

A white circle containing the word "Welcome" in a blue, cursive-style font.

# TO YOUR NEW HOME!

*We installed your fire sprinkler system, and it's one of the best ways to protect your home and everyone in it. We hope it gives you peace of mind.*

## Living with fire sprinklers is easy

In the event of a fire, the fire sprinkler closest to the fire will activate and help to control the fire, giving you and your family more time to escape and call 911.

## Your fire sprinkler system at a glance

- **Your fire sprinkler system is connected to the water main in your home.**
- **In case of an accidental release of your sprinkler system,** to shut off the flow of water you must shut off the main water supply valve to the home.
- **Your fire sprinkler system is equipped with a non-testable backflow device.** This device is designed to prevent sprinkler system water from entering your drinking water.
- **Your system is also connected to a toilet.** Every time the toilet is used, clean water is moving through the system and backflow device.
- **If the designated toilet fails to fill,** please check the operation of the toilet and all toilet-related mechanical components and valves. If the valves are functioning properly and the toilet still fails to fill, please call Troy Life & Fire Safety for service at **(403) 547-1647**.
- Your fire sprinklers are designed to help protect your family from the dangers of fire in conjunction with working smoke alarms. Replace the batteries in your smoke alarms every six months and replace your smoke alarms every 10 years.
- **Complete and Practice your home escape plan regularly.** Contact **Calgary Fire** at 311 for more information, or [visit their site](#). Fire sprinklers and smoke alarms will not protect your family from CO (Carbon Monoxide). Please ensure you follow the owner's manual for the maintenance of your CO alarms.
- **Smoke will not set off your sprinklers!** No matter what you have seen in movies, fire sprinklers do not flow water all at once. And they cannot be set off by smoke.
- **Each fire sprinkler has a glass or metal trigger.** Only the heat of a fire can make it work.

## Tips to help keep your system in optimum condition:

- Protect your fire sprinklers.
- Make sure nothing is blocking your sprinklers.
- **DO NOT PAINT YOUR FIRE SPRINKLERS, THE COVER PLATES OR THE ORANGE BLAZEMASTER® FIRE SPRINKLER PIPE.**
- Do not hang anything from the orange fire sprinkler pipes. Even lightweight items can cause damage.
- Protect your fire sprinklers with plastic when painting or spraying the adjacent ceiling/wall. Remove the plastic as soon as you are finished. **DO NOT LEAVE PLASTIC ON OVERNIGHT.** Remove plastic at the end of the work day and reaffix when work continues.
- Be careful when moving large or tall items that may damage your fire sprinklers or the orange fire sprinkler pipe.
- Don't bump sprinklers or exposed pipes. Teach children not to play or tamper with the fire sprinklers or the fire sprinkler pipe.
- Take extra care to ensure you do not damage any piping or electrical wiring in the walls when hanging items from the walls.



Life & Fire Safety Ltd.

## More information:

**Please see the USB Stick we provided.**

Contact us if you have any concerns or require service on any of your fire and life safety devices.

[www.troylfs.com](http://www.troylfs.com)

**(403) 547-1647**

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Home Fire Sprinkler<sup>®</sup>  
COALITION  
Protect What You Value Most

HOME FIRE  
SPRINKLER SYSTEMS

the future of **fire safety**  
here today







### UNDERSTANDING FIRE SPRINKLER PROTECTION FOR HOMES

Fire kills more people in the United States annually than all natural disasters combined. Ironically, most fire deaths occur in the very place where we feel safest — our own homes. Those at highest risk are very young children and older adults, who may have difficulty making a quick escape.

Fire sprinkler systems provide powerful protection from fire. They work automatically and immediately; before a fire spreads. Sprinklers put water right where it is needed, slowing or stopping the flames and poisonous smoke, so people can get out safely.

“Fire sprinklers give me peace of mind, especially at night when my children are sleeping.”

SANDRA KUHNS, HOMEOWNER, OREGON

The ideal time to install fire sprinkler systems is during new construction. Many homeowners opt to install, or retrofit, sprinklers when they remodel their homes.

#### You are at Greatest Danger from Fire at Home

According to the National Fire Protection Association (NFPA), nine out of 10 structure fire deaths happen in homes. Many people don’t realize how fast a home fire grows and spreads from room to room. Too often, people think they’ll have plenty of time to get out.

Having fire sprinklers installed at home can save your life if fire strikes. In fact, when fire strikes at home, it can become deadly in as few as three minutes. Most fatal fires take place at night when people are sleeping. A fire sprinkler system is like having a firefighter on duty 24 hours a day.

