

**SPRINKLER SUCCESSES IN
ONE- AND TWO-FAMILY HOMES AND APARTMENTS**

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INTRODUCTION

This collection of previously published incidents was compiled from NFPA's studies of large-loss fires and the "Firewatch" column from *NFPA Journal*. Sprinklers are highly effective, reliable weapons in the fight to save lives and property from fire. Sprinklers operated in 93% of the reported structure fires in which sprinklers were present in the fire area and the fire was large enough to activate them. In most occupancy groups, the death rate per fire in sprinklered properties is least 57% lower compared to properties without automatic extinguishing systems, while the average loss per fire in sprinklered properties is 34-68% lower.¹

The incidents that follow are divided by occupancy group. These examples show how sprinklers operate in real fires. They also show that in some situations, particularly explosions, sprinklers prevented a fire from spreading or controlled it, but substantial losses still occurred.

It is important to remember that these descriptions show provide information about what can happen, not what is typical.

For more on NFPA's home Fire sprinkler Initiative, go to <http://www.firesprinklerinitiative.org>

¹ John R. Hall, Jr. *U.S. Experience with Sprinklers and Other Automatic Fire Extinguishing Equipment*, Quincy, MA: National Fire Protection Association, 2013.

ONE-AND TWO-FAMILY HOMES

Sprinkler extinguishes dwelling garage fire, Arizona

A single sprinkler extinguished a fire that investigators believe started when a child's plastic table ignited in the first-floor garage of a single-family home.

The one-story, wood-frame house had smoke alarms and an NFPA 13D wet-pipe sprinkler system that provided coverage in all the living areas and the garage.

The fire department received that alarm at 11:52 a.m., and firefighters responded to find smoke coming from the garage. The fire had already been extinguished by one sprinkler head. They checked the attic for fire extension and found none.

The child's 19-year-old sister told investigators that she heard the sprinkler flow alarm go off, looked in the garage, and saw that it was full of black smoke. She then saw that the toy table had melted and moved it outside into the yard.

The house, valued at \$150,000, and its contents, valued at \$50,000, sustained losses estimated at \$100.

Kenneth J. Tremblay, 2013, "Firewatch", *NFPA Journal*, September/October 26.

Sprinkler douses fire started by child playing with lighter, Florida

Firefighters responding to a public assist call for a water leak at a single-family home were notified enroute that the alarm company was reporting an operating water flow alarm at the house.

The attached, two-story, wood-frame townhouse had concrete block walls, a stucco exterior, and a wood-truss roof covered by plywood and composite shingles. The property was protected by a sprinkler system.

After controlling the sprinkler water flow, the officer noted two areas of burning and called investigators, who determined that a child had ignited paper at the living room door leading to the garage with a lighter. The boy said that he tried to use the contents of a plastic sports drink bottle, thinking it was water, to extinguish the flames, but the fire came back at him, burning his hand. Apparently, the boy's mother had been painting and put acetone in the plastic container.

The flash fire, which spread to an interior door and the adjacent wall, created enough heat to activate the sprinkler and sound an external water flow alarm, allowing the family to evacuate safely.

Water did \$500 in structural damage to the house, which was valued at \$82,000. Its contents, valued at \$10,000, sustained an estimated loss of \$1,000.

Kenneth J. Tremblay, 2013, "Firewatch", *NFPA Journal*, July/August, 23-24.

Hot ashes in trash can ignite, California

A single sprinkler activated to control a fire that began when ashes in a plastic trash can ignited other combustibles in the can, which was stored in a residential garage. The neighbors heard the alarm and called 911.

The single story, wood-frame detached garage, which was 20 feet (6 meters) long and 30 feet (9 meters) wide, had a concrete floor and a basement. The home fire sprinkler system was a wet-pipe NFPA 13D system that provided coverage for about 600 square feet (55 square meters).

The 911 call came in at 12:13 p.m., and firefighters arrived eight minutes later to find the alarm still operating, smoke showing, and water coming from under the garage door. Once inside, they discovered that the sprinkler had nearly extinguished the fire.

The owner told investigators that friends who were staying over had inadvertently disposed of the ashes in the trash. The area around the trash can and on side of a vehicle parked in the garage suffered some heat damage. Damage to the structure and its contents was estimated at \$2,000 and \$3,000, respectively. The fire department report noted that, "no doubt the sprinkler played a key role in limiting what would have been a much more extensive fire."

Kenneth J. Tremblay, 2012, "Firewatch," *NFPA Journal*, September/October 24.

Sprinkler extinguishes fire in home under construction, Illinois

A single sprinkler in a two-unit townhouse under construction extinguished a fire that started when oil-soaked rags stuffed into a cardboard box in a plastic garbage can spontaneously ignited.

The two-story, wood-frame townhouse had local smoke alarms on each level, but they were not a factor during the incident. The sprinkler system had already been installed, and the sprinkler operated despite the fact that it still had a protective cover over it.

A worker who saw the fire called 911 at 7:05 a.m., and firefighters arrived within minutes to find the sprinkler operating and a heavy haze of white smoke inside the building.

Property damage to the house, valued at \$475,000, was estimated at \$5,000. No one was injured.

Kenneth J. Tremblay, 2011, "Firewatch," *NFPA Journal*, January/February, 25.

Sprinkler controls fire in home, Arizona

A sprinkler held a fire in a bedroom of a single-family home in check until firefighters arrived, preventing a significant fire loss. Investigators believe that the fire began when an unattended candle ignited furniture in the bedroom. No one was home at the time of the fire.

The one-story, wood-frame house, which covered an area of 2,000 square feet (186 square meters), was built on a concrete slab and had a tile roof. It was protected by smoke alarms, which were operating when firefighters responded to a neighbor's 911 call at 12:48 p.m.

The house, valued at \$500,000, and its contents, valued at \$50,000, sustained damages estimated at \$20,000 and \$5,000, respectively. There were no injuries.

Kenneth J. Tremblay, 2010, "Firewatch", *NFPA Journal*, January/February, 23.

