catastrophic fires of 2000 • ROBERT S. McCARTHY

Early one morning last December, a Rhode Island fire department received a 911 call reporting a fire in a three-story apartment building. When firefighters arrived, they discovered the first floor and rear stairwell of the building well involved in fire and five of the 10 occupants dead. In Massachusetts, acrid smoke from a late-morning fire in an office building killed another five people, who had no audible alarms to warn them. And 12 people camping alongside a river in New Mexico died when a high-pressure underground natural gas line ruptured violently nearby.

These are 3 of the 34 catastrophic multiple-death fires and explosions that occurred in 2000, killing 176 people, a significant decrease from the 44 catastrophic fires in 1999 that killed 214.

Catastrophic residential fires

The term "catastrophic" refers to fires that kill five or more people in a residential property or three or more in a nonresidential or nonstructural property. In 2000, residential fires were responsible for the largest share of catastrophic fire deaths. Last year, 18 of the 34 catastrophic incidents reported to NFPA, or 53 percent, were residential fires, 15 of which occurred in single-family dwellings and 3 occurred in apartment buildings. Together, these 18 fires were responsible for 99 reported deaths, or 16 fewer than the previous year. Twenty-five of the victims were children under the age of six.

The deadliest residential fire of 2000 occurred in a manufactured home in Georgia when the power cord from an electric dryer short-circuited and ignited nearby combustibles. The fire spread rapidly throughout the home, killing its eight occupants, including a child under six. Seven of the eight victims were found in bedrooms, and the eighth in a bathroom.

The second-deadliest catastrophic residential fire of the year, this one in North Carolina, killed seven people. The blaze started near the rear of a center hallway in a one-story, single-family house and spread up the walls to the combustible ceiling and into the attic. Five of the residents were found in bedrooms, and the other two in a foyer. Three of the victims were under the age of six. Two other occupants managed to escape out a bedroom window.

Four other residential fires killed six people each. One began in a bedroom on the first floor of a two-story row house and spread quickly to the second floor, trapping seven children and a woman. The home's smoke alarm sounded, but the woman apparently ignored it because it had sounded a nuisance alarm the day before. The bodies of five children were found in a second-floor bedroom, and that of the sixth child was found in a bathroom. Three of the children were under the age of six. The children started the fire while playing with smoking materials. A woman and child escaped through a second-floor window.

A second six-victim fire began in the ceiling of a single-family, one-story house with a tin roof, filling the structure with intense heat and smoke. The six victims, two of whom were under the age of six, were found in various bedrooms.

A third catastrophic residential fire started on the first floor of a two-story house in a

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LAST YEAR, 176 PEOPLE DIED in 34 multiple-death fires, more than half of which were residential.

rural area with limited water supply and spread to the second floor, where it trapped 12 people. Six of them managed to jump out the bedroom windows to safety. After examining the debris, investigators determined that all six victims, one of whom was under the age of six, died in bedrooms.

The fourth residential fire that claimed six lives occurred in the bathroom of a manufactured home and quickly spread throughout the structure. Four of the victims were found in bedrooms, one was found in a bathroom, and the body of the sixth was found outside. One of the victims was under the age of six.

Five people died in each of the remaining 12 catastrophic residential fires, two of which occurred in apartment buildings. When firefighters arrived at one of these two fires, both the front and rear stairwells of the three-story building were involved in flames, trapping the five victims. Firefighters found four bodies on the first-floor landing in the front stairwell, and located the fifth on the third-floor landing. All five victims lived on the third floor. The fire, which was of undetermined cause, began in the living room of a first-floor apartment. Five other residents escaped or were rescued from the first floor.

The second apartment building fire also began in the living room of a first-floor apartment. After extending throughout the unit, the blaze spread out the living room window to the balcony and entered the living room of the second-floor apartment directly above the unit of origin. From there, it spread into the attic through a soffit. One victim was found in the living room of the first-floor apartment, and four were found in the second-floor unit. One of the victims was under six.

Two more five-victim fires occurred in manufactured homes. One began in the living room of a beach house that sat on stilts 10 feet (3 meters) high. Fueled by high winds, the fire spread rapidly, threatening the house next door and several vehicles. After they extinguished the fire, firefighters found one victim near the home's bathroom, two near a bedroom, and two in a bedroom, although the house was so badly damaged it was difficult to determine their precise location. One of the victims was under the age of six.