Watch a video that demonstrates how fast a home fire can become deadly at [HomeFireSprinkler.org](https://www.homefiresprinkler.org).

#### A Total System of Safety

Sprinkler systems are the ultimate home fire safety technology available today. Experts agree the most comprehensive protection from a home fire is a total system of safety:

- Prevention
- Early warning (working smoke alarms on every level)
- Quick Evacuation (well-planned and practiced home fire drills)
- Suppression (fire sprinkler system)



Sidewall Sprinkler



Concealed Sprinkler



Pendent Sprinkler

### HOW FIRE SPRINKLERS WORK

Fire sprinklers protect your home around the clock, automatically. Each sprinkler system is unique to the home where it’s installed. Most fire sprinkler systems are connected to the household water main. If the water supply is from a well or if the water pressure is too low, a pump and storage tank may be needed.

Fire sprinklers are linked throughout the home by a network of piping. Most home systems today use strong, noncombustible plastic pipe known as CPVC or PEX. Just like plumbing, sprinkler piping is typically hidden behind walls and ceilings. In unfinished basements, you may be able to see the piping in the ceiling; and it may be copper rather than plastic.

There are several types of fire sprinklers made just for homes. They can be installed on walls or in ceilings. Some sprinklers are concealed by a plate. Home fire sprinklers are much smaller than the types of sprinklers used in commercial properties and use much less water.

#### Heat Activates a Sprinkler, Not Smoke

Each sprinkler has a temperature-sensitive element and is individually activated by heat. Water flows from the sprinkler when the temperature reaches between 135°-165°F. In the vast majority of fires in sprinklered homes, only a single sprinkler will operate.

Smoke, cooking vapors or steam cannot cause home fire sprinklers to activate. Only the high temperature of a fire will operate the sprinkler.

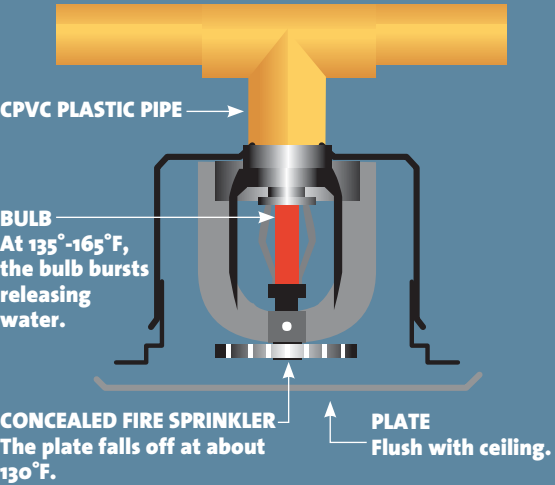
#### Maintenance is a Snap

Home fire sprinklers require very little maintenance. It’s essential to keep the water valve turned on, so a simple visual inspection should be done routinely to ensure the valve is open. (Keeping the valve padlocked in the “on” position is a good idea.)

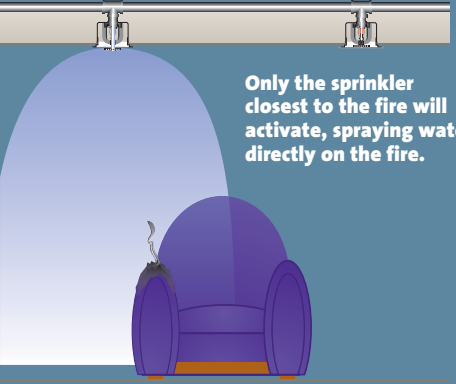
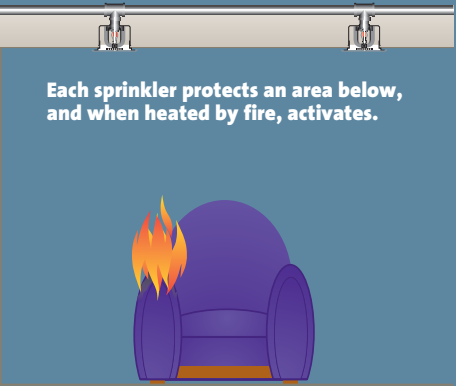
Inspect the pipes and sprinklers occasionally to make sure nothing is obstructing them.

Every home sprinkler system should have a water flow test on a regular basis. It’s a simple test that can be done by the homeowner or a fire sprinkler contractor.

