighters when the wood truss roof collapsed only minutes after the arrival of the fire department.

The fire began in a storage shed adjacent to the northeast corner of the church building. A strong wind directed the flames on the east side of the church, eventually spreading the fire into the attic space of the church. As the pastor was cleaning up the church from the previous evening services, a teenage male came to the door of the church to report the fire to the pastor. The pastor went outside to investigate and there he saw the shed ablaze, and the flames impinging on the northeast corner of the church.

Just before the male reported the fire to the pastor, a police officer from the neighboring jurisdiction of Samson Park spotted the fire and reported it to his dispatcher. (The town line is immediately adjacent to the church's property.) The dispatcher notified the Samson Park Fire Department, thinking the fire was in that jurisdiction. At the same time, a water department employee from Lake Worth spotted the fire and reported it via radio to his supervisor, whom in turn reported it to the Lake Worth Fire Department. With the dual notifications and with automatic aid, a total of six fire departments responded to the reported fire.

The pastor reported hearing sirens as he returned to the building to report the fire.

The first arriving engine from Lake Worth (E210) was positioned in front of the church (Side A) on Roberts Cut-Off Road. The next arriving unit was an engine from Samson Park (E225) and was positioned on the Cowden Street (Side B), adjacent to the church (north). Two 1 in. (44 mm) handlines were deployed from both the Samson Park and Lake Worth engines. Both the lines from the Lake Worth engine were advanced into the church, while one line from Samson Park was also deployed into the church.

An aerial tower from the Saginaw Fire Department (T14) arrived and was set up on the northwest corner of the building to provide access to the roof for ventilation. River Oaks Fire Department E13 responded and supplied E210 with water from a nearby hydrant. The crew from E13 then responded to the building to assist in battling the fire.

Crews from Lake Worth and Samson Park had advanced into the east portion of the church from the front of the church, using the center aisle toward the rear of the altar area into the sanctuary in the southern corner. They had located a fire in the attic space and were attempting to extinguish it. Two fire fighters from River Oaks entered the building and joined the crew in the sanctuary. At this time, there were five fire fighters in this area: two from River Oaks, one from Samson Park, one from Lake Worth, and one from the Eagle Mountain Fire Department

Four fire fighters accessed the roof to begin ventilation operations. One fire fighter removed the covers from the roof monitor ventilation units and reported light smoke venting from the units at first. This smoke got heavier as minutes went by. Before rooftop ventilation could be completed, the roof structure collapsed, sending one fire fighter into the main hall of the church, and leaving another fire fighter hanging by his fingers at the edge of the collapsed portion of the roof. The remaining two fire fighters were on the only portion of the roof not to collapse. One fire fighter went to assist the fire fighter hanging by his fingers, and the three quickly exited the roof toward the tower ladder. The fire fighter who had fallen into the building was able to find the front door and exit with minor injuries.



The collapse trapped the five fire fighters in the interior of the building in the southeast corner of the church near the wall shared with the Fellowship Hall. An initial accountability check revealed that two fire fighters were trapped in the building. A rescue attempt was attempted through the Fellowship Hall, and as a fire fighter entered the hall he found a door near where the trapped fire fighters were believed to be located. He was able to remove two of the five fire fighters inside the building, but was unaware that there were additional fire fighters trapped inside. Conditions deteriorated rapidly immediately following this rescue. A second more accurate accountability check was made, and it was realized that three fire fighters were still missing, two from River Oaks and one from Samson Park.

As the fire was being extinguished, the three fire fighters were found. Two were in a short corridor adjacent to the altar and the third was found in one of the offices on the east side.

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State and local fire marshals have determined that the fire was incendiary in nature. No arrests have been made in this incident at the time of this report.

Based on the fire investigation and analysis, the NFPA has determined that the following significant factors may have contributed to the deaths of the three fire fighters:

- Lack of a proper building/incident size-up (risk vs. benefit analysis)
- Lack of compatible accountability systems among mutual aid departments
- Absence of an established rapid intervention crew (RIC)
- Lack of use of Personal Alert Safety Systems (PASS)
- Lack of subdivision in combustible attic space

## New IFMA Members

### Arkansas

Allan Skogen  
Springdale Fire Department  
Springdale, AR

Kevin McDonald  
Battalion Chief /Fire Marshal  
Springdale Fire Department  
Springdale, AR

Wallace Lindsey  
Manager  
American Solo Challenger  
McGehee, AR

### Arizona

Daniel Uthe  
Battalion Chief  
Tucson Fire Department  
Tucson, AZ

Dave Montgomery  
Fire Marshal  
Apache Junction Fire District  
Apache Junction, AZ

### California

Michael Hyde  
Fire Marshal  
Hayward Fire Department  
Hayward, CA

Michael Theule  
Fire Inspector II  
Los Angeles Fire Department  
Los Angeles, CA

Robert Meyer  
Fire Marshal  
Santa Maria Fire Department  
Santa Maria, CA

Steve Howard  
Fire Marshal  
Glendale Fire Department  
Glendale, CA

Thomas Groseclose  
Division Chief/Fire Marshal  
City of Orange Fire Dept.  
Orange, CA

### Columbia

Jaime Gabriel Vargas  
Safety & Fire Protection  
Engineer  
Abonos Colombianos  
Zona Industrial  
de Manonal KM 11  
Cartagena - Bolivar, Colombia

### Connecticut

John Roache  
Fire Safety Code Inspector  
Town of Andover  
Andover, CT

Patrick Tourville  
Deputy Fire Marshal  
Simsbury Fire District  
Tariffville, CT

Peter Bernstein  
Deputy Fire Marshal  
Turn of River Fire Department  
Stamford, CT

### Florida

Alfredo Suarez  
Fire Marshal  
Miami Dade Fire Rescue  
Miami, FL

Dennis Marshall  
Fire Marshal  
Maitland Fire/Rescue  
& Building  
Maitland, FL

Victor Jackson  
FDO  
City of Gainesville  
Gainesville, FL

### Georgia

Melissa Henderson  
Building Official  
Oconee County  
Watkinsville, GA

Patrick Parker  
Assistant Fire Chief/  
Fire Marshal  
Decatur Fire Department  
Decatur, GA

### Illinois

John Spurgeon  
Building Division Supervisor  
Village of Bensenville  
Bensenville, IL

Randy Borre  
Lieutenant  
Arlington Heights  
Fire Department  
Arlington Heights, IL

### Iowa

Richard Boots  
Fire Marshal  
Marion Fire Department  
Marion, IA

### Kansas

Donald Francis  
Fire Marshal/CBO  
Manhattan Dept. of  
Fire Services  
Manhattan, KS

### Kentucky

James Grey, President  
Lexington Firefighters Loc #526  
Lexington, KY

### Maryland

James Rubeling  
Lieutenant, City Fire  
Investigator, K-9 Handler  
Baltimore City Fire Department  
Baltimore, MD

### Massachusetts

Amal Tamim, Manager  
W. R. Grace  
Cambridge, MA

William Baraby, President  
Baraby Electric Co., Inc.  
Westport, MA

### Mississippi

Anthony Hansen  
Fire Inspector  
Vanceleave Volunteer  
Fire Department  
Ocean Springs, MS

### Missouri

James Weaver  
Assistant Fire Marshal  
Columbia Missouri  
Fire Department  
Columbia, MO

### New Jersey

James McAleer, Fire Official  
Branchburg Fire Safety  
Branchburg, NJ

Steven Avato  
Special Agent/CFI  
ATF  
Trenton, NJ

Walter Ash, Jr.  
Fire Official/EMC  
Borough of Saddle River  
Saddle River, NJ

### New Mexico

James Bolleter, Fire Marshal  
Santa Fe Fire Department  
Santa Fe, NM

### Nevada

Robert Fash  
Deputy Fire Marshal  
Las Vegas Fire & Rescue  
Las Vegas, NV

### New York

John Hawkins  
Senior Fire Marshal  
East Northport Fire District  
East Northport, NY