The other manufactured home fire began in the furnace and spread quickly throughout the structure. The residents were unable to escape in part because the rear door had been nailed shut. The locations of the victims, two of whom were under the age of six, weren't reported.

Another 2 of the 12 fires that claimed the lives of five people each were incendiary. The first occurred in a two-story, single-family house when someone ignited two 40-ounce (118-centiliter) bottles filled with gasoline and threw them through a first-floor living room window. The room's contents ignited, and flames spread up the stairwell to the second floor. Four bodies

Five people died when a fire broke out in a second-floor office and spread rapidly throughout the three-story building that housed several businesses. Although there were notification appliances on the second floor, they didn't operate.

PHOTOGRAPH: KEITH E. JACOBSON

were found in second-floor bedrooms, and the fifth in the second-floor hallway.

The second incendiary fire began on the front porch of a two-story, single-family home. By the time firefighters arrived, the front porch and the front of the house were fully involved, and the fire was spreading up to the second-floor dormer. The bodies of four of the victims were found on the first floor, three in bedrooms and the fourth in the dining room. The fifth victim was found in a second-floor bedroom.

Of the six remaining residential fires, one began in a one-story, single-family house when children playing with matches or a lighter ignited bedding. The fire spread up the walls to the ceiling, then into the living room and the attic. Firefighters found the bodies of two of the children in a closet in the front bedroom and those of their mother and her other two children in a back bedroom. The four children were all under the age of six.

In another fire, a candle left unattended ignited nearby combustibles, and the resulting fire traveled down the hall, blocking the stairs and trapping the residents. All five victims, two of whom were under the age of six, were found in a second-floor bedroom. The home's electricity had been disconnected, and the occupants were using candles for light.

Another catastrophic fire began in the kitchen of a single-story house when someone left the burners of a gas stove on. Firefighters found one body in the kitchen, one in a bathroom, and the other three in various bedrooms. Two of the victims were intoxicated at the time of the fire, and another was under the age of six. Security bars were installed on the front door and windows.

Of the three remaining fires, one was started by an improper electrical alteration in the front wall of a single-story house and spread quickly to the rear of the structure. One victim was found in an attached garage, another was found in the hallway, and three died in various bedrooms.

A second fire, the cause of which couldn't be determined, began in the first-floor living room of another single-family home and spread to the second floor through an open stairwell. One of the victims was found in the living room, another in the second-floor hallway, and the other three in bedrooms. One of them was under the age of six.

The last catastrophic residential fire also began in the living room of a single-family house and was also of undetermined origin. It spread rapidly throughout the dwelling, causing the structure to collapse in the middle. All five victims, two of whom were under six, were found in bedrooms.

Causes of residential fire deaths

The cause of three of last year's catastrophic residential fires, which killed 19 people, can be traced directly to electrical wiring.

In one, heat generated when the power cord of an electric dryer short-circuited at a splice ignited nearby combustibles. Eight people died in this fire. In the second incident, fire began when improperly altered wiring ignited structural members in the ceiling above the dining room. In the third, fire began with improperly altered wiring in the wall between the living room and the porch.

Children playing with smoking materials started another two fires, which killed 11. In one, a child is believed to have ignited bedding in a first-floor bedroom. Six children died in this fire, which spread quickly to the second floor. In the other, a child ignited a mattress in a first-floor bedroom, and the fire spread to the living room and attic, killing four children and an adult.

The two incendiary catastrophic fires of 2000 killed 10 people, and another 5 died in a manufactured home in a fire caused by heating equipment. This fire erupted when the furnace malfunctioned and sent smoke and heat throughout the structure.

Five more people, including one under the age of six, died in a blaze that began in cooking equipment, and an unattended candle was the cause of a fire that killed another five people. The causes of the remaining eight catastrophic fires, which killed 44, couldn't be determined.

Catastrophic nonresidential fires

In 2000, there were also five catastrophic fires in nonresidential occupancies. Two occurred in care facilities, two in stores or offices, and one in a manufacturing property. Together, these fires resulted in 19 deaths. This is a considerable decrease from the year before, when 16 such fires killed 63 people.

The two deadliest fires claimed five lives each. The first began in an office on the second floor of a three-story building that housed several occupancies and spread rapidly, filling the building with smoke and causing parts of the structure to collapse. Arriving firefighters, who found the building heavily involved in flames, used ladders to rescue several occupants. There were no audible alarms on the floor of origin to warn the occupants of a fire.