Residential sprinkler extinguishes cooking fire, California

A single sprinkler extinguished a fire in the kitchen of a single-family home that began when food left cooking unattended ignited. The single-story, wood-frame house, which covered 2,100 square feet (195 square meters), had both smoke alarms and a wet-pipe sprinkler system.

A water flow alarm alerted the home's occupant, who was outside, that the sprinkler had activated. By the time he reentered the house the sprinkler had already extinguished the fire, so he turned off the electric stove and shut the water off at the street before calling the fire department business number at 6:39 p.m.

Firefighters arrived within five minutes to find water throughout the kitchen and a melted microwave oven above the burned stove. Before leaving, they removed the water with water vacuums, replaced the sprinkler, and put the sprinkler system back in service after advising the owner to have the system inspected.

The occupant said he began heating a pan of oil on the stove, then went outside and forgot about the pan.

The house, valued at \$635,000, sustained \$63,000 in damages. There were no injuries.

Kenneth J. Tremblay, 2006, "Firewatch", *NFPA Journal*, September/October, 34.

Residential sprinkler saves home, Washington

A residential sprinkler system in a single-family home under renovation proved its value when it extinguished a fire started by a cigarette in a waste barrel in the garage. Only the debris and the plastic barrel in which the fire started were damaged by fire.

Investigators determined that the fire ignited after the construction workers had left for the day. Although the property wasn't yet occupied, a residential sprinkler system had already been installed in the 4,200-square-foot (390-square-meter) house following the requirements of [NFPA 13D](#), *Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*. Upon the fire department's recommendation, the homeowner had also provided sprinkler protection in the garage where the fire occurred.

Because a local alarm had yet to be connected, the single activated sprinkler went unnoticed until the next morning. Fire damage was limited to \$30, or the cost of the plastic barrel. After 15 hours of operation, however, the sprinkler had caused \$2,400 worth of water damage to the drywall and three low-voltage lighting system transformers.

The combined fire and water damage was 1 percent or less of the total value of the property, estimated in the “hundreds of thousands of dollars.”

The fire marshal later noted that, “Automatic fire sprinklers aid in the detection and control of residential fires, providing improved protection against injury, life loss, and property damage.”

Kenneth J. Tremblay, 2001, “Firewatch”, *NFPA Journal*, January/February, 20-21.

Residential sprinkler contains dwelling fire, California

A residential sprinkler system prevented a fire from spreading into the living area of a single-family home.

The two-story wood-framed structure was 70 feet (21 meters) long and 40 feet (12 meters) wide. A residential sprinkler system was installed throughout. It was unclear whether smoke alarms were present.

A paper bag of fireplace ashes had been placed on the wooden deck by the front door the night before. Shortly after midnight, the bag ignited, and the fire spread to the deck, siding, and front door. The door’s seal failed, which allowed the fire to penetrate the building setting off the heat activated sprinkler.

The occupant used a garden hose on the deck to control the exterior fire and the residential sprinkler controlled the interior fire until firefighters arrived after receiving a 911 call at 12:50 a.m. The property, valued at \$330,000, suffered a structure loss of \$15,000 and a contents loss of \$2,000.

Kenneth J. Tremblay, 2000, “Firewatch”, *NFPA Journal*, July/August, 18.

Residential sprinklers extinguish Christmas tree fire, Arizona

A residential sprinkler system extinguished a fire in a Christmas tree in a single-story, one-family dwelling of unprotected, wood-frame construction. Following the fire, fire department officials said, “The...sprinkler system... was instrumental in controlling and extinguishing this fire. Because the sprinkler system was present in the house, the occupants escaped with no injury or loss of life.”

The residential sprinklers, which were installed in all rooms of the home, were not required by local ordinance. They had been installed by the owner. A single-station, battery-operated smoke detector was located in the hallway, but it is not known whether it operated.

The owner's wife was home with their 10-year-old son when the boy plugged in the lights on the Christmas tree in the living room. Shortly after he did so, one bulb blew and ignited the tree. The son screamed and, seeing his father just driving up, ran outside to tell him about the fire. The mother was calling the fire department when the father entered the house, and the three of them left the building as the sprinkler system activated.

The fire department responded to the 6:16 p.m. call and arrived to find light smoke coming from the front living room window. The sprinkler system had operated, and the father and a neighbor had used a garden hose to put additional water on the fire through a front window. Firefighters completed overhaul and ventilation.

Although the sprinkler system activated almost immediately, the fire burned with great intensity. Eight sidewall sprinklers, one in each room, and two pendant sprinklers in the hallways activated.

Damage to the dwelling, which was valued at \$125,000, was estimated at \$20,000. There was no information on damage to the contents. There were no injuries.

Kenneth J. Tremblay, 1994, "Firewatch", *NFPA Journal*, November/December, 34.

Unfinished sprinkler system extinguishes, California

Sprinklers extinguished a fire that started in some painting supplies that had been improperly stored in a large, single-family dwelling under construction. The building sustained fire and water damage, some of which could have been prevented had the sprinkler system been completely installed.

The two-story, 13,000-square-foot structure was of wood-frame construction covered with plaster. A residential automatic sprinkler system had been installed throughout the house, but its water flow alarm had not yet been connected to an alarm monitoring company and some of the sprinklers were covered with masking tape while the final interior finish work was being completed.

A construction worker arriving for work at approximately 6:45 a.m. discovered water running into the basement and shut off the water service to the residence, which had been vacant since 7:00 the previous evening. When he went to investigate, he found the remnants of a small fire that had been extinguished by sprinklers in a first-floor room that was being used to store painting supplies. The man called the fire department at 7:27 a.m.

Investigators found rags saturated with oils and solvents, as well as drop cloths, in the room of fire origin and determined that the rags had had a spontaneous chemical reaction. The drop cloths had insulated the rags, restricting heat dissipation, but they had not blocked the oxygen needed to support the reaction. After several hours, the rags had burst into flames.

The room of fire origin contained two sprinklers, but they had not blocked the oxygen needed to support the reaction. After several hours, the rags had burst into flame.