*continued on next page*

## New IFMA Members continued from previous page

Robert Stiloski  
Director—Department of  
Fire & Life Safety  
Village of Sleepy Hollow  
Sleepy Hollow, NY

William Hart, Fire Marshal  
Town of Brookhaven  
Medford, NY

### North Carolina

Caprice Mellon, Fire Marshal  
Town of Chapel Hill  
Chapel Hill, NC

Charles Johnson  
Chief Deputy Fire Marshal  
Wake County  
Raleigh, NC

Phillip Lawrence, Fire Chief  
Town of Atlantic Beach  
Fire Department  
Atlantic Beach, NC

Roger Fall, Fire Marshal  
Anson County Fire Marshal's  
Office  
Wadesboro, NC

Timothy Bradley, Fire Marshal  
North Carolina Office of the  
State Fire Marshal  
Raleigh, NC

### Ohio

James Amy, Fire Protection  
Engineer—Consultant  
Findlay, OH

### Ontario

Brian Maltby  
Division Chief, Fire Prevention  
Brampton Fire & Emergency  
Services  
Brampton, Ontario

### Oregon

Neil Hall  
Fire Prevention Manager  
Corvallis Fire Dept.  
Corvallis, OR

### Pennsylvania

Carlos Trump  
Fire Safety Coordinator  
Harley-Davidson Motor Co.  
Dillsburg, PA

Joseph Szymanski  
Safety Officer  
University of Pennsylvania  
Health System  
Philadelphia, PA

Larry Johnson  
Chief Fire Inspector  
Erie Fire Department  
Erie, PA

R. Mark Plumb, Fire Marshal  
Borough of Pleasant Hills  
Pittsburgh, PA

### Singapore

R. Maideen Kader  
Resident Director of Security  
and Fire Safety  
Singapore

### South Carolina

Gary Downey, Fire Chief  
Wade Hampton Fire Department  
Greenville, SC

James Kelly  
Fire Protection Engineer  
Westinghouse Safety  
Management Solutions  
Aiken, SC

### Texas

Mikael Makela, Fire Analyst  
McDowell Owens Engineering  
Kingwood, TX

### Virginia

Sandra Kulik  
Fire Safety Engineer  
Virginia Polytechnic Institute  
& State University  
Blacksburg, VA

William Hogsten  
Chair, Fire Prevention  
Charlottesville Fire  
Charlottesville, VA

### West Virginia

Clarence Leake  
Deputy State Fire Marshal  
West Virginia State Fire  
Marshal's Office  
Charleston, WV

David Brining  
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Martinsburg Fire Department  
Hedgesville, WV

Rudy Raynes  
Assistant Fire Marshal  
West Virginia State Fire Marshal  
Charleston, WV

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Phone: (800) 344-3555  
Outside Continental US and Canada,  
please call (617) 770-3000



## Third Annual Fire Marshals Conference

The Third Annual Fire Marshals Conference is scheduled for November 10–14, 2001, in Dallas, Texas. The conference will feature educational offerings, business meetings, networking sessions, and codes and standards technical sessions.

The following education programs are planned: Legal Aspects of Fire Investigation; Legal Aspects of Fire Prevention; Performance-Based Design with Panel Discussion; Fire Department Operations for the Design Professional; An Update on NFPA 1, *Uniform Fire Code*; and How to Implement a Fire Inspector Certification Program. We are also planning a business meeting, codes and standards forum, hospitality room, and more. Please stay tuned to future issues for additional information.

## Request for Assistance in Sprinkler Reliability

We are writing this letter to request assistance with a project associated with sprinkler reliability. We provide these comments and information to support a request for responses from fire safety professionals who may be aware of failures (or patterns of failure) of sprinklers in the field.

Traditionally, fire sprinklers have proven to be highly reliable devices, which serve as a first line of defense to ensure the life and property safety in buildings where they are installed. We also believe that by combining emerging new technologies and feedback from field service and testing records, newly developed fire sprinkler systems can be even more reliable. However, because of failures of specific, listed, and labeled sprinkler head designs in thousands of installations in the past few years, we feel it is important to share our observations on the reliability of specific, existing systems as may relate to the development of new fire sprinklers.

Existing reliability data is mainly based on older styles of sprinkler heads. Data for newer fire sprinkler designs is generally not included. In addition and of primary importance in this analysis, reliability of fire sprinklers is treated as a whole regardless possible fundamental differences in design and operating principles on which individual head designs are based. We believe that fire sprinkler reliability information for different mechanical/design technologies should be compiled separately because the more widely accepted designs may work on quite different principals and individual model types themselves can literally account for millions of installations.

If data from such analyses could be applied readily, “not acceptable designs” or designs with potentially low reliability could be isolated more readily and rejected than at present. In addition, such an approach can provide an opportunity for the fire safety community to cooperatively develop reliability

testing protocols for fire sprinkler and associated system components before new designs are introduced. Such an approach is absolutely consistent with assessments needed to better understand environmental or aging effects typified by pipe corrosion as well as the performance of the recently recalled Central Omega sprinklers.

Using the Omega case as an example, the reliability of that particular design degraded as a function of years in service. Test data accumulated in our laboratory as well as test data collected by others involved in evaluations of Omega sprinkler reliability demonstrated a consistent drop in reliability as number of years in service increased. We have seen for example reliability of Omega sprinklers drop below 70% after several years of service. The inference to be drawn from this is that resulting performance will be significantly less than the 90%+ reliability one would expect an individual fire sprinkler head to show.

More recently, the Central GB family of sprinklers has been the subject of notifications from UL<sup>1</sup> and Factory Mutual<sup>2</sup> and an “Informational Bulletin” from the California State Fire Marshall<sup>3</sup> warning of potential problems. In evaluating problems with this design to date, we have focused on performance of both sprinklers taken for testing from existing, undamaged buildings as well as those suggesting failures in the field after fire incidents have occurred. That data is compiled in the table below.

In the case of fire incidents, two incidents have been confirmed in California where affected installations included multiple GB heads that failed to operate and required extensive fire service intervention before the fires were controlled. One of these, in Montecito, California, has been the subject of reports from both an FPE firm and a laboratory, which investigated water quality issues, associated with the site in question.

**Results of Testing of Central GB Sprinkler Heads**

| Installation Location | Years of Service <sup>5</sup> | % Failure Rate | Testing Facility | Total Number of Sprinklers Failed/Tested |
|-----------------------|-------------------------------|----------------|------------------|------------------------------------------|
| San Francisco, CA     | 9                             | 57%            | FCA <sup>6</sup> | 24/42                                    |
| Los Angeles, CA       | 3                             | 10%            | FCA              | 1/10                                     |
| San Francisco, CA     | 3                             | 23%            | UL <sup>7</sup>  | 18/77                                    |
| San Francisco, CA     | 2                             | 0%             | UL               | 0/25                                     |
| San Francisco, CA     | 2                             | 0%             | UL               | 0/25                                     |
| San Francisco, CA     | 2                             | 29%            | UL               | 7/24                                     |
| San Francisco, CA     | 1                             | 4%             | UL               | 2/50                                     |
| Montecito, CA         | 9                             | 83%            | UM <sup>8</sup>  | 15/18                                    |

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## Request for Assistance in Sprinkler Reliability continued from previous page

A second fire in northern California has also been the subject of an investigation and the local AHJ is currently recommending replacement of all remaining GB heads in the multiple building projects where the fire occurred. Interestingly, these two sites as well as many of those listed in the table on page 7 (for heads taken from undamaged buildings) rely on water from widely different sources ranging from river water in widely differing parts of California to ground water wells. Thus, the suggestion that these failures are the result of MIC based on specific water supply problems seems improbable.