The second fire occurred in a state-approved foster home providing care to mentally handicapped or developmentally disabled children. A child playing with a lighter ignited bedding. After ordering the children to leave the house, an adult resident tried to extinguish the fire as it spread up the wall and into the attic. Instead of leaving, the children retreated to another bedroom, where they were trapped when the fire burned between them and the back door. One child was under the age of six.

Three people died in a fire that began in a sofa in a patient's room on the third floor of a four-story assisted living facility. The fire spread down the hallway, where firefighters later found one victim. A second was found in a room at the end of the hall, and the third in the stairwell. There were no smoke alarms in the room of origin.

The fourth fire occurred in a motor vehicle manufacturing plant when molten metal came into contact with a flammable gas in the basement. The ignition caused a shock wave, which stirred up dust, causing a second blast that killed three workers.

The fifth nonresidential catastrophic fire occurred in a motor vehicle repair shop when a portable droplight fell to the floor, igniting spilled gasoline. Three workers removing the gasoline tank from a vehicle were killed as the fire spread to the fuel tank and other vehicles in the building.

Catastrophic nonstructural fires

As deadly as the catastrophic residential and nonresidential structure fires of 2000 were, the deadliest fire of the year occurred outside a structure when a high-pressure natural gas line ruptured, killing 12 people camped alongside the banks of the Pecos River. The victims may have been unaware of the pipeline, since part of it was buried 15 feet (4.5 meters) below ground.

All together, 11 catastrophic fires outside

Table 1 - Catastrophic Residential Fires in the United States in 2000

Georgia

Date, Time of Alarm, Number of Deaths
March, 3:12 a.m.
Eight (one under age six)
Number of Stories, Occupancy Type, Construction Type
One story, single-family manufactured home of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
None
Fire Origin and Path
The fire began in the living room. A short circuit at a splice in a power cord to an electric clothes dryer ignited nearby combustibles, spreading fire through the home.
Contributing Factors and Victim Locations
Everyone was asleep and there were no smoke alarms to warn the occupants of fire. Seven of the eight victims were found in bedrooms and one in the bathroom.

North Carolina

Date, Time of Alarm, Number of Deaths
November, 11:30 p.m.
Seven (three under age six)
Number of Stories, Occupancy Type, Construction Type
One-story, single-family dwelling of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
Undetermined
Fire Origin and Path
The fire began in a rear room near the center hallway, travelling up to the combustible ceiling and into the attic. The fire's cause is undetermined.
Contributing Factors and Victim Locations
Everyone was home and it's unclear if there were smoke alarms to warn the occupants of fire. Five of the victims were found in bedrooms, and two victims were found in the foyer. Two of the occupants managed to escape through a bedroom window. The open window drew the fire from the hallway into the bedroom.

Michigan

Date, Time of Alarm, Number of Deaths
December, 10:15 a.m.
Six (three under age six)
Number of Stories, Occupancy Type, Construction Type
Two-story, town-house style apartment building of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
Smoke alarms operated
Fire Origin and Path
The fire began in a first-floor bedroom and traveled up the stairway to the second-floor, trapping the occupants.
Contributing Factors and Victim Locations
The fire began as children played with smoking materials. The adult occupant ignored the smoke alarms, which had gone off in the absence of a fire the previous day. Five children were found in a second-floor bedroom and the sixth child in a second-floor bathroom.

Missouri

Date, Time of Alarm, Number of Deaths
September, 11:00 p.m.
Six (two under age six)
Number of Stories, Occupancy Type, Construction Type
One story, single-family house of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
None
Fire Origin and Path
The fire began in the ceiling above the dining room. A metal-clad roof delayed venting the fire, which eventually vented through the ceiling filling the house with intense heat and smoke. Improperly altered electrical wiring was the cause of the fire.
Contributing Factors and Victim Locations
The metal-clad roof kept the fire in the attic from venting to the outside. There were no smoke alarms present to warn the occupants. There was also a language barrier, which delayed notification of the fire department. A male occupant who didn't speak English drove eight blocks to a friend's house to report the fire. The six victims were found in various bedrooms.