A SPRINKLER COVERS A MINIMUM 12 X 12 FOOT AREA. EXTENDED COVERAGE SPRINKLERS CAN COVER A MAXIMUM AREA OF 20 X 20 FEET.

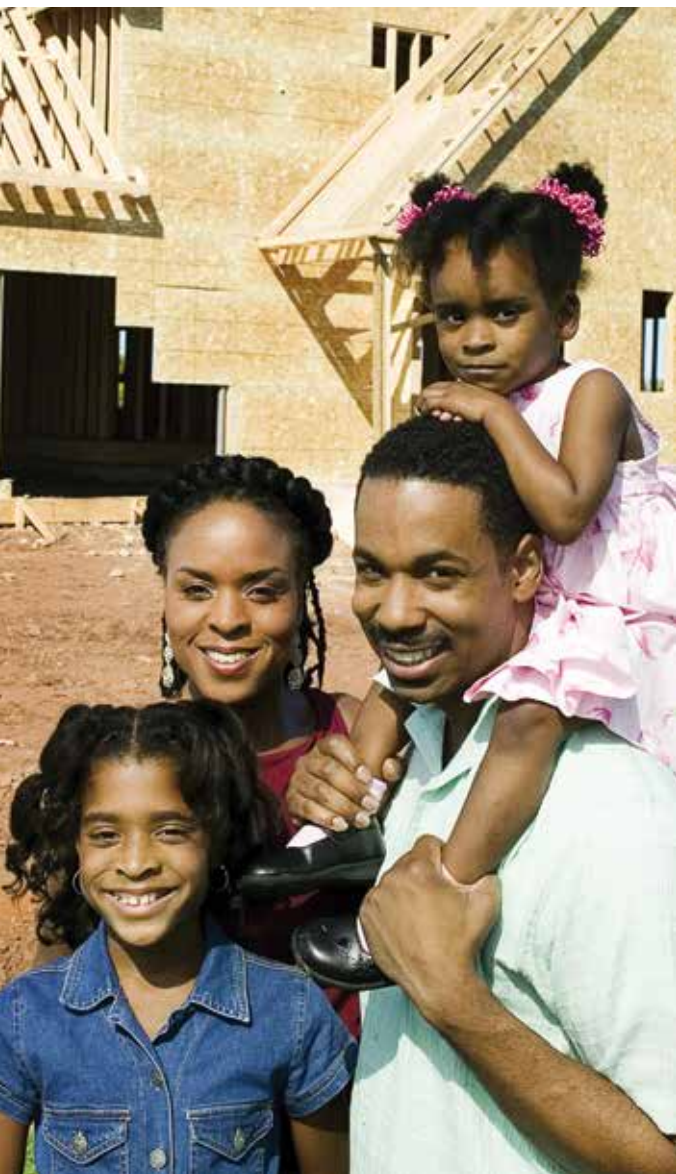


SPRINKLERS ARE LINKED BY A NETWORK OF PIPING, TYPICALLY HIDDEN BEHIND WALLS AND CEILINGS AND USUALLY DRAWING UPON HOUSEHOLD WATER SOURCES.





“An electrical short started a fire in our house. That fire was so fast and furious. The sprinkler system activated immediately. Our house is still standing. We are all still alive including our pets.” JIM MCCOLLISTER, HOMEOWNER, ARIZONA



THE ADVANTAGES OF A HOME FIRE SPRINKLER SYSTEM

With Fire Sprinklers

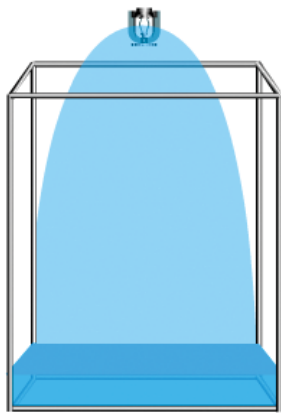
- The sprinkler closest to the fire activates
- Water contains or extinguishes fire
- Residents have time to safely escape
- Surrounding rooms are protected from damage

Fire sprinklers work so fast they often put out a home fire before the fire department arrives. Instead of launching a major fire suppression effort, arriving firefighters will simply turn off the sprinkler system and mop up the water.