Test results from evaluations of almost 300 GB heads taken from service for various periods of time at different locations without fire occurrence, show a similar relationship between failure levels and years in service to that of the Omega models that were the subject of an earlier CPSC recall. For example, the GB heads we have tested have shown reliability below 50% for some locations and University of Maryland test data show an even lower reliability result for heads associated with the fire site in Montecito. These levels of reliability are unacceptable and suggest problems with product design and/or manufacture.

We are continuing to investigate this problematic performance and request that fire investigators involved with fire losses where excessive numbers of sprinkler heads operate or with fires seeming to overwhelm sprinkler systems contact the undersigned to share information. Our community needs to learn from recent recalls and the information they have provided us, and we also need to prevent such failures from continuing.

Joseph B. Zicherman, Ph.D., SFPE; [joez@fcfire.com](mailto:joez@fcfire.com)  
Frank Hsu, Ph.D., PE; [frankhsu@fcfire.com](mailto:frankhsu@fcfire.com)

<sup>1</sup> UL News Release of 2.7.00;

<http://www.ul.com/about/newsrel/gbsprinkler.html>.

<sup>2</sup> FM Global News Release of 2.8.00;

<http://www.fmglobal.com/news/releases/20000208.html>.

<sup>3</sup> California State Fire Marshal, Deputy FM Diane Arend, (916) 445-8200. "Potential Problems with Central Sprinkler Model GB," 6.303.01.

<sup>4</sup> For the reader's information, the listing of "testing facility" there refers to where functional testing of undamaged heads was conducted. Installation locations relate to building locations from which sprinkler contractors took heads involved in sampling activities or evaluations after a fire occurred.

<sup>5</sup> Based on the manufacturing date and date of sampling, if no other information available.

<sup>6</sup> Fire Cause Analysis, Richmond, CA 94804.

<sup>7</sup> Underwriters Laboratories Inc.

<sup>8</sup> University of Maryland.

## Sparky the Fire Dog® Celebrates the Big 50 *That's 350 dog years!*

It may be a dog-eat-dog world, but when it comes to teaching children about fire and life safety for a half-century, Sparky the Fire Dog® will "paws" to no one. The cool, vibrant trademarked Dalmatian-mascot for the international nonprofit safety advocate NFPA (National Fire Protection Association) and long-time best friend to the fire service, turned 50 years old on March 18!

That's 350 doggie years! Whoever thinks that Sparky is being put out to pasture, or will be living, er, er, dog days is surely barking up the wrong tree. NFPA plans to celebrate Sparky's birthday all year long and has just announced that Sparky will continue to doggedly impart educational messages to children.

How did Sparky come to be? He got his start as a pup when he followed home two children from school. In the evening, when he awoke from a nap in their backyard, he saw the children's home engulfed in fire, so he ran for help, barking all the way to the local fire station. Fire fighters rushed to the scene of the blaze, and fortunately the family was saved from the fire. Sparky was recognized for his valiant effort in alerting

fire fighters, and subsequently was invited to live with them in the firehouse, where he became schooled in fire prevention.

NFPA adopted the canine as its mascot in 1951.

So what's Sparky doing for his special day? Celebrating with birthday cake and candles. But he wants to remind everyone that lit candles must never be left unattended by adults. Last year, there were more than 11,000 fires caused by candles, and many of them started when children were playing with lit candles.

To celebrate Sparky's 50th and to learn more about Sparky and his safety messages, please visit his very own Web site at [www.sparky.org](http://www.sparky.org). For an electronic version of Sparky's 50th birthday icon, please call NFPA's public affairs office.



## Call for Members

The following NFPA Technical Committees are looking for members.

The **Committee on Liquid Fuel Burning Equipment** is seeking members in the interest categories of user and insurer. This Committee is responsible for NFPA 31, *Standard for the Installation of Oil-Burning Equipment*.

The **Committee on Manufacture of Organic Coatings** is seeking members in the interest categories of enforcing authority and insurer. This Committee is responsible for NFPA 35, *Standard for the Manufacture of Organic Coatings*.

The **Committee on Fire Protection for Nuclear Facilities** is seeking members in all interest categories except special expert or user. This Committee is responsible for NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials*; NFPA 804, *Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants*; and NFPA 805, *Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants*.

The **Committee on Fire Service Training** is seeking members in the following interest categories: user, special expert, and enforcer. This Committee is responsible for NFPA 13E, *Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems*; NFPA 1401, *Recommended Practice for Fire Service Training Reports and Records*; NFPA 1402, *Guide to Building Fire Service Training Centers*; NFPA 1403, *Standard on Live Fire Training Evolutions*; NFPA 1404, *Standard for a Fire Department Self-Contained Breathing Apparatus Program*; NFPA 1405, *Guide for Land-Based Fire Fighters Who Respond to Marine Vessel Fires*; NFPA 1410, *Standard on Training for Initial Emergency Scene Operations*; NFPA 1451, *Standard for a Fire Service Vehicle Operations Training Program*; and NFPA 1452, *Guide for Training Fire Service Personnel to Conduct Dwelling Fire Safety Surveys*.

The **Committee on Internal Combustion Engines** is seeking members in all categories except manufacturing. This Committee is responsible for NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*.

The **Committee on Premises Security** is seeking members in all interest categories. This Committee will be responsible for the development of documents on premises security.

The **Committee on Public Fire Educator Professional Qualifications** is seeking members in the user category. This Committee is responsible for NFPA 1035, *Standard for Professional Qualifications for Public Fire and Life Safety Educator*.

The **Committee on Solvent Extraction Plants** is seeking members in the interest categories of equipment manufacturer, insurer, and enforcing authority. This Committee is responsible for NFPA 36, *Standard for Solvent Extraction Plants*.

The **Committee on Water Spray Fixed Systems** is seeking members in the enforcer interest category. This Committee is responsible for NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection*.

The **Committee on Vehicular Alternative Fuel Systems** is seeking members in the enforcer interest category. This committee is responsible for NFPA 52, *Compressed Natural Gas (CNG) Vehicular Fuel Systems Code*, and NFPA 57, *Liquefied Natural Gas (LNG) Vehicular Fuel Systems Code*.

Anyone interested in serving on one of these committees or on any NFPA technical committee should request a technical committee application form from Codes and Standards Administration, NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

## On a Sad Note

John Vendetta, Fire Marshal (retired) Hartford, Connecticut, and Secretary of the New England Fire Marshals Association, lost his wife unexpectedly on March 26.

Henry Renfrew, Connecticut State Trooper (retired) assigned to the Connecticut State Fire Marshals Office and IFMA Representative on the NFPA 58 Technical Committee, passed away on April 30 after a long battle with cancer.

Our thoughts and prayers are with them and their families.