Kansas

Date, Time of Alarm, Number of Deaths
October, 6:00 a.m.
Six (one under age six)
Number of Stories, Occupancy Type, Construction Type
Two-story, single-family dwelling of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
None
Fire Origin and Path
The fire began on the first floor and quickly spread to the second floor, trapping 12 occupants. Six occupants managed to jump to safety. The cause of the fire is undetermined.
Contributing Factors and Victim Locations
Everyone was asleep and there were no smoke alarms to warn the occupant of fire. The fire occurred in a rural area with a limited water supply. There was no telephone on the second floor and one of the occupants drove a quarter of a mile to a neighbor's home to notify the fire department.

Vermont

Date, Time of Alarm, Number of Deaths
February, 4:30 a.m.
Six (one under age six)
Number of Stories, Occupancy Type, Construction Type
One-story, single-family manufactured home of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
Undetermined
Fire Origin and Path
The fire started in the bathroom and extended throughout the structure. The cause of the fire is undetermined.
Contributing Factors and Victim Locations
Everyone was asleep when the fire broke out and it's unclear if there were smoke alarms present to warn the occupants of the fire. Four victims were found in various bedrooms, one victim in a bathroom, and the sixth outside the structure.

Illinois

Date, Time of Alarm, Number of Deaths
January, 00:57 a.m.
Five
Number of Stories, Occupancy Type, Construction Type

Table 1 - Catastrophic Residential Fires in the United States in 2000 ***(continued)***

One-story, single-family structure of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
None
Fire Origin and Path
The fire started in the front exterior wall separating the living room from a screened-in porch and extended to the rear of house. Improper electrical alteration was the cause.
Contributing Factors and Victim Locations
Everyone was at home when the fire broke out, and there were no smoke alarms to warn the occupants of the fire. Victims were found throughout the house: one in the garage, one in the hallway, and three in various bedrooms.

Kentucky

Date, Time of Alarm, Number of Deaths
January, 9:45 p.m.
Five (one under age 6)
Number of Stories, Occupancy Type, Construction Type
Two-story, single-family structure of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
Undetermined
Fire Origin and Path
The fire began in the first-floor living room and spread to the second floor through an open stairway. The cause is undetermined.
Contributing Factors and Victim Locations
It's unclear if there were smoke alarms present to warn the occupants of the fire. One of the victims was found in the living room, another in the second-floor hallway, and the other three were found in various bedrooms.

Ohio

Date, Time of Alarm, Number of Deaths
March, 11:24 p.m.
Five
Number of Stories, Occupancy Type, Construction Type
Two-story, single-family dwelling of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
Smoke alarms were present but it's unknown if they operated.
Fire Origin and Path
Two 40-ounce bottles containing gasoline with terry cloth wicks were ignited and tossed through the living room picture window. The room contents ignited and the fire traveled to the second floor.
Contributing Factors and Victim Locations
A quick moving incendiary fire and time of day contributed to the fatalities. Four of the victims were found in second-floor bedrooms, the fifth in a second-floor hallway. A male occupant managed to escape by jumping out second-floor window.

Michigan

Date, Time of Alarm, Number of Deaths
April, 11:39 p.m.
Five
Number of Stories, Occupancy Type, Construction Type
Two-story, single-family dwelling of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
None
Fire Origin and Path
An intentionally set fire that began in the front porch and extended upward and outward through the door and window openings.
Contributing Factors and Victim Locations
Everyone was at home and there were no smoke alarms to warn the occupants of advancing fire. Three of the victims were found in first-floor bedrooms, a fourth in the first-floor dining room, and the last in a second floor-bedroom. Neighbors rescued five other residents.

Texas

Date, Time of Alarm, Number of Deaths
July, 4:28 a.m.
Five (two under age 6)
Occupancy Type, Construction Type, Number of Stories
One-story, single-family dwelling of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
None
Fire Origin and Path
The fire started in the living room near the rear door and spread through the dwelling. The middle of the structure collapsed. The fire's cause is undetermined.
Contributing Factors and Victim Locations
Everyone was asleep at the time of the fire. There were no fire alarms to warn the victims. All five victims were found in bedrooms.