The room of fire origin contained two sprinklers, but they had been covered with heavy fibrous duct tape to protect them during painting. The tape prevented one of the sprinklers from operating, delayed the activation of the other, and compromised spray patterns. Heat and pyrolysis spread to the ceiling and into a foyer and the dining room where a third sprinkler operated. Fortunately, flames never spread from the area around the rags, and the sprinklers were able to extinguish the fire. Because the water flow alarm had not yet been connected, the sprinklers continued to operate until detected by the construction worker.

Damage to the structure, which was valued at \$3.3 million, was estimated at \$20,000.

Kenneth J. Tremblay, 1994, "Firewatch", *NFPA Journal*, November/December, 27.

APARTMENTS

Sprinkler extinguishes unattended cooking fire, Minnesota

A single sprinkler extinguished an apartment fire that started when the occupant left a pan of oil heating unattended on the stove.

The apartment was in a 12-unit, wood-frame building that covered an area of approximately 25,000 square feet (2,323 square meters). Each apartment was protected by local smoke alarms connected to a building fire alarm system, as well as a monitored wet-pipe sprinkler system. A dry-pipe system had been installed in the attic.

The alarm monitoring company notified the fire department of the water flow alarm at 6:05 p.m., and firefighters arrived at the scene seven minutes later to find light smoke inside the building. Once inside the apartment of origin, they discovered that sprinklers had already extinguished the fire.

The apartment's occupant told investigators that he had put a pan of oil on the stove and turned the burner on high before he went to watch a video in another room. When he noticed that the pan was on fire, he moved the pan to the sink and tried to douse the flames with salt. As he did so, the sprinkler activated and extinguished the blaze.

Fire damage was limited to the kitchen cabinets, although there was smoke damage throughout the apartment. The building, which was valued at \$1 million, sustained \$10,000 in damage. The contents of the apartment of origin, valued at \$10,000, sustained an estimated \$5,000 in damage. There were no injuries.

Kenneth J. Tremblay, 2013, "Firewatch", *NFPA Journal*, September/October 25-26.

Sprinklers extinguish fire caused by smoking, British Columbia

Two sprinklers extinguished a fire that began when a woman fell asleep in her apartment while smoking in bed after taking prescribed medication and consuming alcohol.

The three-story, 26-unit, wood-frame apartment building, which measured 128 feet (39 meters) by 50 feet (15 meters), had a roof covered by tar and gravel. A wet-pipe sprinkler system monitored by an alarm monitoring company provided coverage in the living areas, and each apartment was equipped with local battery-operated smoke alarms. The occupant was unsure whether any smoke alarms in her unit sounded.

Firefighters received calls from the fire alarm monitoring company at 9:14 p.m. By the time they arrived, however, the sprinklers had already extinguished the blaze. Fire alarms in the building were sounding when firefighters arrived.

When investigators spoke to the apartment's occupant, she reported that she had been drinking alcohol after taking her prescribed medication. She fell asleep while smoking in bed and watching television, saying that she last remembered a show that had been broadcast three to four hours before she awoke to the smell of smoke. As she left her

apartment, she reported that the sprinklers activated and she heard the smoke detectors in the common hallway operating.

The investigators determined that the fire started when a lit cigarette ignited the bedcovers and that alcohol consumption and medication were contributing factors.

The building, valued at \$1.5 million, sustained damages estimated at \$8,000. The woman suffered minor smoke inhalation injuries.

A fire department spokesman noted that, "since 1996, this (was) the fourth time there has been a fire extinguished by the sprinkler system in this building, greatly reducing the property loss, and... the potential loss of life".

Kenneth J. Tremblay, 2013, "Firewatch", *NFPA Journal*, September/October 24-25.

Sprinkler prevents fire from spreading up trash chute, Pennsylvania

A single sprinkler prevented a fire from spreading from a dumpster at the bottom of a trash chute into a seven-story apartment building, although smoke filled the building's top three floors.

The 114-unit, steel-frame apartment building, which was 169 feet (51 meters) long and 119 feet (36 meters) wide, was of masonry construction and had a metal roof with a built-up roof surface. The property was protected by a wet-pipe sprinkler system and a fire detection system, which alerted the occupants.

An occupant called 911 at 6:10 p.m. to report the fire, and firefighters arrived four minutes later to find water coming from a lower-level trash room. They found that the sprinkler had confined the fire to a dumpster, which they removed from the building to complete extinguishment. They then repositioned it under the trash chute.

Investigators were unable to determine the exact ignition source.

No damage was done to the building, which was valued at \$2.1 million, or its contents, valued at just over \$1 million. There were no injuries.

Kenneth J. Tremblay, 2013, "Firewatch", *NFPA Journal*, July/August, 21.

Sprinkler saves townhouse, Massachusetts

A single sprinkler extinguished a fire in a townhouse-style condominium that began when smoking materials ignited a blanket that had been draped over a living room couch.

The two-story, four-unit, wood-frame condominium building, which was 100 feet (30 meters) long by 50 feet (15 meters) wide, had hardwired smoke detectors providing a local alarm on each level. A wet-pipe residential sprinkler system was installed in living areas. The water flow was not monitored, but it did provide internal and external horn/strobe notification.

A passerby heard the horn/strobe operating and called 911 at 9:11 a.m. Told that a sprinkler had activated and that the fire appeared to be under control, responding firefighters forced the front door and completed extinguishment. Searches for victims were negative, as the unit of origin and all the other condos in the building were unoccupied at the time.

Investigators found that a match or a pipe started the fire at the end of a couch in the first-floor living room of a unit. A Christmas tree was nearby.

In a press release about the fire, an official noted that, "Opponents to residential sprinklers often say that newer buildings don't have fires or that smoke alarms are adequate fire protection. This building was built in the 1980s, and the fire would have progressed significantly and quickly without sprinklers, impacting the people in the other condos and their homes and possessions and pets."

"As fast as we were able to get there," said the local fire chief, "the fire sprinkler was faster and had the fire under control, frankly before we even left the station. It is absolutely amazing that the Christmas tree was never involved in this fire and that everyone got out safely. What is even more amazing is that everyone can sleep here tonight." The chief also said that the fire demonstrated the need for residential fire sprinklers in every new home.