## Coming Events

### June

- 2–3 Fire Service Training, Baltimore, MD
- 21–23 Wildland Fire Fighting Protective Clothing and Equipment, Missoula, MT

### July

- 10 TCC NEC Meeting, San Francisco, CA
- 10–13 NFPA Standards Council, San Francisco, CA
- 19–21 Emergency Medical Services Protective Clothing & Equipment, TBA

### August

- 19–25 NFPA Committee Week, Reno, NV
- 20–21 Carbon Monoxide (CO) and Fuel Gas Detectors
- 21–22 Mining Facilities

### September

- 10–13 *IFMA/SFPE Principles of Fire Protection Engineering Course*, Baltimore, MD
- 14–15 *Northeastern Regional Fire Code Development Committee*, Warwick, RI
- 18–19 *Southern Regional Fire Code Development Committee*, Tulsa, OK
- 25–26 *Western Regional Fire Code Development Committee*, Boise, ID

### October

- 2–3 *Northcentral Regional Fire Code Development Committee*, Milwaukee, WI

### November

- 10–14 *3rd Annual Fire Marshals Conference*, Dallas, TX
- 10–14 *NFPA Fall Educational Conference*, Dallas, TX

## Fall 2002 Regional Fire Code Development Committee Meetings

To encourage greater fire service participation in the NFPA Codes and Standards Making System, NFPA and IFMA has established four Regional Fire Code Development Committees. The members of these committees are from the fire service in your area. The committees are responsible for developing proposals for changes to NFPA Codes and Standards, reviewing the Report on Proposals (ROP), and developing comments on proposed changes, and act as liaisons to their region's fire service for inputting changes to NFPA Codes and Standards. The meetings will be held on the following dates and times.

### ***Northcentral***

October 2–3, 2001, Milwaukee, WI, 8:30 a.m. to 4:00 p.m.

### ***Northeastern***

September 14–15, 2001, Warwick, RI, 8:30 a.m. to 4:00 p.m.

### ***Southern***

September 18–19, 2001, Tulsa, OK, 8:30 a.m. to 4:00 p.m.

### ***Western***

September 25–26, 2001, Boise, ID, 8:30 a.m. to 4:00 p.m.

There is no cost to attend the meeting. You are responsible for all costs associated with your travel. If you wish to attend, please contact Steven F. Sawyer at (617) 984-7423 or [ssawyer@nfpa.org](mailto:ssawyer@nfpa.org).



## Committees Soliciting Proposals

The committees for the following documents are planning to begin preparation of their respective reports. In accordance with the Regulations Governing Committee Projects, committees are now accepting proposals for recommendations on content for the documents listed below. Proposals received by 5:00 p.m. EDST on the closing date indicated will be acted on by the committee, and that action will be published in the committee's report. Proposals must be submitted to Codes and Standards Administration on proposal forms available in the back of all NFPA documents or from NFPA headquarters. (NOTE: For information on specific committee meeting dates, contact Codes and Standards Administration, NFPA.) Please note that for **new documents (P\*)**, a draft copy of the **new document** on which to submit proposals will be available. Copies of **new document (P\*)** drafts are available from Codes and Standards Administration, NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101, or they may be downloaded from NFPA's Web site at <http://www.nfpa.org/procom/document.html>. If you need a current edition of a document, please contact NFPA, Fulfillment Center, 11 Tracy Drive, Avon, MA 02322, or call (800) 344-3555.

| Document No./<br>Edition | Title                                                                                                                                                                                                                                | Proposal<br>Closing Date | Meeting<br>Reporting |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------|
| NFPA 20-1999             | <i>Standard for the Installation of Stationary Pumps for Fire Protection</i>                                                                                                                                                         | 12/28/2001               | A2003                |
| NFPA 50A-1999            | <i>Standard for Gaseous Hydrogen Systems at Consumer Sites</i>                                                                                                                                                                       | 6/28/2002                | F2003                |
| NFPA 50B-1999            | <i>Standard for Liquefied Hydrogen Systems at Consumer Sites</i>                                                                                                                                                                     | 6/28/2002                | F2003                |
| NFPA 51B-1999            | <i>Standard for Fire Prevention During Welding, Cutting, and<br/>Other Hot Work</i>                                                                                                                                                  | 12/28/2001               | A2003                |
| NFPA 85-2001             | <i>Boiler and Combustion Systems Hazards Code</i>                                                                                                                                                                                    | 6/28/2002                | F2003                |
| NFPA 86-1999             | <i>Standard for Ovens and Furnaces</i>                                                                                                                                                                                               | 12/28/2001               | A2003                |
| NFPA 86C-1999            | <i>Standard for Industrial Furnaces Using a Special Processing Atmosphere</i>                                                                                                                                                        | 12/28/2001               | A2003                |
| NFPA 86D-1999            | <i>Standard for Industrial Furnaces Using Vacuum as an Atmosphere</i>                                                                                                                                                                | 12/28/2001               | A2003                |
| NFPA 251-1999            | <i>Standard Methods of Tests of Fire Endurance of Building<br/>Construction and Materials</i>                                                                                                                                        | 1/3/2003                 | A2004                |
| NFPA 252-1999            | <i>Standard Methods of Fire Tests of Door Assemblies</i>                                                                                                                                                                             | 12/28/2001               | A2003                |
| NFPA 260-1998            | <i>Standard Methods of Tests and Classification System for<br/>Cigarette Ignition Resistance of Components of Upholstered Furniture</i>                                                                                              | 12/28/2001               | A2003                |
| NFPA 261-1998            | <i>Standard Method of Test for Determining Resistance of Mock-Up<br/>Upholstered Furniture Material Assemblies to Ignition by<br/>Smoldering Cigarettes</i>                                                                          | 12/28/2001               | A2003                |
| NFPA 285-1998            | <i>Standard Method of Test for the Evaluation of Flammability<br/>Characteristics of Exterior Non-Load-Bearing Wall Assemblies<br/>Containing Combustible Components Using the Intermediate-Scale,<br/>Multistory Test Apparatus</i> | 12/28/2001               | A2003                |
| NFPA 302-1998            | <i>Fire Protection Standard for Pleasure and Commercial Motor Craft</i>                                                                                                                                                              | 12/28/2001               | A2003                |
| NFPA 701-1999            | <i>Standard Methods of Fire Tests for Flame Propagation of<br/>Textiles and Films</i>                                                                                                                                                | 1/3/2003                 | A2004                |
| NFPA 1670-1999           | <i>Standard on Operations and Training for Technical Rescue Incidents</i>                                                                                                                                                            | 6/28/2002                | F2003                |
| NFPA 1901-1999           | <i>Standard for Automotive Fire Apparatus</i>                                                                                                                                                                                        | 9/28/2001                | A2003                |
| NFPA 1977-1998           | <i>Standard on Protective Clothing and Equipment for Wildland Fire Fighting</i>                                                                                                                                                      | 12/31/2001               | F2003                |

P\* Proposed NEW drafts are available from NFPA Codes and Standards Administration, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101, or they may be downloaded from NFPA's Web site [http://www.nfpa.org/Codes/Current\\_Codes\\_and\\_Standards/Info\\_About\\_Documents/Drafts\\_of\\_Proposed\\_Documents/drafts\\_of\\_proposed\\_documents.html](http://www.nfpa.org/Codes/Current_Codes_and_Standards/Info_About_Documents/Drafts_of_Proposed_Documents/drafts_of_proposed_documents.html).

† A proposed preprint combining NFPA 1 and the *Uniform Fire Code* will be available in February 2001 to assist in the submission of proposals. Preprints are available from NFPA Codes and Standards Administration, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101, or they may be downloaded from NFPA's Web site at [http://www.nfpa.org/Codes/Current\\_Codes\\_and\\_Standards/Info\\_About\\_Documents/Drafts\\_of\\_Proposed\\_Documents/drafts\\_of\\_proposed\\_documents.html](http://www.nfpa.org/Codes/Current_Codes_and_Standards/Info_About_Documents/Drafts_of_Proposed_Documents/drafts_of_proposed_documents.html).

## Walter Smittle Receives Percy Bugbee Award



Walter Smittle, retired State Fire Marshal of West Virginia, is the sixth recipient of the IFMA Percy Bugbee Award.

The Percy Bugbee Award was established in 1969 to honor a member of the International Fire Marshals Association whose notable, significant, and enduring contributions to the public safety are in keeping with the highest traditions of the International Fire Marshals Association.