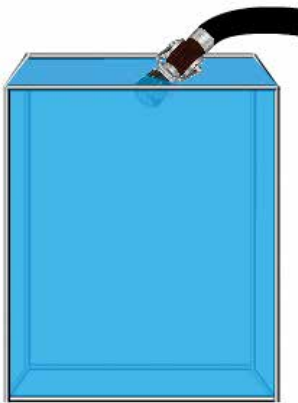
Without Fire Sprinklers

- Flames grow and move room to room
- Heat and toxic gases spread
- In as few as three minutes, the fire becomes deadly
- Flashover occurs and the gases and combustible materials burst into flames

It typically takes 9-12 minutes from the time a fire starts to the time the fire department arrives. In that time, the fire will be so advanced that firefighters will have to use high-pressure hoses, applying water at 250 gallons per minute. Even if the family is lucky enough to get out unharmed, the home will likely be lost and the family displaced.



Sprinkler - 25 Gallons of Water/Minute



Fire Hose - 250 Gallons of Water/Minute

Learn more about how home fire sprinkler systems work at [HomeFireSprinkler.org](http://HomeFireSprinkler.org).

HOME FIRE SPRINKLERS ARE A SMART CHOICE

Homebuilders know that homeowners are safety conscious. They want to protect their families and they want to secure their investment. That’s why more and more homebuilders are offering their customers the option of installing a fire sprinkler system in new homes. A home fire sprinkler system is a smart choice. Unlike the many upgrades that are available in new construction – such as gourmet kitchen amenities, whirlpool tubs and high-end flooring – only a home fire sprinkler system can save your life if there is a fire. And, the fire sprinkler system also protects your home and your valuables. No other upgrade can do that.

Nearly 70% of homeowners believe having a fire sprinkler system increases the value of a home, according to a survey conducted by Harris Interactive. Nearly half say a sprinklered home is more desirable than an unsprinklered home.

Affordable Fire Protection

The cost to install a fire sprinkler system is rolled into a new home mortgage, as are the plumbing and electrical systems.

Sprinklered homes qualify for valuable discounts on homeowner insurance premiums. Discounts vary by company and by state, so shop around to find the best discount in your area.

The cost to install a home fire sprinkler system also varies by region. Nationally on average, the cost to install sprinklers is \$1.61 per sprinklered square foot. Retrofitting a home with sprinklers is typically higher. In many municipalities, increased installations have brought the cost down significantly.

Unmatched Peace of Mind

Home fire sprinklers are proven lifesavers. In Scottsdale, Arizona, sprinklers have been required in new homes since 1986. A 15-year study of fire loss in Scottsdale since then found that no deaths occurred in the fires that took place in sprinklered homes during the period; 13 people died in unsprinklered homes.

Fire sprinklers also protect property and valuables. The Scottsdale study showed that where fires occurred in sprinklered homes, there was less fire damage and less water damage from suppression. The average loss per sprinklered single-family home fire was \$2,166, compared to \$45,019 for the unsprinklered home fires.



HARRIS INTERACTIVE® SURVEY FINDINGS

- 69 PERCENT OF HOMEOWNERS BELIEVE HAVING A FIRE SPRINKLER SYSTEM INCREASES THE VALUE OF A HOME.
- 38 PERCENT SAY THEY WOULD BE MORE LIKELY TO PURCHASE A NEW HOME WITH SPRINKLERS THAN WITHOUT.
- 45 PERCENT SAY A SPRINKLERED HOME IS MORE DESIRABLE THAN AN UNSPRINKLERED HOME, MOST OFTEN BECAUSE OF THE ADDED SAFETY PROVIDED BY THE SPRINKLERS (51 PERCENT).
- IF OFFERED, 36 PERCENT WOULD CHOOSE FIRE SPRINKLERS OVER HARDWOOD FLOORS; AND 35 PERCENT WOULD CHOOSE THEM OVER CABINET UPGRADES.
- FOR 43 PERCENT, THE ABILITY TO INCLUDE THE COST OF INSTALLING SPRINKLERS IN THE MORTGAGE IS AN INSTALLATION INCENTIVE.