Maryland

Date, Time of Alarm, Number of Deaths
June, 4:18 a.m.
Five (two under age 6)
Number of Stories, Occupancy Type, Construction Type
Three-story, single-family dwelling of unprotected ordinary construction.
Smoke Detectors and other Fire Protection Devices
None
Fire Origin and Path
A candle left sitting on a stereo speaker ignited the speaker, stereo, and CDs. The fire quickly spread to the walls and combustibles, travelling down the hall and up the stairwell to the third floor.
Contributing Factors and Victim Locations
Everyone was asleep at the time of the fire and there were no smoke alarms present to warn the victims. The fire blocked the exits and there were bars on the second-floor windows. The dwelling's gas and electric service had been disconnected and the occupants were using candles for light. All five victims were found in a second-floor bedroom.

Texas

Date, Time of Alarm, Number of Deaths
October, 3:48 a.m.
Five (one under age six)
Number of Stories, Occupancy Type, Construction Type
Two-story, 20-unit apartment building of unprotected wood-frame construction.
Smoke Detectors and other Fire Protection Devices
A smoke alarm didn't operate because the battery had been removed.
Fire Origin and Path
The fire began in the northwest corner of a first-floor apartment

Table 1 - Catastrophic Residential Fires in the United States in 2000 *(continued)*

and spread out the living room window and doorway. The fire burned up and around the balcony and entered the second-floor living room and into the attic through the soffit. The fire's cause is undetermined.

Contributing Factors and Victim Locations

Everyone was asleep and no smoke alarms were present. The occupant tried to extinguish the fire and had difficulty notifying 911 in the apartment. The occupant left the building to notify 911 from a pay phone. One occupant was in the first-floor apartment living room, the other four were found in the second-floor apartment directly above.

Delaware

Date, Time of Alarm, Number of Deaths

October, 1:52 a.m.

Five (one under age six)

Number of Stories, Occupancy Type, Construction Type

Two-story, single-family manufactured home of unprotected wood-frame construction.

Smoke Detectors and other Fire Protection Devices

None

Fire Origin and Path

The fire began in the living room of a manufactured home that was on stilts 10-feet (3-meters) high. Fueled by high winds, the fire rapidly spread throughout the home. The fire is under investigation and the cause hasn't been determined.

Contributing Factors and Victim Locations

Everyone was asleep and there were no smoke alarms present to warn the occupants. One victim was found in the bathroom, two were in a bedroom, and two others were in a bedroom or outside in the hallway. Due to the destruction of the home exact locations on some of the victims isn't known. One of the adult occupants managed to escape by jumping from bedroom window.

Rhode Island

Date, Time of Alarm, Number of Deaths

December, 1:52 a.m.

Five

Number of Stories, Occupancy Type, Construction Type

Three-story, Three-unit apartment building of unprotected wood-frame construction.

Smoke Detectors and other Fire Protection Devices

Smoke alarms were present but it's unknown if they operated.

Fire Origin and Path

The fire began in the living room of the first-floor apartment where it intensified and vented out the front window onto the porch. An open rear door allowed the fire to travel up the stairwell and into the attic. The fire's cause is undetermined.

Contributing Factors and Victim Locations

When firefighters arrived, the first floor of the house was heavily involved in fire and the rear stairwell was blocked by flames. Four of the victims were found at the first-floor landing in the front stairwell, the fifth victim was on the third-floor landing. All the victims were occupants of the third-floor apartment. Five occupants escaped or were rescued from the first floor, the second floor was vacant.

New York

Date, Time of Alarm, Number of Deaths

December, 2:30 a.m.

Five (two under age six)

Occupancy Type, Construction Type, Number of Stories

One-story, single-family manufactured home of unprotected wood-frame construction.

Smoke Detectors and other Fire Protection Devices

None

Fire Origin and Path

The fire began in the furnace near the center of the structure and spread throughout the home.

Contributing Factors and Victim Locations

Everyone was asleep at the time of the fire and there were no smoke alarms to warn the occupants of the fire. A rear door was nailed shut hindering escape. Victim locations weren't reported.

Louisiana

Date, Time of Alarm, Number of Deaths

December, 11:00 p.m.

Five (one under age six)

Occupancy Type, Construction Type, Number of Stories

One-story, single-family dwelling of unprotected wood-frame construction.

Smoke Detectors and other Fire Protection Devices

Smoke alarms were present, although it's unknown if they operated.

Fire Origin and Path

The fire started at the gas stove when unattended burners ignited combustibles on the counter and items hanging from the cabinets. The fire traveled up to the cabinets spreading throughout the structure.

Contributing Factors and Victim Locations

Security bars were installed on the front doors and windows. Two of the adults were intoxicated. One adult victim was in the kitchen, one victim in a bathroom, and the other three were in various bedrooms. Another occupant was rescued by neighbors.