This award is named in honor of a dedicated colleague who for more than 40 years gave himself untiringly and unselfishly in advancing and supporting the objectives of the International Fire Marshals Association—to promote the science and improve the methods of fire protection and fire prevention; to obtain and circulate information on these subjects and to secure the cooperation of its members in establishing proper

safeguards against loss of life and property by fire. Before today this honor has only been bestowed five times.

**1969** Percy Bugbee  
**1977** Senator Warren G. Magnuson  
**1978** Charles S. Morgan  
**1989** Howard D. Boyd  
**1997** Jack Sanders

Walter is no stranger to IFMA or NFPA having been a member since 1974. He has held many positions within IFMA including president. He has served on many technical committees, was chair of the Fire Prevention Code Technical Committee for many years, and served on the NFPA Standards Council.

He started his fire service career as a volunteer fire fighter and moved through the ranks. He was appointed West Virginia State Fire Marshal in 1974 and remained in that position until his retirement in 1999.

He is a leading proponent and advocate of fire and life safety code enforcement has placed him among the national leaders in fire prevention and life safety. He was also a driving force in bringing fire safety education to his state that was the first state to adopt the Risk Watch Program.

He also is the only member to receive three prestigious awards: in 1995 he received the Standards Medal, in 2000 the Paul C. Lamb Award and today the Percy Bugbee Award.

## Executive Secretary's Report



*Steven F. Sawyer*

Another busy Annual Meeting has gone by. I would like to thank the departing executive board members for their years of service and welcome the new officers and wish them well. The educational sessions were well attended. We held our annual Chapter Presidents Meeting on Saturday with 11 chapters in attendance. It was a very productive meeting.

Congratulations to Walter Smittle the sixth recipient of the Percy Bugbee Award.

We are in the final stages of planning for the Third Annual Fire Marshals Conference held in conjunction with the NFPA Fall Educational Conference. It will be held November 10–14, 2001, in Dallas, Texas. Look for details in the future.

We are holding a Principles of Fire Protection Engineering course with SFPE in Baltimore, Maryland, see cover. IFMA

has entered into a partnership with SFPE to cosponsor the Principles of Fire Protection Engineering course. The two-day Management Institute for Fire Marshals was held in Los Angeles in April. I would like to give a special thanks to Jim Crawford and Jim Hill for their assistance in sponsoring this course. Thirty-three people were in attendance.

The fall round of Regional Fire Code Development Committees have been scheduled; if you are interested in attending, please let me know.

On a sad note we lost an avid supporter with the passing of Henry Renfrew. Henry was IFMA representative on the NFPA 58 Technical Committee and an avid supporter of IFMA. He will be greatly missed. John Vendetta, a long-term supporter of IFMA, lost his wife in March. We wish them and their families our thoughts and prayers.

I hope everyone has a safe summer.

## Outgoing President's Corner



*Jim Crawford*

By time this is published, I will have completed my term as president of IFMA. It has been an honor serving in that capacity—but I'm very excited about the future of the organization. This is usually a time to reflect, and I'd like to make a few observations about IFMA.

First, I'm very much impressed with the leadership on the board. Your board of directors has demonstrated their willingness to work on behalf of the association. That isn't always easy—everyone already has a "day job." But they continue to give extra effort—and work on your behalf. I'm pleased that Ron will be serving president – and look forward to others on the board moving into positions as officers and leaders of IFMA. It is because the board functions as a team that things get done.

I am very grateful for the support NFPA has provided our association. I've said before—it is a little unusual being a membership organization within a membership organization. But there are

advantages to having a close working relationship with NFPA—and the financial and logistical support they provide IFMA is far greater than we would receive on our own. Other member sections have reached similar conclusions.

Working as a team, we have accomplished a great deal for IFMA, but there is still much to do. As long as I am able, I will continue to work for the benefit of the association. I know others will as well—continuing to raise the bar for what we can expect of our organization. I will continue to look forward to an even brighter future for the many professionals involved with IFMA.

I'd like to end my tenure by saying thanks for all your efforts and support of IFMA. It has been my pleasure to work with so many fine people, and my life (professional and personal) is greatly enriched by the experience.

## Incoming President's Corner



*Ron Farr*

I would like to extend my sincere thank you to the membership of the International Fire Marshals Association for allowing me the honor and privilege to serve as your president. To now Past President Jim Crawford, I would like to say congratulations on a very impressive and successful term as IFMA's president. Jim has made great strides in promoting the goals of IFMA and this is an area I am determined to continue.

As I look back over the last few years I realize the many positive activities IFMA has been involved in and also realize the positive impacts we have made as a group. IFMA is very fortunate to have a great membership support base; however, I would like to see this grow not only in numbers but participation. Professional development and customer service are high prior-

ities of the entire fire service. Our membership is IFMA's customer. We need to get involved.

As the Executive Board meets we will be reviewing goals and objectives outlined in our strategic plan. In an effort to meet the needs of our membership, I am encouraging all of you to forward any issues you feel are important or that could impact IFMA, for consideration.

As I indicated, I would like to see IFMA's membership grow in size. The more members we have, the more ideas we have, the more participation we have, the more successful we can be. We all have a vision about issues. It is important that we take that vision and make a positive impact.

Again, thank you, and I look forward to serving as your president.

## Looking for Policies and Procedures

IFMA is looking for policies and procedures on the operation of fire prevention offices. We get many requests for policies and procedures, and we would like to be able to send them the information. In the future we may want to package them and make them available to all. If you have any, please forward them to the Executive Secretary.

## Be cool, stay safe

### *NFPA offers tips to ensure safety in the summertime*

Scooters. Swimming pools. Barbecues. All signs point to summer. As adults and children head for the great outdoors to enjoy hot fun in the summertime, NFPA offers the following tips to make this season safer.

#### **Scooter and bike safety**

Scooters, bikes, in-line skates, and skateboards are associated with numerous injuries yearly.

- Wear a comfortable, properly fitted helmet bearing the label of an independent testing lab. Be sure that the helmet sits level on top of the head—not rocking in any direction—and always fasten the safety strap.
- Be sure that safety gear (wrist, elbow, and kneepads) fits properly and does not interfere with the rider's movement, vision, or hearing. Wrist pads are not recommended for scooter riders as they may affect their ability to maneuver.
- Ride scooters only on smooth, paved surfaces.
- Only ride bikes and scooters during daylight hours.
- Learn the proper hand signals and use them when you turn or stop.
- Come to a complete stop before entering driveways, paths, or sidewalks, then look left, right, and left again for bikes, cars, or pedestrians heading your way.

#### **Water safety**

Extra caution should be used when around water, for children and adults.

- Only swim in approved areas.
- Always supervise children near water at all times and make sure that children learn to swim.
- Check the depth of the water with a lifeguard before jumping in.
- Always wear a U.S. Coast Guard-approved PFD (personal flotation device) when boating, jet-skiing, tubing, or water-skiing.
- Air-filled swimming aids, like water wings or inner tubes, are not substitutes for approved PFDs. An adult should always supervise children using these devices.
- Be sure to extinguish all smoking materials and shut down motors, fans, and heating devices before fueling a boat. In case of a spill, wipe up fuel immediately and check the bilge for fuel leakage and odors. After fueling and before starting the boat's motor, ventilate with the blower for at least four minutes.

#### **Fireworks**

Fireworks lead to thousands of injuries requiring emergency room treatment, according to NFPA. These impressive, but dangerous, devices can burn up to 1200° F and can cause burns, lacerations, amputations, and blindness. Stay safe by always leaving fireworks to professionals.

- Stay back at least 500 feet from professional fireworks displays.
- Treat all fireworks, whether legal or illegal for consumers, as suitable only for use by trained professionals.
- If you find fireworks, do not touch them but instead direct authorities to them.
- Leave any area where amateurs are using fireworks.