The building, valued at \$1 million, and its contents, valued at \$160,000, sustained a combined loss of \$27,000.

Kenneth J. Tremblay, 2013, "Firewatch", *NFPA Journal*, March/April, 19-20.

Sprinkler controls sofa fire, Florida

A 50-year-old woman who used a wheelchair suffered severe burns when smoking materials ignited a sofa in her apartment in a low-income, high-rise building.

The 13-story- apartment building, which had concrete block walls and concrete floors, had monitored fire alarm system that included smoke detectors and a waterflow alarm. A wet-pipe sprinkler system, standpipes, and hose cabinets with cotton-jacketed hose had also been installed. The 150-unit building provided housing for older adults.

The fire department received the alarm from the central station company at 8 a.m. When responding firefighters arrived at the apartment of origin, they found that a single sprinkler had controlled the blaze. They quickly extinguished the remains of the fire that were still burning behind the couch and on the wood paneling on the wall.

Investigators determined that the woman discarded a cigarette, which ignited the sofa. Flames spread from the sofa to the wood paneling on the walls, but the sprinkler kept it from going any further.

The building, valued at \$3,676,000, sustained an estimated \$1,000 worth of damage. Damage to the apartment's contents, valued at \$2,000, was estimated at \$250.

Kenneth J. Tremblay, 2012, "Firewatch," *NFPA Journal*, September/October 27-28.

Sprinkler extinguishes unattended cooking fire, Georgia

A man living in a 52-unit apartment building left a pan of grease heating on the stove when he went to the bathroom. When he returned, he discovered that the grease had ignited but that a single sprinkler had extinguished the fire.

The three-story, wood-frame apartment building, which was 192 feet (58 meters) long and 50 feet (15 meters) wide, had vinyl siding on the exterior walls and an asphalt-shingled roof. A fire alarm system providing full coverage was monitored by a central station alarm company, as was a full-coverage wet-pipe sprinkler system.

The fire department received the alarm at 6:56 p.m., and firefighters arrived in four minutes to find that the building had already been evacuated in response to the local alarm. Reports of fire on the third floor sent fire crews upstairs, where they found light to moderate smoke. When they entered the apartment of origin, they noted that a sprinkler had already put the fire out.

The report did not contain estimates of value or damage for the structure or its contents. There were no injuries.

Kenneth J. Tremblay, 2012, "Firewatch" *NFPA Journal*, July/August, 22.

Sprinkler extinguishes high-rise apartment fire, Minnesota

A single sprinkler extinguished an apartment fire that started after the tenant left the apartment and forgot to turn off a stovetop burner. Combustibles near the burner ignited, and the fire spread to a cabinet and a cardboard box before a sprinkler activated, tripping the fire alarm.

The 20-story apartment building, each floor of which covered 30,000 square feet (2,787 square meters), was equipped with a fire alarm system and a sprinkler system, each of which worked as designed.

The fire department responded to a report of alarms sounding at 7:48 a.m. and arrived to find a fire burning in an apartment on the eleventh floor. When they entered the unit, they found the single sprinkler operating in the kitchen.

Damage to the building, which was valued at \$4.1 million, was estimated at \$1,000. Damage estimates for its contents were not reported. No one was injured.

Kenneth J. Tremblay, 2012, "Firewatch" *NFPA Journal*, May/June, 30.

Sidewall sprinkler extinguishes apartment fire, Virginia

The fire department credits residential sprinklers with extinguishing a fire started by smoking materials that had been discarded in a trash can on the first-floor balcony of a three-story apartment building.

The wood-framed, garden-style apartment building, which was 75 feet (23 meters) long and 75 feet (23 meters) wide, had vinyl exterior siding and an asphalt roof. A monitored NFPA 13R residential sprinkler system with patio and balcony coverage initiated interior alarms when the sprinkler activated. The apartment building also had smoke detectors installed throughout, as well as fire walls and portable fire extinguishers.

The occupants of the apartment of origin were awoken by the fire alarm, noticed the sprinkler operating on the balcony, and called 911 at 7 a.m. The fire department, which also received a report from the monitoring station, dispatched firefighters, who arrived to find that the balcony's sprinkler had already extinguished the blaze. Fire damage was limited to a trash barrel and the building's vinyl siding.

One of the apartment's occupants told investigators he had been smoking on the balcony around 2 a.m. and had dropped his cigarette butts in a small trash can, which melted after the trash inside ignited.

The building, which was valued at \$600,000, sustained structural losses of \$500. Damage to the structure's contents, which were valued at \$10,000, was limited to \$50. There were no injuries.

Kenneth J. Tremblay, 2011, "Firewatch", *NFPA Journal*, May/June, 40.

Sprinkler extinguishes unattended cooking fire, Virginia

A single sprinkler activated and extinguished a fire that began in a first-floor unit of a three-story apartment building when a woman left a pan of oil heating unattended on the stovetop.

Each unit of the wood-frame apartment building had local smoke alarms, and the common areas were equipped with a fire alarm system. The building also had a wet-pipe sprinkler, which operated as designed.

The woman left the kitchen to attend to her granddaughter and discovered the fire on her return. When her attempt to put out the flames by throwing water on them made the fire larger, she grabbed the child and left the apartment just as the sprinkler activated. The apartment smoke alarm operated, as did the fire alarm system in the common areas.

Firefighters responding to a 911 call and a monitoring system notification found neither smoke nor flames showing from the building. When they located the unit of origin, they found that one sprinkler had put out the fire.

The building, valued at \$1 million, sustained losses estimated at \$5,000. There were no injuries.

Kenneth J. Tremblay, 2011, "Firewatch", *NFPA Journal*, March/April, 27.

Sprinkler extinguishes apartment fire, Wisconsin

A single sprinkler extinguished a fire that began when the occupant of an apartment turned on the wrong stove burner and unintentionally overheated a pan of grease that had been left on the burner.

The three-story, 24-unit apartment building, which was 210 feet (64 meters) long and 67 feet (20 meters) wide, had exterior walls of brick and an asphalt roof. It had a wet-pipe sprinkler system, which was monitored by a central station fire alarm company, and hardwired smoke detection equipment, which operated and alerted the building occupants.