Tennessee

Date, Time of Alarm, Number of Deaths

December, 7:30 a.m.

Five (four under age six)

Number of Stories, Occupancy Type, Construction Type

One-story, single-family dwelling of unprotected wood-frame construction.

Smoke Detectors and other Fire Protection Devices

None

Fire Origin and Path

The fire began in the front bedroom on a mattress and spread to the walls and ceiling. Flames extended into the living room and up to the attic. The cause of the blaze was children playing with matches or a lighter.

Contributing Factors and Victim Locations

Contributing factors included failure to call 911, no working smoke alarms, and the absence of an escape plan. Four-year-old twins were found in a closet in the front bedroom, their mother and two other children were found in a back bedroom.

Table 2 - Catastrophic Nonresidential Fires in the United States in 2000

Massachusetts

Date, Time of Alarm,
Number of Deaths
February, 12:07 p.m.
Five
Occupancy Type and Use, Construction Type, Operating Status
Office building of unprotected ordinary construction with three stories visible from the front and a basement level accessible from the rear because of an elevation of the property; operating.
Detection Systems
Second-floor notification appliances were installed but didn't operate and there were no pull stations.
Suppression Systems
There was partial sprinkler protection, but not in the area of origin.
Fire Origin and Path
The fire began in a second-floor office causing severe damage, including structural collapse. The fire's cause is undetermined.
Contributing Factors
There were no audible fire alarms to warn the occupants of the rapidly spreading fire.

Virginia

Date, Time of Alarm,
Number of Deaths
March, 9:35 p.m.
Three
Occupancy Type and Use, Construction Type, Operating Status
Four-story, motor vehicle manufacturing facility of unprotected non-combustible/limited combustible construction; operating.
Detection Systems
None
Suppression Systems
None
Fire Origin and Path
The fire began in the basement when molten metal came into contact with flammable gas. The ignition caused a shock wave, which jarred a buildup of dust, causing a second blast.
Contributing Factors
Excess molten metal was poured into the basement by a mold press.

New York

Date, Time of Alarm,
Number of Deaths
March, 6:33 a.m.
Three
Occupancy Type and Use, Construction Type, Operating Status
One-story, motor vehicle repair shop of unprotected construction; operating.
Detection Systems
None
Suppression Systems
None
Fire Origin and Path
As workers removed a fuel tank from a vehicle, a portable electric droplight fell to the floor igniting a puddle of gasoline. The fire spread to other vehicles and the building, trapping the workers.
Contributing Factors
Unsafe working conditions.

Tennessee

Date, Time of Alarm,
Number of Deaths
September, 6:00 p.m.
Five (one under age six)
Occupancy Type and Use, Construction Type, Operating Status
One-story, foster home that provided care to mentally handicapped and developmentally disabled children, of unprotected wood-frame construction; operating.
Detection Systems
Smoke alarms operated.
Suppression Systems
None
Fire Origin and Path
The fire began in a bedroom when a child ignited bedding with a lighter. The fire extended up the wall and into the attic.
Contributing Factors
The adult occupant tried to extinguish the fire and ordered the children to leave the house. Instead of leaving, the children retreated to another bedroom. The fire burned between the children and the back door preventing escape.

Pennsylvania

Date, Time of Alarm,
Number of Deaths
December 30, 5:31 p.m.
Three
Occupancy Type and Use, Construction Type, Operating Status
Four-story, assisted living residence of unprotected construction; operating.
Detection Systems
Smoke alarms were present, but not in room of origin and operated.
Suppression Systems
Wet-pipe sprinkler system was present, but not in the room of origin.
Fire Origin and Path
The fire began in a third-floor patient's room on the sofa bed and spread to other combustibles in the room and into the hallway. The cause of the fire was careless use of smoking materials.
Contributing Factors
There was no smoke alarm in the room of origin and the occupant tried to extinguish the fire. All three victims were elderly and found in various locations.

Five people died when a fire began in the first-floor living room of a three-story apartment building and spread quickly up the stairwell. All five victims lived on the third floor. Five people on the first floor escaped or were rescued.