NATIONAL SURVEY CONDUCTED IN DECEMBER 2005; COMMISSIONED BY HFSC



“We’ve lived in a sprinklered home for 25 years – nothing has made us feel safer.” JAN AND RICH GRATTON, HOMEOWNERS, CALIFORNIA

# Protect the Earth One Home at a Time

## FIRE SPRINKLERS ARE GREEN

AN FM GLOBAL STUDY PROVED THAT FIRE SPRINKLERS ARE GOOD FOR THE ENVIRONMENT. IN A FIRE, FIRE SPRINKLERS:

- REDUCE GREENHOUSE GAS EMISSIONS BY 98%
- REDUCE FIRE DAMAGE BY UP TO 97%, WHICH MEANS LESS WASTE IS SENT TO LANDFILLS
- REDUCE WATER USAGE TO FIGHT A HOME FIRE BY AS MUCH AS 91% VERSUS FIRE HOSES
- REDUCE RUNOFF WATER POLLUTION

## HOME FIRE SPRINKLER FAQs

### If one sprinkler goes off, will they all go off?

No. Sprinklers activate independently; only the sprinkler(s) closest to the fire will activate. In most home fires, only one sprinkler is needed to control the fire.

### If I burn toast, will the sprinkler activate?

No. Fire sprinklers do not respond to smoke; they respond to the high temperature of a fire at about 135° to 165°F. Smoke caused by cooking or cigars cannot and will not cause a sprinkler to activate.

### Will my sprinklers leak?

Sprinkler mishaps are generally less likely and less severe than conventional home plumbing system problems. Choose an experienced residential sprinkler contractor to install your system. Contractors follow national installation standards, which help ensure proper operation.

### Is post-fire water damage from sprinklers worse than fire damage would be without sprinklers?

Fire damage and water from high-pressure fire hoses are far greater. A residential sprinkler flows 10-26 gallons of water per minute, for approximately 10 minutes (or less if the fire department turns the water off sooner). An uncontrolled fire will cause far greater fire destruction and smoke damage, requiring a tremendous amount of water from fire department hoses – more than 10 times the water per minute. The property loss in a sprinklered home fire is typically only a fraction of the loss in an unsprinklered home fire.

### Won’t the fire department be able to put out the fire and save my things?

From the time the fire starts, it typically takes about nine to 12 minutes for the fire department to arrive. In that time, an uncontrolled fire will have grown and spread throughout the home, causing tremendous smoke and fire damage before the fire department can get there.

### Will my sprinklers freeze in the winter?

Freezing is not a problem with proper installation. The national sprinkler installation standard provides guidance for proper installation in cold regions, including appropriate additional insulation and moving fire sprinklers to interior walls.

### Since I have smoke alarms, why do I need fire sprinklers?

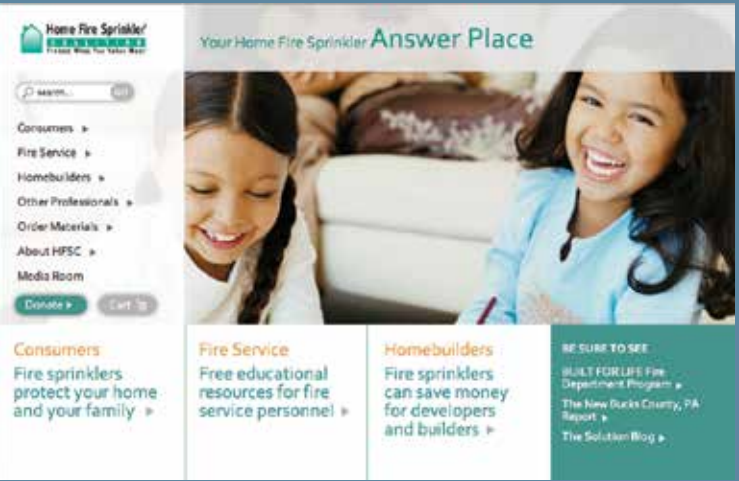
Smoke alarms are essential in every home, but they can only detect a fire. To be effective, residents must be willing and able to respond quickly to the alarm. Only fire sprinklers can detect the fire and automatically control or extinguish it, paving the way for residents to make a safe escape – and also protecting property and valuables. The best protection from fire is having both smoke alarms and a fire sprinkler system.

### Are fire sprinklers difficult to maintain?

No. Home maintenance is simple. Regular flow tests should be conducted and homeowners can do these simple tests themselves or have the sprinkler contractor do it every year or so.

## FREE RESOURCES FOR HOMEOWNERS

The Home Fire Sprinkler Coalition (HFSC) is a national, nonprofit organization dedicated to educating the public about the value and availability of fire sprinkler protection for homes. HFSC works with fire departments, local officials, sprinkler contractors and others to help increase awareness of home fire safety.