The sprinkler in the kitchen activated and extinguished the fire before firefighters arrived. There were no injuries, and damage was not reported.

Kenneth J. Tremblay, 2010, "Firewatch", *NFPA Journal*, November/December, 22-23.

Malfunctioning microwave starts fire, Connecticut

A single sprinkler extinguished a fire that began when a microwave oven malfunctioned and ignited crackers stored inside it and wooden cabinets above it.

The three-story, 54-unit, wood-frame apartment building, which was 255 feet (78 meters) long and 56 feet (17 meters) wide, had brick walls and a wooden roof covered with asphalt shingles. In addition to the wet-pipe sprinkler system, the building had a smoke and heat detection system.

A woman was using the stove in her first-floor unit when she smelled something burning. Unable to find the source of the smell in the kitchen, she went into the bedroom to see if anything was amiss. Seeing nothing out of the ordinary, she returned to the kitchen, where she saw smoke. At about the same time, the smoke detectors began to sound.

A floor monitor who came to investigate opened a window and told the woman and her husband, who had been watching television in the living room, to evacuate. The monitor also pulled the building's manual fire alarm and asked a neighbor to call 911. When the couple left the apartment, they did not know where the smoke was coming from.

A fuse problem in the fire alarm control panel prevented the alarm from reaching the monitoring company, so the fire department only learned of the fire through the 911 call. Fortunately, one 155°F (68°C) sprinkler operated and extinguished the fire in the unit.

Investigators determined that the fire started in the internal control panel of the kitchen's microwave, which was plugged in but not in use at the time of the fire.

The building, valued at \$2.8 million, sustained \$22,000 in damage. There were no injuries.

Ken Tremblay, 2010, "Firewatch", *NFPA Journal*, September/October, 32.

Residential sprinkler douses apartment fire, Oklahoma

By the time firefighters responded to a 911 call reporting a kitchen fire at a wood-frame apartment building, a residential fire sprinkler had extinguished the blaze.

The 24-unit, three-story apartment building, which measured 116 feet (35 meters) by 63 feet (19 meters), was covered with brick and wood siding. Its wooden roof was covered with asphalt shingles. The building was protected by monitored, hardwired, interconnected smoke alarms installed in the bedrooms and hallways and a wet-pipe sprinkler system designed in accordance with [NFPA 13R](#), *Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*.

Investigators determined that the fire began when oil left heating unattended in a pan on the stove in a third-floor apartment ignited. The smoke alarm alerted the apartment's occupant, who tried to extinguish the flames with water. When this caused the fire to intensify, he called 911 at 7:18 p.m.

Estimates placed the damage to the building at \$5,000, while damage to the apartment's contents was estimated at \$1,500. There were no injuries.

Ken Tremblay, 2010, "Firewatch", *NFPA Journal*, September/October, 31.

Sprinkler controls apartment building lightning fire, Connecticut

One sprinkler controlled a fire in a 39-unit apartment building for older adults that began when a bolt of lightning struck the building during a summer storm, igniting the roof and attic.

The apartments occupied four floors of the wood-frame building, which also contained a fifth half-story, with a maintenance office built into part of the attic. The building, which was 150 feet (46 meters) long and 72 feet (22 meters) wide, had a brick exterior and a flat roof covered with a rubber membrane. Local smoke alarms were installed in each unit, and a fire detection and alarm system protected the common areas. The alarm system was monitored by a central station alarm company, which also monitored the complete-coverage wet-pipe sprinkler system.

Just after midnight, a fourth-floor resident was awakened by a large bang and saw sparks coming from the roof. Shortly afterward, the sprinkler tripped the water flow alarm, alerting the monitoring company, which notified the fire department at 12:17 a.m. On arrival two minutes later, firefighters discovered that the roof was on fire and called for additional support. With the help of aerial apparatus lines, fire crews used a hose line to extinguish the remaining fire.

Investigators determined that the lightning entered the attic and ignited several wooden roof joists, which burned until a sprinkler protecting the space activated and controlled the fire. Water damaged the units below the fire, but the building, valued at \$4 million, sustained only \$500,000 in damage. There were no injuries.

Ken Tremblay, 2010, "Firewatch", *NFPA Journal*, July/August, 30-31.

Sprinkler extinguishes fire started by child, Tennessee

A single sprinkler extinguished a fire started by one of several boys left alone in an apartment while their mother went out to get them some medication.

The three-story, wood-frame apartment building, which was 210 feet (64 meters) long and 47 feet (14 meters) wide, had a fire alarm installed in accordance with [NFPA72®](#), *National Fire Alarm and Signaling Code*, and a wet-pipe sprinkler system installed in accordance with [NFPA 13R](#), *Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*. Both systems were monitored by a company that reported the fire at 12:42 p.m.

According to the mother, her children were playing video games when she left, but they apparently went into her room where she kept matches and candles. When she returned, the apartment was filled with smoke.

Investigators determined that one of the boys lit a match and threw it down when it burned his fingers. It landed in the bedroom curtains, starting a fire that burned until the sprinkler activated and extinguished it.

Damage to the building and to its contents was estimated at \$7,000.

Ken Tremblay, 2010, "Firewatch", *NFPA Journal*, May/June, 36.

Cigarette ignites home oxygen unit, Illinois

Two sprinklers extinguished an apartment fire that started when a 78-year-old man removed the tubing of his home oxygen system, placed it near a cigarette burning in an ashtray, and left the room.

The eight-story, steel-frame, Type I fire-resistive apartment building had concrete floors, walls and roof. Brick covered the exterior, and the roof was of build-up construction. Each unit had battery-operated smoke alarms. A wet-pipe sprinkler system protected the entire building, and hardwired smoke detectors were located in the common areas. The sprinkler and detection systems were monitored by a central station alarm company.

Firefighters responding to the 6:30 a.m. water flow alarm found that the two sprinklers had already extinguished the blaze, which investigators determined began when the cigarette ignited the oxygen flowing from the oxygen unit's plastic tubing.