PHOTOGRAPH: MICHAEL POROWSKI

Table 3 - Catastrophic Nonstructural Fires in the United States in 2000

Missouri

Date, Time of Alarm,
Number of Deaths
January, 1:13 p.m.
Eight
Setting
Multiple-vehicle crash on interstate highway.
Climate Conditions
Icy road conditions.
Fire Origin and Path
A truck jackknifed causing a fiery multiple-vehicle accident.
Factors Hindering Occupant Escape
Many of the vehicles burst into flames on impact. A truck leaking hydrochloric acid may have contributed to the post-impact fires.

California

Date, Time of Alarm,
Number of Deaths
March, 7:15 p.m.
Seven
Setting
One-vehicle crash on paved public road.
Climate Conditions
Unreported
Fire Origin and Path
When firefighters arrived, they found the vehicle on its top and fully involved in flames. The area of origin was the fuel line or fuel tank area.
Factors Hindering Occupant Escape
The position of the vehicle impeded escape, although a male passenger managed to escape. One victim was found outside and six children were trapped inside.

Arizona

Date, Time of Alarm,
Number of Deaths
September, 4:00 p.m.
Six
Setting
Vehicle was found an eighth of a mile off the highway in a ditch.
Climate Conditions
Unreported
Fire Origin and Path
The van's engine overheated, igniting brush and catching the vehicle on fire.
Factors Hindering Occupant Escape
The passenger door of the van was blocked due to the position of the vehicle. Five of the victims were mentally challenged.

Florida

Date, Time of Alarm,
Number of Deaths
March, 10:35 a.m.
Four
Setting
Runway at international airport.
Climate Conditions
Visual meteorological conditions prevailed.
Fire Origin and Path
Two small private jets collided during takeoff with both airplanes immediately bursting into flames.
Factors Hindering Occupant Escape
The impact and subsequent fire made it impossible for the victims to act.

Utah

Date, Time of Alarm,
Number of Deaths
May, 3:40 p.m.
Three
Setting
Helicopter crash
Climate Conditions
Visual meteorological conditions prevailed.
Fire Origin and Path
A helicopter making a sharp left turn crashed into the ground and the post-impact fire killed three.
Factors Hindering Occupant Escape
The crash and subsequent fire rendered the victims helpless.

Arizona

Date, Time of Alarm,
Number of Deaths
November, 11:11 a.m.
Five (one under age six)
Setting
Two-vehicle crash on state highway
Climate Conditions
Unreported
Fire Origin and Path
A head-on collision between an automobile and a van carrying 18 passengers caused the van to overturn and burst into flames.
Factors Hindering Occupant Escape
The collision pushed the van off the road where it burst into flames. Five of the victims were in the van while 13 others managed to escape.

New Mexico

Date, Time of Alarm,
Number of Deaths
August, 5:26a.m.
Twelve (five under age six)
Setting
A high-pressure 30-inch (76-centimeter) natural gas pipeline.
Climate Conditions
Unreported
Fire Origin and Path
A violent rupture of a high-pressure natural gas pipeline with subsequent ignition of flowing product under pressure. The ensuing fireball could be seen 20 miles (32 kilometers) away. The explosion created a crater 86 feet long, 46 feet wide, and 20 feet deep (26 meters long, 14 meters wide, and 6 meters deep.) The ignition source is undetermined and is under investigation by NTSB.
Factors Hindering Occupant Escape
Two families camping near the pipeline may have been unaware of its location because part of it had been buried 15 feet (4.5 meters) underground. The victims had no chance to escape as flames swept through their tents.

Minnesota

Date, Time of Alarm,
Number of Deaths
October, 12:30 a.m.
Four
Setting
Two-vehicle crash on a limited highway.
Climate Conditions
Unreported
Fire Origin and Path
An automobile collided with a refrigeration truck and burst into flames, trapping its occupants.
Factors Hindering Occupant Escape
The car lodged under the trailer of the truck, bursting into flames making escape impossible.

Florida

Date, Time of Alarm,
Number of Deaths
March, 8:00 a.m.
Three
Setting
Multi-vehicle crash on interstate highway.

Table 3 - Catastrophic Nonstructural Fires in the United States in 2000 *(continued)*

Climate Conditions
Poor visibility from a forest fire causes a multi-vehicle pileup. One vehicle's gas tank ignited, killing the driver. Two other people were killed when they stopped to help.
Factors Hindering Occupant Escape
The impact and ensuing fire trapped the driver.