YOU CAN LEARN MORE ABOUT HOME FIRE SPRINKLER SYSTEMS ON THE NONPROFIT HOME FIRE SPRINKLER COALITION WEBSITE, **HomeFireSprinkler.org**, INCLUDING:

- ANIMATED FIRE SPRINKLER SYSTEM FEATURES
- COMPARISONS OF HOME FIRES WITH AND WITHOUT SPRINKLER SYSTEMS
- CHECKLIST FOR INSTALLING SPRINKLERS IN YOUR HOME
- HOW TO TALK TO YOUR BUILDER ABOUT INSTALLING A FIRE SPRINKLER SYSTEM
- HOW TO CHOOSE A QUALIFIED SPRINKLER CONTRACTOR

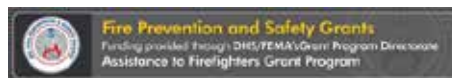
THERE IS NO COST TO DOWNLOAD THE MATERIALS FROM HFSC’S WEBSITE.

FOR ADDITIONAL INFORMATION, CONTACT YOUR LOCAL FIRE DEPARTMENT’S PUBLIC EDUCATOR.

# HFSC MEMBERS



FEMA



Home Fire Sprinkler<sup>®</sup>

COALITION

Protect What You Value Most<sup>™</sup>

[HomeFireSprinkler.org](http://HomeFireSprinkler.org)

# This home can

# save your life.



## Ask for home fire sprinklers.



**HOME FIRE SPRINKLER**  
**COALITION CANADA**  
HomeFireSprinklerCanada.ca

## **Fire is fast. Would you have time to escape a home fire?**

Did you know a house fire can become deadly in as little as two minutes? Fires burn quickly and are more deadly today because of what we have in our homes. Our furniture and belongings are made of plastics and synthetics that make fires burn faster – and they produce deadly smoke. Common unprotected lightweight building materials, flooring and open designs can cause fires to spread quickly.

If you woke up to the sound of a smoke alarm, would you have enough time to escape? If there were small children, older adults or people with disabilities, could they get out on their own?

## **Home fire sprinklers control a fire, so everyone can escape.**

Only the sprinkler closest to the fire activates. That stops the fire and deadly smoke from spreading. Fire sprinklers work automatically and immediately. It's like having a firefighter on duty 24 hours a day.





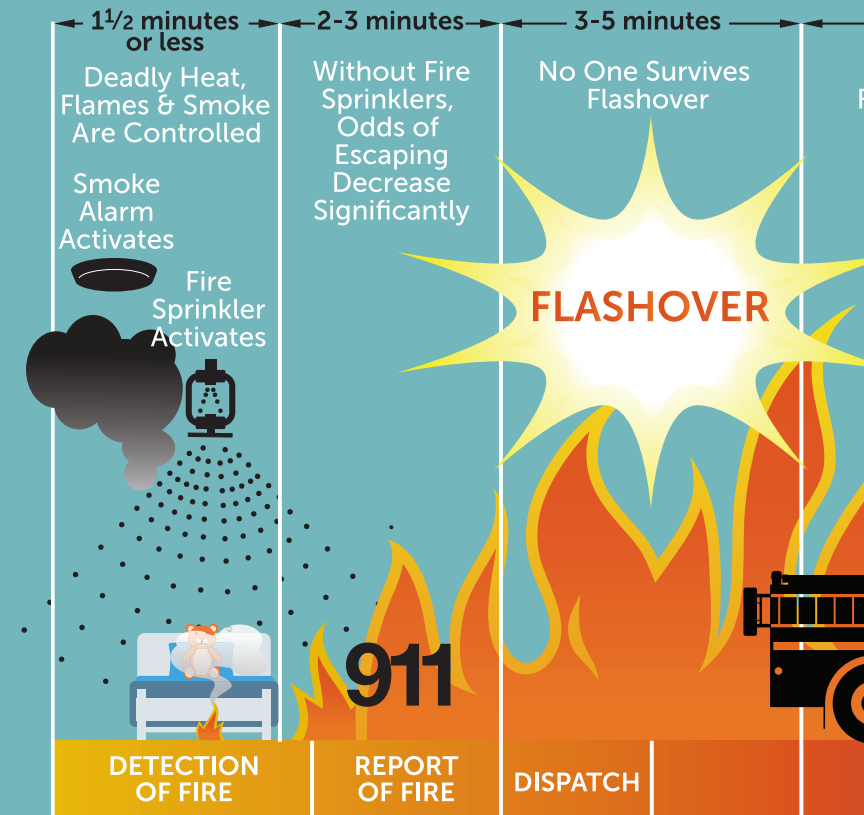
In a home fire  
you have less than  
**2** minutes to escape.