The building, valued at \$2 million, sustained no structural damage. Damage to its contents, valued at \$750,000, was estimated at \$15,000. The occupant of the apartment was treated for smoke inhalation.

Kenneth J. Tremblay, 2010, "Firewatch," *NFPA Journal*, January/February, 25-26.

Sprinkler controls cigarette fire, Hawaii

A single sprinkler controlled a fire that began when a terminally ill 78-year-old man left a burning cigarette on a leather jacket on a bed in his apartment. Heat from the cigarette ignited the jacket, the bedding, and the mattress before the sprinkler operated.

The apartment was located on the thirty-sixth floor of a steel-and-concrete-frame high-rise building that contained condominiums and hotel rooms. The building's detection and suppression systems included smoke and heat detectors and a wet-pipe sprinkler system. Dry standpipes were also available for fire department use, and there were portable fire extinguishers in the hallways.

The fire alarm operated and apparently alerted the building's other occupants. The fire was reported to the fire department at 8:43 p.m. Arriving firefighters found that the sprinkler had confined the fire to the bed where it began.

Structural damage to the unit of fire origin, valued at \$260,000, was estimated at \$40,000, and damage to its contents was estimated at \$10,000. The unit's occupant, who showed signs of dementia and may have been impaired by alcohol, survived.

Ken Tremblay, 2009, "Firewatch", *NFPA Journal*, November/December, 22.

Sprinkler extinguishes intentionally set fire, Missouri

A residential sprinkler extinguished a fire that was set intentionally in an apartment building laundry room, limiting the loss to approximately \$5,000.

The 18-unit apartment building was 3 stories high, 150 feet (46 meters) long, and 50 feet (15 meters) wide. It had a brick exterior, and asphalt shingles covered its roof. A wet-pipe residential sprinkler system provided coverage in the building's living spaces, as did hardwired smoke alarms with battery back-up. Both systems were monitored by a central station alarm company.

When firefighters arrived within five minutes of the 8:56 a.m. alarm, a single sprinkler had already extinguished the fire.

Investigators determined that someone had used a lighter to ignite paper, plastic, and lighter fluid in a basement laundry room trashcan. Heat from the fire activated a sprinkler above the fire, causing a water flow and sounding the alarm. The suspect who allegedly started the fire had been accused previously of vandalizing the laundry room, setting a dumpster on fire, and pulling a fire alarm on the second floor.

Despite the alarms, several residents, including one whose apartment was adjacent to the laundry room, slept through the whole event. An investigator noted that "although this was a small fire and quickly extinguished by the sprinkler system, it could have ended with several fatalities and much more damage than was done."

Kenneth J. Tremblay, 2008, "Firewatch", *NFPA Journal*, November/December, 21-22.

Sprinkler extinguishes apartment fire, Washington

A sprinkler extinguished a stovetop fire in an apartment while the occupants tried unsuccessfully to put the blaze out with a portable fire extinguisher.

The fire occurred on the first floor of a three-story, wood-frame apartment building that was 130 feet (39.6 meters) long and 50 feet (15.2 meters) wide. A local smoke alarm was present but did not operate, and manual pull stations were located at the bottom of the building's stairs. A central station monitoring company monitored the building's wet-pipe sprinkler system's water flow alarm.

An occupant who was heating scented wax in a saucepan on the stove to fill the apartment with fragrance stepped out of the kitchen for a few moments and returned to find that the wax had ignited. As the occupant and a neighbor tried unsuccessfully to put the fire out with a dry-chemical fire extinguisher, a sprinkler above the stovetop operated and extinguished the blaze.

Alerted by the water flow alarm at 8:45 a.m., responding firefighters found that the fire was already out. The fire department said this was the second kitchen-related fire extinguished by a sprinkler in the complex in less than three months.

The building, valued at \$1.25 million, and its contents, valued at \$50,000, sustained \$2,500 and \$2,000 in damage, respectively. There were no injuries.

Kenneth J. Tremblay, 2006, "Firewatch", *NFPA Journal*, January/February, 18, 20.

Sprinklers douse high-rise fire, Minnesota

Two sprinklers activated and extinguished a fire in an apartment in a 20-story apartment building. At the time of the fire, the occupant of the second-floor apartment was not at home.

Each floor of the 149-unit building covered about 15,000 square feet (4,572 square meters) and was protected by a sprinkler system and fire detection system.

Firefighters received the alarm at 5:54 a.m. and responded to the apartment to find that the fire had already been extinguished. A small burned area in the living room contained the melted remains of a portable box-type fan and an upholstered swivel chair. The apartment's occupant told investigators that the fan had been operating normally when he left the apartment about five hours earlier. The investigator determined that it malfunctioned and tipped over, igniting the carpeting and chair.

Losses were estimated at \$10,000. There were no injuries.

Kenneth J. Tremblay, 2006, "Firewatch", *NFPA Journal*, July August, 27.

Sprinkler extinguishes cooking fire, Washington

One residential sprinkler successfully extinguished a fire in an apartment in a 12-unit apartment building.

The three-story, wood-frame building was 130 feet (39 meters) long and 50 feet (15 Meters) wide. It was protected by a residential sprinkler system, and smoke alarms were located in all the apartments, including sleeping rooms. A central station alarm company monitored the fire protection systems, which were operational at the time of the fire.

The fire started when the liquid in a pan of potatoes left cooking unattended on the stove evaporated. Single-station smoke alarms activated around 5:30 p.m., and alerted to the blaze, the apartment's occupant left the unit.

Shortly afterward, a sprinkler 5 feet (1.5 meters) from the stove activated and extinguished the fire, limiting fire and smoke damage to the stovetop and surrounding area.

Damage to the building, valued at \$1.2 million, was estimated at \$15,000, and damage to its contents, valued at \$50,000, was estimated at \$2,000. The fire department credited the building's emergency evacuation plan for the rapid evacuation of its occupants.

Kenneth J. Tremblay, 2005, "Firewatch", *NFPA Journal*, November/December, 18.