#### **Barbecue safety**

Be aware when you barbecue. In 1998 alone, there were 6,100 reported home fires involving gas or charcoal grills in the United States, leading to \$29.1 million in direct property damage, according to NFPA.

- When using barbecue grills on decks or patios, be sure to leave sufficient space from siding and eaves.
- Always watch a barbecue grill when in use.
- Keep children and pets far away from grills.
- With charcoal grills, only use charcoal starter fluids designed for barbecue grills and do not add fluid after coals have been lit.
- With gas grills, be sure that the hose connection is tight and check hoses carefully for leaks. Applying soapy water to the hoses will easily and safely reveal any leaks.
- Always follow the manufacturer's instructions and have the grill repaired by a professional, if necessary.

For more on these topics, please visit [www.nfpa.org](http://www.nfpa.org) and view the seasonal safety tips. Following these quick and simple steps will make summer activities safer. For further information on summer fire safety and related topics, please contact NFPA or view the summer safety fact sheet at [www.nfpa.org](http://www.nfpa.org). Also, stay tuned this spring for the launch of NFPA's new Risk Watch® Web site, a dynamic, injury prevention site, providing a wealth of resources and information to kids, parents, safety advocates, and teachers.

## New Fire Grant Program Receives More Than 19,000 Applications

More than 19,000 applications from fire departments across the nation reached the Assistance to Firefighters Grant office before the May 2 deadline, the Federal Emergency Management Agency (FEMA) and the U.S. Fire Administration (USFA), which is part of FEMA, announced today.

“It is gratifying to see so many fire departments responded and have applied for financial assistance, which also demonstrates the many needs of our nation’s fire service,” said FEMA Director Joe M. Allbaugh. “While we haven’t had much time to get the new program up and running, we are continuing to work with the fire service organizations, and it certainly helps to have all the information about the grants available via the Internet.”

A series of panels in May and June will review the applications and make recommendations to FEMA on grant awards. All fire departments will be notified of final action on their grant applications no later than September 30, 2001.

“As the review process begins, we will ensure that grant awards are distributed as outlined in the legislation,” said

Acting USFA Administrator Ken Burris. “That means in awarding grants we must consider rural, suburban, and urban departments and distribution of funds must also be weighted to include departments with volunteers, career staff, or a combination of volunteer and career staff.”

Grants will be funded among six categories this year. The targeted allocation for each category is:

- Training—\$6.5 million
- Wellness and Fitness Programs— \$6.5 million
- Vehicles—\$15 million
- Fire Fighting Equipment—\$15 million
- Personal Protective Equipment—\$35 million
- Fire Prevention Programs—\$12 million

More information on the grant program is available from the U.S. Fire Administration Web site at [www.usfa.fema.gov/grants](http://www.usfa.fema.gov/grants), the Grant Office’s toll free information line at (866) 274-0920, or e-mail at [usfagrants@fema.gov](mailto:usfagrants@fema.gov).

## A Summary of the Home Structure Fire Problem

The following information is taken from the May 2001 *U.S. Fire Problem Overview Report*, by Marty Ahrens. This report provides a complete overview of the U.S. fire patterns and trends, and a discussion of many other occupancy types besides homes. It’s the best single reference offered by the NFPA for facts on fire experience. Please contact Nancy Schwartz in NFPA’S One-Stop Data Shop at (617) 984-7450 or [osds@nfpa.org](mailto:osds@nfpa.org) to request a complimentary copy of the complete report.

Home fires include fires in one- and two-family dwellings, manufactured homes, and apartments. Only fires reported to public fire departments are included in these statistics.

### **More than 400,000 home structure fires were reported per year.**

An average of 406,400 reported home structure fires caused 3,498 civilian deaths, 18,092 civilian injuries, and \$4.4 billion in direct property damage per year during the five-year period from 1994–1998. Three-quarters of the home structure fires occurred in one- and two-family dwellings. In addition to these home fires, an average of 14,500 fires in dwelling garages coded as separate buildings were reported per year. These fires caused an average of 16 civilian deaths, 171 civilian injuries, and \$90.4 million in direct property damage.

### **Almost 3/4 of reported structure fires occurred in homes.**

Overall, the 406,400 home structure fires accounted for 71.7% of the 567,100 structure fires, 93.4% of the 3,744 civilian structure fire deaths, 85.0% of the 21,293 civilian structure fire injuries, and 60.5% of the \$7.2 billion in direct structure fire property damage per year during that time period.

Dwelling garage fires that had been coded as separate buildings (and so are not counted with home fires) accounted for 3.1% of the structure fires, 0.5% of the associated civilian fire deaths, 1.0% of the associated civilian fire injuries, and 2.1% of the direct associated property damage per year during that time period.

### **Since 1980, home structure fires fell 49%.**

Home structure fires fell 49% from 731,000 in 1980 to 370,900 in 1998. From 1997 to 1998, structure fires in these occupancies fell 6% from 394,900 in 1997.

The downward trend was more pronounced in one- and two-family dwellings and manufactured homes, which fell 53% from 1980 to 1998, than in apartment fires, which fell 35% during the same period. Fires in buildings coded as dwelling garages fell 68% during this time. In comparison, structure

*continued on the following pages*

fires of all types declined 51% from 1980 to 1998. From 1997 to 1998, total structure fires fell 6%.

### **Kitchens were the leading area of origin for home structure fires.**

Kitchens were the leading area of origin for home structure fires and for home civilian fire injuries. Almost half of all

### **2/5 of reported home structure fires occurred in properties with working smoke alarms.**

Only 41% of the reported home fires occurred in properties protected by working smoke or fire alarms during the five-year period from 1994 through 1998. Smoke alarm operability was comparable in apartments and one- and two-family

### **Home Structure Fires, by Year: 1980–1998**

| <b>Year</b> | <b>Fires</b> | <b>Civilian Deaths</b> | <b>Civilian Injuries</b> | <b>Direct Property Damage (in Millions)</b> |
|-------------|--------------|------------------------|--------------------------|---------------------------------------------|
| 1980        | 731,000      | 5,234                  | 19,998                   | \$2,948.4                                   |
| 1981        | 709,500      | 5,323                  | 19,366                   | \$3,162.2                                   |
| 1982        | 658,300      | 4,837                  | 20,212                   | \$3,182.5                                   |
| 1983        | 626,000      | 4,679                  | 20,507                   | \$3,156.0                                   |
| 1984        | 606,800      | 4,097                  | 18,481                   | \$3,335.4                                   |
| 1985        | 604,700      | 4,857                  | 19,118                   | \$3,664.5                                   |
| 1986        | 565,200      | 4,639                  | 18,290                   | \$3,398.2                                   |
| 1987        | 535,900      | 4,521                  | 19,708                   | \$3,608.0                                   |
| 1988        | 538,300      | 4,987                  | 21,978                   | \$3,909.6                                   |
| 1989        | 498,500      | 4,349                  | 20,113                   | \$3,872.1                                   |
| 1990        | 453,500      | 4,008                  | 19,932                   | \$4,132.6                                   |
| 1991        | 464,700      | 3,522                  | 21,206                   | \$5,391.1                                   |
| 1992        | 458,300      | 3,667                  | 20,857                   | \$3,756.2                                   |
| 1993        | 456,500      | 3,731                  | 21,921                   | \$4,739.1                                   |
| 1994        | 437,400      | 3,407                  | 19,353                   | \$4,190.9                                   |
| 1995        | 413,100      | 3,604                  | 18,494                   | \$4,229.2                                   |
| 1996        | 415,600      | 3,978                  | 18,737                   | \$4,786.9                                   |
| 1997        | 394,900      | 3,329                  | 17,246                   | \$4,439.9                                   |
| 1998        | 370,900      | 3,173                  | 16,628                   | \$4,274.7                                   |

*Note:* These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. Fires are expressed to the nearest hundred, civilian deaths and injuries are rounded to the nearest one, and property damage is rounded to the nearest hundred thousand dollars. Property damage figures have not been adjusted for inflation.