A fire sprinkler can  
control a fire in  
**1½** minutes or less.

## WITH FIRE SPRINKLERS

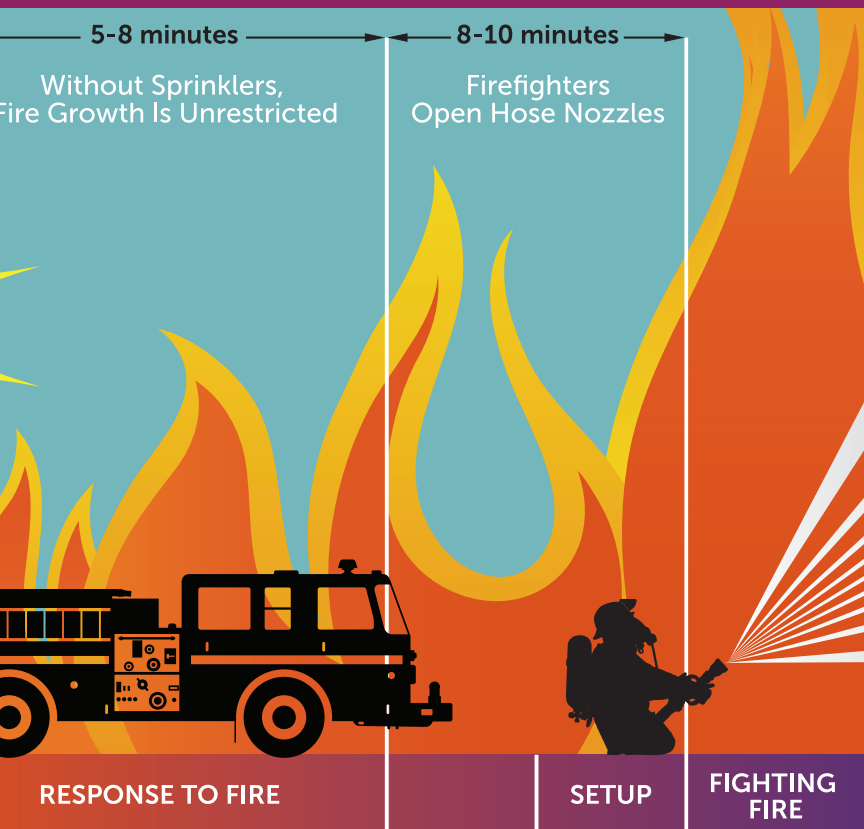
## WITHOUT FIRE SPRINKLERS



### With Fire Sprinklers

- Sprinkler closest to the fire activates
- Water controls the fire, heat and smoke
- Residents have time to safely escape
- Damage is limited

Fire sprinklers work so fast they often put out a fire before the fire department arrives.



## Without Fire Sprinklers

- Uncontrolled flames grow
- Flames, heat and gases spread
- Flashover may occur: igniting everything
- In two minutes or less, the fire becomes deadly

Sprinklers protect residents and firefighters.  
Sprinklers use far less water than fire department hoses.



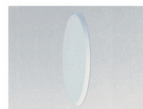
## Simple technology. Life-saving protection.

The home fire sprinkler contractor will customize the system design and layout. That ensures enough coverage for all living spaces.

In most cases, the sprinklers are connected to the household water. In some areas, they can connect to a well or a storage tank. If so, a pump may be needed.

The sprinklers are put on piping before framing is completed. Usually, this piping is strong, noncombustible plastic pipe known as CPVC or PEX. Just like plumbing systems, the sprinkler piping is hidden behind walls and ceilings.

There are several types of fire sprinklers made just for homes. They easily blend into walls or ceilings. The contractor can hide sprinklers behind flat plates. Some sprinkler companies offer custom painting.



*Pendent Sprinkler*

*Sidewall Sprinkler*

*Concealed Sprinkler*

*Concealed Sidewall  
Sprinkler*



Each sprinkler protects  
an area below, and when  
heated by fire, activates.

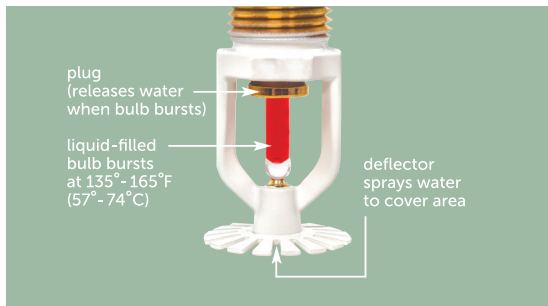
# How home fire sprinklers work.