Sprinkler extinguishes apartment building fire, New Jersey

A heat detector activated a single sprinkler and alerted the fire department and the occupants of a six-story apartment building to a fire in the structure's boiler and trash compactor room.

The apartment building, which was 116 feet (35 meters) long and 65 feet (19 meters) wide, was of fire-resistive construction. It contained 35 units and was occupied at the time of the fire. There were smoke and heat detectors in the common area, hallways, laundry rooms, recycling rooms, and boiler room. A wet-pipe sprinkler system provided limited coverage to the trash chute.

Before the fire began, several dumpsters had been removed from the compactor room, and trash apparently fell out during the transfer, coming to rest near the two boilers. Radiant heat from the boilers ignited the trash, which burned until the sprinkler extinguished the fire.

Firefighters who responded to the 10:43 a.m. call opened the doors, which was sufficient to ventilate the room, and shut the sprinkler off once they confirmed the fire was out. The building, valued at \$1.5 million, sustained a \$2,000 loss; the contents, valued at an estimated \$500,000, were not damaged. There were no injuries.

Kenneth J. Tremblay, 2005, "Firewatch", *NFPA Journal*, March/April, 22, 24.

Fire sprinkler extinguishes fire started by candle, New Hampshire

A residential fire sprinkler system quickly extinguished a fire that started when a candle ignited bedroom curtains. The sprinklers had been installed during rebuilding after a 1991 fire in the same property killed a four-year-old boy.

The two-story, wood-framed building measured 40 feet (12 meters) by 30 feet (9 meters) and contained four apartments. Battery-operated smoke alarms were installed within and just outside each bedroom. However the tenant had removed the alarm in the room of origin. The NFPA 13R fire-sprinkler system provided full coverage.

The fire occurred in a first-floor apartment after a child took a burning candle from the kitchen and placed it on a bedroom windowsill. The unprotected flame ignited curtains that burned vertically to the rod and melted to the floor. A single fire sprinkler in the room extinguished the fire before the fire department arrived. The smoke alarm located outside the bedroom alerted the tenant to the fire. The fire department received the 911 call at 4:32 p.m. Damage to the building, valued at \$83,900, and its contents valued at \$20,000, was estimated at \$2,500.

Kenneth J. Tremblay, 2004, On Line Exclusive, "Firewatch", *NFPA Journal*.

Sprinkler extinguishes apartment fire, New Hampshire

A residential sprinkler system extinguished an early-morning fire in an apartment building, allowing occupants, who had been awakened by the building's fire detection system, to escape uninjured as smoke filled their first-floor apartment. A fire department officer later noted "at least one occupant had to pass the fire in order to egress from the apartment and was only able to do so because of the sprinkler activation."

The four-story building had brick exterior walls and a wooden roof with an asphalt covering. It covered approximately 11,000 square feet (1,022 square meters) and had a monitored sprinkler system.

Firefighters responding to the 6:05 a.m. alarm found heavy smoke in the first-floor unit when they arrived, but the sprinkler, which was still operating, confined the fire to the kitchen. The smoke detection system alerted residents before the sprinkler operated.

Investigators determined that the fire started when a stuffed animal in a wicker-shelving unit in the kitchen ignited. The toy was lying on top of a cell phone that had been plugged into an electric charging unit for 4 or 5 days. The equipment overheated and ignited the toy. The fire spread up the wicker shelving to other items before the sprinkler activated. Value of the building and its contents wasn't reported, but losses were estimated at less than \$1,000.

Kenneth J. Tremblay, 2004, "Firewatch", *NFPA Journal*, July/August, 17.

Sprinkler extinguishes unattended cooking fire, Washington

Cooking oil left heating unattended in a pan overheated, starting a fire that spread to cabinets above the stovetop. A sprinkler in the kitchen and another in an adjacent hallway operated and extinguished it, limiting fire damage to the area of origin.

The fire occurred in a third-floor apartment in a three-story, wood-framed apartment building protected by a wet-pipe automatic residential sprinkler system. The building also had single-station smoke detectors, but their location and coverage weren't reported.

One of the apartment's occupants had put a pan of cooking oil on the stove while making dinner and left the kitchen. When the oil ignited, the fire alarm activated, alerting the apartment complex's caretaker, who investigated and saw smoke around the apartment's balcony. The caretaker reported that the fire, which filled the apartment with smoke, had been extinguished, but that the stove was still on. He shut off the burner and evacuated the building's occupants. By the time firefighters responded to the 7:53 p.m. call, the fire had been extinguished and the occupants had been safely evacuated.

Investigators determined that the heat from the burning oil damaged an overhead ventilation hood and the ceiling panels, causing the panels to drop to the floor.

Damage to the structure was estimated at \$10,000 and to the building's contents at \$500. No one was injured.

Kenneth J. Tremblay, 2004, "Firewatch", *NFPA Journal*, May/June, 18.

Fire sprinkler extinguishes cooking fire, Washington

A single fire sprinkler limited fire losses when an occupant of an apartment in a three-story building inadvertently turned the burner on under a pot of cooking oil and left the apartment. The building's monitored water-flow detector system activated the building's fire alarm and notified the fire department.

The wood-frame building, which measured 130 feet (40 meters) by 50 feet (15 meters), contained 12 two- and three-bedroom units. Manual pull stations and smoke alarms had been installed in compliance with a local ordinance, and emergency plans had been distributed to residents. Although he wasn't required to, the building's owner had also installed a residential wet-pipe fire-sprinkler system that provided full coverage. A central station alarm company monitored the alarms and fire sprinklers.

The fire started when the unattended oil heated to its ignition temperature and ignited, and spread from the stove to the area immediately above it.

The central station alarm company notified the fire department at 2:03 p.m., but by the time firefighters arrived, the apartment's fire sprinkler had extinguished the blaze.

Damage to the building, valued at \$1.25 million, and its contents, valued at \$50,000, were approximately \$15,000 and \$2,000, respectively. Much of the damage was attributed to water damage.

Kenneth J. Tremblay, 2004, Firewatch, *NFPA Journal*, January/February, 15.