Iowa

Date, Time of Alarm,
Number of Deaths
July, 11:38 p.m.
Three
Setting
Vehicle crash on interstate highway.
Climate Conditions
Roads were dry.
Fire Origin and Path
A vehicle slammed into a guardrail and burst into flames. The fire began in the rear of the vehicle at the fuel tank. The post-impact fire trapped three victims, all in the front seat.
Factors Hindering Occupant Escape
The impact of the crash and resulting fire made it impossible for the victims to act.

Florida

Date, Time of Alarm,
Number of Deaths
December, 2:34 a.m.
Three
Setting
Vehicle crash off interstate highway.
Climate Conditions
Unreported
Fire Origin and Path
A vehicle swerved off the interstate and hit a tree, exploding into fire.
Factors Hindering Occupant Escape
The impact of the crash trapped three occupants in the automobile. Two of the victims were found in the front seat, the other was found in the rear.

of structures last year killed 58 people. Ten involved vehicles, including two aircraft.

In the first aircraft incident, two Cessnas collided on an airport runway during takeoff, bursting into flames and killing the two pilots and their two passengers. In the second, a helicopter crashed into the ground, and the post-impact fire killed the pilot and both passengers.

The remaining vehicle fires all occurred on highways. The deadliest was a multi-vehicle crash on an icy roadway, which killed eight. A truck leaking hydrochloric acid may have contributed to the post-impact fires.

In a second incident, seven people, six of whom were children, died when their vehicle overturned and became engulfed in flames. Six other people died in a vehicle fire that began when their van's engine overheated after it went off the road into a ditch, igniting brush. Five of the victims were mentally challenged.

The fourth vehicle fire was the result of a head-on collision between a car and an 18-passenger van. The impact caused the van to roll onto its side and burst into flames. Thirteen of the van's occupants managed to escape, but five were trapped in the vehicle.

The fifth vehicle fire occurred when a car collided with a refrigeration truck, became lodged under the trailer, and burst into flames. Escape was impossible for the four people trapped in the car.

The last three vehicle fires killed three people each. In the first, smoke from a forest fire caused a multi-vehicle pileup, and one of the vehicle's gas tank ignited, killing the driver. Two Good Samaritans who stopped to help were also killed.

The other fires occurred when one car crashed into a guardrail and another into a tree in separate accidents. In the first accident, the car burst into flames, trapping all three victims in the front seat.

What would have made a difference?

While it's impossible to say that following proper prevention practices would have eliminated all of last year's catastrophic fires, it's possible to say that doing so could have brought the fatality levels down considerably. Such practices include making sure that electrical alterations have been properly done, that electrical cords are undamaged, and that children—not to mention cooking and heating equipment—are never left unattended.

They also include installing equipment specifically designed to protect occupants from fire, such as sprinklers and smoke alarms. None of the homes that experienced catastrophic fires last year was protected by a sprinkler system. And 10 of the 18 homes didn't have a smoke alarm. Of the remaining eight, three had alarms, but their performance is unknown; the operational status of the alarms in three other homes couldn't be determined; and the alarm in another didn't operate because it had no battery. In one home, the alarm operated, but the only adult in the house ignored the alarm.

A smoke alarm is clearly the first line of defense once a fire begins, particularly since many fires occur at night or very early in the morning. In fact, 16 of the 18 catastrophic residential fires of 2000 occurred between 11:00 p.m. and 7:00 a.m. These fires demonstrate the need for interconnected, hard-wired smoke alarms that will alert all occupants to a fire anywhere in a house.

However, smoke alarms are only effective if people take them seriously and leave the building when they sound. Children, in particular, should be familiar with the sound of a properly operating smoke alarm. They should also be taught to follow a practiced escape plan that emphasizes two ways out and has a designated meeting place. Exit drills in the home are part of many school curriculums.

Sound safety programs in nonresidential properties would also go a long way toward reducing fire losses, as would an adequate number of fire extinguishers. Particularly important is the installation of automatic suppression systems with alarms. The properties involved in three of last year's nonresidential catastrophic structure fires were unsprinklered, and those involved in the other two had only partial sprinkler systems, without coverage in the room of origin.

In the coming years, residential sprinklers will play an important role in home fire protection, too. New construction and major renovations lend themselves to sprinkler installations.

The declining death toll from catastrophic multiple-death fires is encouraging and a sign of the effectiveness of steps already taken. But so many of the remaining deaths are currently preventable. We need to be safer—and we can be.