*Source:* National estimates based on NFIRS and NFPA survey.

apartment fires and one-quarter of the fires in one- and two-family homes started in kitchens. Bedrooms ranked second, and living rooms, family rooms, or dens ranked third. Chimneys ranked fourth in home fire structure frequency. However, they were a much larger problem in one- and two-family homes than in apartments.

Almost one-third of the home civilian fire deaths resulted from fires that started in the living room, family room, or den. In apartments, slightly more fire deaths occurred in fires starting in bedrooms than in the living room. The bedroom ranked first among the areas of origin for home fire dollar loss in both apartments and in one- and two-family dwellings. The bedroom ranked second in civilian fire injuries and second in home fire deaths.

homes, but apartments were more likely to have these devices than were one- and two-family dwellings. Apartments were also much more likely to have automatic suppression systems, although too few homes of any type have such systems. They were present in less than 1% of the fires in one- and two-family dwellings and in only 7% of the apartment fires. Home fire deaths were reduced 77% when these systems were present. The average estimated direct property loss per fire was cut roughly in half when an automatic suppression system was present.

### **139,200 outside fires and 19,300 vehicle fires were reported on home properties.**

During the same five-year period from 1994 through 1998, an average of 139,200 outside and other fires on home properties

caused an average of 12 civilian deaths, 495 civilian injuries, and \$25.2 million in direct property damage per year. An average of 19,300 vehicle fires on home properties caused 21 civilian deaths, 174 civilian injuries, and \$54.2 million in direct property damage per year. In addition, an average of 2,200 vehicle fires in or at dwelling garages coded as separate properties caused an average of one civilian death, 20 civilian

### Causes of Home Structure Fires

The leading causes of home structure fires and associated losses during the five-year period from 1994 through 1998 were cooking equipment for fire incidents and civilian injuries, smoking materials for civilian fire deaths, and incendiary and suspicious fires for property damage.

#### Causes of Home Structure Fires 1994–1998 Annual Averages Unknown Cause Fires Allocated Proportionally

| Major Cause                          | Fires                   | Civilian Deaths       | Civilian Injuries      | Direct Property Damage (in Millions) |
|--------------------------------------|-------------------------|-----------------------|------------------------|--------------------------------------|
| Cooking equipment                    | 91,700 (22.6%)<br>#1    | 327 (9.3%)<br>#5      | 4,607 (25.5%)<br>#1    | \$394.8 (9.0%)<br>#5                 |
| Heating equipment                    | 59,100 (14.5%)<br>#2    | 468 (13.4%)<br>#3     | 1,592 (8.8%)<br>#5     | \$550.6 (12.6%)<br>#3                |
| Incendiary or suspicious             | 49,000 (12.1%)<br>#3    | 568 (16.2%)<br>#2     | 1,923 (10.6%)<br>#4    | \$803.2 (18.3%)<br>#1                |
| Other equipment                      | 42,800 (10.5%)<br>#4    | 264 (7.6%)<br>#7      | 1,554 (8.6%)<br>#6     | \$509.8 (11.6%)<br>#4                |
| Electrical distribution              | 38,400 (9.4%)<br>#5     | 352 (10.1%)<br>#4     | 1,343 (7.4%)<br>#7     | \$614.2 (14.0%)<br>#2                |
| Appliance, tool, or air conditioning | 29,400 (7.2%)<br>#6     | 133 (3.8%)<br>#9      | 962 (5.3%)<br>#9       | \$253.4 (5.8%)<br>#6                 |
| Smoking materials                    | 21,200 (5.2%)<br>#7     | 798 (22.8%)<br>#1     | 1,983 (11.0%)<br>#3    | \$252.0 (5.7%)<br>#7                 |
| Open flame, ember, or torch          | 19,700 (4.8%)<br>#8     | 112 (3.2%)<br>#10     | 706 (3.9%)<br>#10      | \$214.2 (4.9%)<br>#10                |
| Child playing                        | 18,200 (4.5%)<br>#9     | 289 (8.3%)<br>#6      | 2,056 (11.4%)<br>#2    | \$239.6 (5.5%)<br>#8                 |
| Exposure (to other hostile fire)     | 15,500 (3.8%)<br>#10    | 33 (0.9%)<br>#11      | 164 (0.9%)<br>#11      | \$224.1 (5.1%)<br>#9                 |
| Other heat source                    | 13,000 (3.2%)<br>#11    | 142 (4.1%)<br>#8      | 1,078 (6.0%)<br>#8     | \$165.9 (3.8%)<br>#11                |
| Natural causes                       | 8,400 (2.1%)<br>#12     | 13 (0.4%)<br>#12      | 124 (0.7%)<br>#12      | \$162.6 (3.7%)<br>#12                |
| <b>Total</b>                         | <b>406,400 (100.0%)</b> | <b>3,498 (100.0%)</b> | <b>18,092 (100.0%)</b> | <b>\$4,384.3 (100.0%)</b>            |

Each entry shows the estimated number, percent share of total in parenthesis, and rank among the 12 major cause groups.

*Note:* These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. Fires are expressed to the nearest hundred, civilian deaths and injuries to the nearest one, and property damage to the nearest hundred thousand dollars. Property damage figures have not been adjusted for inflation. The 12 major cause categories are based on a hierarchy developed by the U.S. Fire Administration. Sums may not equal totals due to rounding errors.

*Source:* National estimates based on NFIRS and NFPA survey.

injuries, and an estimated \$7.2 million in direct property damage per year. An annual average of 1,100 outside and other fires in or on dwelling garage properties caused an average of one civilian death, eight civilian injuries, and \$400,000 in direct property damage per year.

### Leading fire causes differ in one- and two-family homes versus apartments.

Apartment fires differ significantly from dwelling fires. The systems that tend to be centrally installed, maintained, and supervised in apartment buildings, such as heating and

electrical distribution equipment, cause a smaller share of the fires in apartments than they do in dwellings. Those causes that reflect more on the actions of the occupants, such as smoking and cooking, rank high in both kinds of properties. This is not surprising. Equipment-related fires usually occur because of human errors. When systems pass into the scope of regulatory authorities and central management by professionals, greater safety typically results.

By contrast, heating equipment fires typically involve poorly installed, poorly maintained, or misused auxiliary heating equipment fires. Cooking equipment fires most often involve unattended cooking. Smoking-material fires involve careless handling or disposal of materials.

Although human errors are usually involved, equipment and other product redesign can improve safety; this method may even be the most effective and inexpensive approach. But improved public education and motivation with respect to fire safety are clearly needed to address all types of home fires. So are systems—like smoke alarms and residential sprinklers—and practiced escape plans, all of which can provide safety margins after a fire has begun.

#### **Cooking equipment was the leading cause of home fires.**

Cooking equipment is equipment used to heat or warm food (unlike food processors or can openers). Human error was involved in most of these fires. For example, more than half of the stove fires started when food was left unattended.\* During the five-year period from 1994 through 1998, cooking activities or equipment caused an annual average of 91,700 reported home structure fires, 327 civilian fire deaths, 4,607 civilian fire injuries, and \$394.8 million in direct property damage.

Cooking equipment fires caused 37% of all apartment fires, but only 18% of the fires in one- and two-family dwellings or manufactured homes. Even so, cooking still ranked first in both categories.