Fire sprinkler controls apartment building fire, New Jersey

A single fire sprinkler controlled an incendiary fire in a trash room on the third floor of a six-story apartment building, alerting the fire department, which responded within a minute of the alarm.

The steel-framed apartment building had concrete block walls and a brick façade. Hardwired and interconnected heat and smoke alarms were monitored by a central station and an automatic wet-pipe fire sprinkler system provided complete coverage.

The fire began when someone intentionally ignited seasonal decorations in the trash room using an undetermined heat source. As police and firefighters evacuated the residents, firefighters found that a single fire sprinkler had confined the fire to the trash room and extinguished it. No one was injured, and damage to the building's contents was limited to \$500.

Kenneth J. Tremblay, 2003, "Firewatch", *NFPA Journal*, September/October, 16.

Unattended candle fire damages apartment, Massachusetts

An unattended candle left in an entertainment center in the living room of a fourth-floor apartment ignited the room's furniture. Fortunately, a sprinkler extinguished the fire as it began to spread up the wall.

The five-story building, originally a mill, had a hard-wired fire detection system and wet-pipe sprinkler system, both connected to the municipal fire alarm system.

Firefighters received the alarm at 3:50 p.m. and arrived three minutes later to find that the sprinkler system had activated. Fire companies responding to the fourth floor reported smoke in the hallway and the sound of water running in the locked apartment. By the time they entered the unit, the sprinkler had extinguished the blaze.

The apartment's resident told investigators that she'd come home from work during a break to do some cooking and lit the candle to mask the odor. When she left to go back to work, she forgot to extinguish the candle, the heat from which eventually broke the glass candleholder. Molten wax dripping down the front and back of the entertainment center ignited the cardboard covering its back, and the fire spread up the wall until the sprinkler extinguished it.

Smoke damage in the unit of origin and common areas of the fourth floor, and fire damage to the entertainment center, its contents, and the wall behind it were estimated at \$10,000. There were no injuries.

Kenneth J. Tremblay, 2003, "Firewatch", *NFPA Journal*, May/June, 16.

Sprinklers control fire, Washington

After seeing smoke coming from a second-floor dryer vent of a three-story apartment building, a police patrolman alerted the building's occupants and notified the fire department at 10:38 p.m. He then retrieved the portable fire extinguisher from his cruiser and was using it on the flames coming from the dryer's open door when a sprinkler activated. By the time firefighters arrived, the patrolman and the sprinkler system had extinguished the fire.

The 12-unit, wood-frame apartment building, one of 13 in the complex, was 135 feet (41 meters) long and 35 feet (10.6 meters) wide. Each apartment had a local smoke alarm, and there were smoke detectors and manual pull stations in the common areas. The building was also protected by a residential, wet-pipe sprinkler system, and fire extinguishers were located throughout. The detection and suppression systems were monitored by a central station alarm company, which called the fire department when the water flow alarm activated in the unit of origin.

The fire began when clothes, towels, and other items the apartment's occupant was drying ignited after the occupant went to bed. It was the fourth fire in the apartment complex the sprinkler system controlled or extinguished, and a fire department spokesman noted that, without the sprinklers, the blaze could have been serious. As it was, damage to the \$450,000 structure was estimated at just \$5,000, and damage to the apartment's contents, valued at \$20,000, came to \$2,000.

Kenneth J. Tremblay, 2003, "Firewatch", *NFPA Journal*, March/April, 22-23.

Sprinkler extinguishes fire, Washington

A sprinkler extinguished an apartment fire, even though the efforts of the unit's occupant to put out the blaze had caused the flames to spread further.

The wood-frame, three-story, 12-unit apartment building was 130 feet (40 meters) long and 50 feet (5 meters) wide and had an asphalt shingle roof. Single-station smoke alarms had been installed in the bedrooms, hallway, and living room of each apartment, and the building had a sprinkler system that complied with [NFPA 13R, Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height](#). The system was connected to a central station alarm company.

A third-floor resident melting paraffin wax in a small saucepan on an electric range in the kitchen left the stove unattended, and when he returned, he found the wax had ignited. He threw a glass of water at the saucepan, spreading the flames from the pan onto the stove and counter. A sprinkler 8 feet (2 meters) from the stove activated and extinguished the flames.

Firefighters responding to the 11:13 a.m. water-flow alarm found that the fire had been extinguished. Damage to the building, valued at \$1.2 million, was estimated at \$30,000. Its contents, valued at \$50,000, sustained losses of \$2,750. Water damage to units below the unit of origin accounted for a huge share of the loss, although fire and water damage would probably have been much greater if the sprinkler hadn't activated. There were no injuries.

Kenneth J. Tremblay, 2001, "Firewatch", *NFPA Journal*, July/August, 23.

Sprinklers douse fourth cooking fire in two years, Washington

For the fourth time in two years, residents of a 13-building apartment complex learned the benefit of residential sprinklers. In each case, sprinklers put out fires started by careless cooking.

The two-story, six-unit apartment building was 75 feet (23 meters) long and 37 feet (11 meters) wide, covering approximately 5,781 square feet (537square meters). Built of wood framing over a concrete slab, it had an asphalt shingle roof. Single-station smoke alarms were in the bedrooms, hallways, and living areas of each unit, and a wet-pipe residential sprinkler system provided full coverage in the living areas. Portable fire extinguishers were available in the common areas, and a central station monitored all systems.

At 6:28 a.m., firefighters responded to a water flow alarm, which was followed shortly by a smoke alarm activation. Apparently, a first-floor resident had been heating oil in a frying pan on an electric stove, when the oil overheated and ignited. The man moved the pan to the sink, trying unsuccessfully to put the fire out with water from the faucet. Heat from the fire fused the overhead sprinkler, which alerted the central station and the fire department. When firefighters arrived, the sprinkler had extinguished the fire.

The building, valued at \$450,000, suffered estimated losses of \$2,000. The contents of the unit, valued at \$20,000, suffered a loss of \$200. There were no injuries. The sprinkler was credited with preventing further damage to the unit and building.

Kenneth J. Tremblay, 2000, "Firewatch", *NFPA Journal*, November/December, 17.