#### **Heating equipment was the leading cause of fires in one- and two-family dwellings and manufactured housing.**

Like cooking equipment, heating equipment is said to cause fires when it was involved in the ignition, even if it was working properly. Home heating equipment includes central heating units, portable and fixed space heaters, fireplaces, chimneys, heat transfer systems, and hot water heaters. During the five-year period from 1994 through 1998, heating equipment in the home caused an annual average of 59,100 reported home structure fires, 468 civilian fire deaths, 1,592 civilian fire injuries, and \$550.6 million in direct property damage.

Although heating equipment was involved in 17% of the fires in one- and two-family homes and manufactured housing (the second leading cause in this occupancy group), it was involved in only 5% of the apartment fires. In his analysis of home heating fires, John Hall states, “Portable and fixed space heaters and related equipment (such as chimneys) accounted for two of every three home heating fires in 1997 and three of every four associated deaths.” Combustibles too close to the heater was the leading cause of portable heater fires and of gas and electric fixed area heaters.\*\*

#### **Incendiary and suspicious fires together ranked first in home fire dollar loss.**

During the five-year period from 1994 through 1998, 49,000 home structure fires per year, on average, were incendiary or suspicious. These fires caused an annual average of 568 civilian fire deaths, 1,923 civilian fire injuries, and \$803.2 million in direct property damage. Incendiary and suspicious fires ranked first in terms of property damage and second in home fire deaths.

Although ranked third in home fires overall, incendiary and suspicious fires ranked second among the causes of apartment fires. One-third of the dwelling garage fires coded as separate structures were also considered incendiary or suspicious.

#### **“Other equipment” ranked fourth among fire causes.**

The term “other equipment” is used to describe an assortment of things including specific equipment that does not logically fall into the other cause categories (vehicles, electronic equipment, etc.), and fires in which the form of heat of ignition indicates some form of equipment, but no type of equipment was captured under the equipment involved in ignition. During the five-year period from 1994 through 1998, “other equipment” in the home caused an annual average of 42,800 structure fires, 264 civilian fire deaths, 1,554 civilian fire injuries, and \$509.8 million in direct property damage.

#### **Electrical distribution equipment fires ranked second in property damage.**

Electrical distribution equipment includes: fixed wiring; transformers or associated overcurrent or disconnect equipment; meters or meter boxes; power switch gear or overcurrent protection devices; switches, receptacles, or outlets; light fixtures, lamp holders, light fixtures, signs, or ballasts; cords or plugs; and lamps or light bulbs.

During the five-year period from 1994 through 1998, electrical distribution equipment in the home caused an annual average of 38,400 structure fires, 352 civilian fire deaths, 1,343 civilian fire injuries, and \$614.2 million in direct property damage.

Electrical distribution equipment caused 11% of the fires in one- and two-family dwellings or manufactured homes, but only 5% of the fires in apartments.

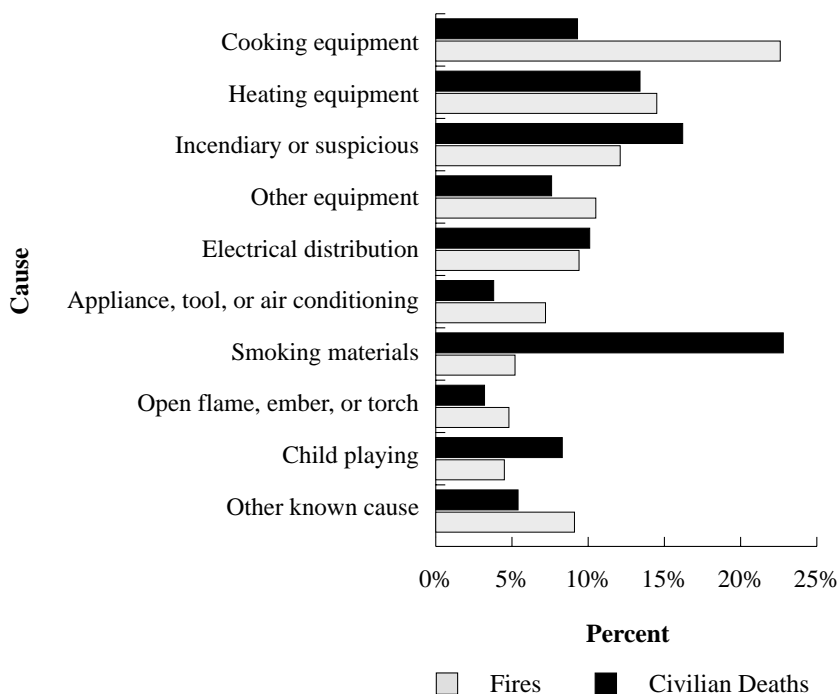
A study done by the U.S. Consumer Product Safety Commission in the mid-1980s examined detailed information about electrical equipment residential fires in specific cities. They found that improper alterations contributed to 37% of the fires; improper initial installations factored in 20% of the incidents; deterioration due to aging system components contributed to 17% of the fires; improper use was a factor in 15% of the

of 29,400 structure fires, 133 civilian fire deaths, 962 civilian fire injuries, and \$253.4 million in direct property damage.

**Smoking materials were the leading cause of fire deaths.**

Smoking materials have been the leading cause of fire death for years. During the five-year period from 1994 through 1998,

**Causes of Home Fires and Home Fire Deaths  
1994–1998 Annual Averages**



incidents; inadequate electrical capacity contributed to another 15%; faulty products were implicated in 11%; and contributing factors were unknown in 6% of the fires studied. (Multiple factors were coded in a number of investigations resulting in a total higher than 100%.)\*\*

**“Appliance, tool, or air conditioning” ranked sixth in home fire causes.**

The category “appliance, tool, or air conditioning” includes air conditioning or refrigeration equipment, clothes washers and dryers, home entertainment equipment, and other appliances commonly found in homes. Dryers were the most frequently involved appliances in home fires.

During the five-year period from 1994 through 1998, appliances, tools, or air conditioning in the home caused an annual average

of 21,200 structure fires, 798 civilian fire deaths, 1,983 civilian fire injuries, and \$252.0 million in direct property damage.

Smoking materials caused 8% of the fires in apartments, but only 4% of the fires in one- and two-family dwellings or manufactured homes.

**“Open flame, ember, or torch” ranked eighth in home fire causes.**

The category “open flame, ember, or torch” includes cutting, welding, or other torches; matches or lighters not associated with incendiary, suspicious, or child-play fires; open fires; embers; and some candle fires. Hot ember or ash fires and rekindles or reignitions were the most common problems of this nature in one- and two-family dwellings. Open flame,

## A Summary of the Home Structure Fire Problem continued from page 19

ember, or torch fires ranked fourth among the causes of dwelling garage fires.

During the five-year period from 1994 through 1998, open flames, embers, or torches in the home caused an annual average of 19,700 structure fires, 112 civilian fire deaths, 706 civilian fire injuries, and \$214.2 million in direct property damage.

### **Home child-play fires ranked second in home civilian fire injuries.**

Child play fires involve children playing with the heat source, typically matches or lighters, but occasionally other items like stoves, candles, etc., or with the material first ignited, such as

gasoline. During the five-year period from 1994 through 1998, children playing with fire in the home caused an annual average of 18,200 structure fires, 289 civilian fire deaths, 2,056 civilian fire injuries, and \$239.6 million in direct property damage.

\* John R. Hall, Jr., *U.S. Home Cooking Fire Patterns and Trends*, Quincy, MA: National Fire Protection Association, Fire Analysis and Research Division, April 2000.

\*\* John R. Hall, Jr., *U.S. Home Heating Fire Patterns and Trends*, Quincy, MA: National Fire Protection Association, Fire Analysis and Research Division, April 2000.

\*\*\* Linda E. Smith and Dennis McCoskie, "What Causes Wiring Fires in Residences?" *Fire Journal*, Quincy, MA: National Fire Protection Association, January/February 1990, p. 22.



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