Each sprinkler has its own temperature-sensitive part. This holds back the water. If a fire starts, the high heat from it causes that part to break open. The sprinkler closest to the fire will open when the temperature reaches between 135°-165°F (57°-74°C). Water will flow from the sprinkler.

In the vast majority of fires in sprinklered homes, just one sprinkler operates. The sprinkler controls the fire.

You may have seen movies where all the sprinklers flowed water at once. In real life, they don't work that way. Smoke alarms cannot cause sprinklers to activate – neither can smoke, cooking vapors or steam.

**Only the sprinkler closest to the fire activates, not the entire system.**



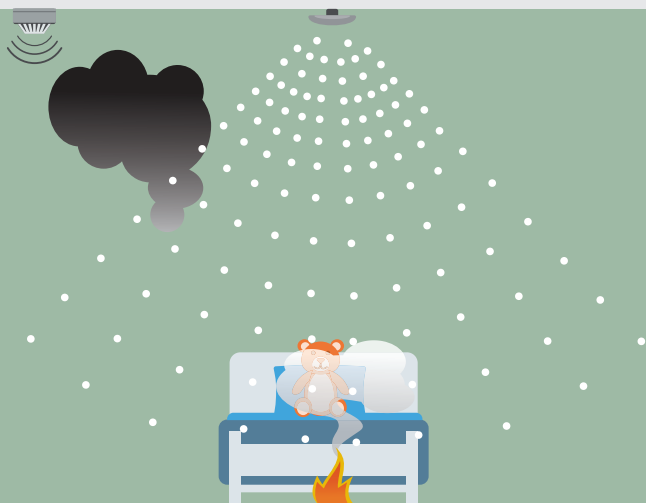
Only the sprinkler closest to the fire will activate, spraying water directly on the fire.

## Since I have smoke alarms, why do I need fire sprinklers?

Every home must have working smoke alarms. But remember, they can only detect smoke. To survive a fire, you must be able to quickly escape. You need fire sprinklers because they detect AND control or put out the fire. That gives you time to safely escape. The best protection from fire is having working smoke alarms on every level, fire sprinklers, and a fire escape plan that you practice.

## What about fire sprinkler water damage?

There is far less damage in a home fire with sprinklers than in an unsprinklered home fire. Sprinklers act fast, controlling the fire. Without sprinklers, fire, heat, smoke and the water from high-pressure fire department hoses cause greater damage. With sprinklers, water flow is 40 to 100 litres of water per minute, about 1/10th of fire hoses.





## Will my sprinklers freeze in the winter?

Sprinklers can be installed in any region or climate



Freezing is not a problem with proper installation. The national sprinkler standard provides guidance for proper installation in cold regions. That includes using appropriate

additional insulation and installing fire sprinklers inside interior walls.

Today's homeowners are safety conscious. We want to protect our families and pets and secure our investment. That's why 80% of millennials would prefer to buy a home with home fire sprinklers after learning how they work.\*

## Home fire sprinklers are affordable!

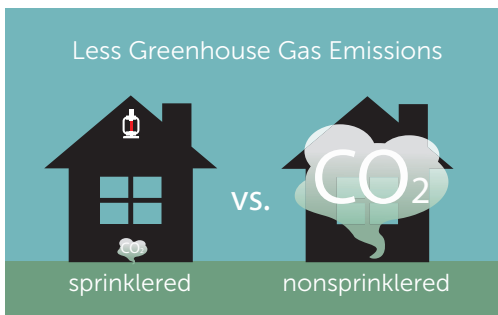
As demand has grown, the cost to install home fire sprinklers has dropped. Builders can often offset the cost to install sprinklers by taking advantage of incentives offered by municipalities.

Homes protected by fire sprinklers qualify for valuable discounts on most homeowner insurance premiums. Discounts vary by company and by province, so shop around to find the best discount in your area.

## Home fire sprinklers are good for the environment.

A study\*\*\* on the environmental impact of fires showed home fire sprinklers can:

- Reduce greenhouse gas emissions by 98%
- Reduce fire damage by up to 97%
- Reduce water usage to fight a home fire by as much as 91%
- Reduce water pollution



## Maintenance is a snap.

Home fire sprinklers require very little maintenance. A water flow test should be conducted at least twice a year. It's a simple test that can be done by the homeowner or a fire sprinkler contractor.

Check occasionally to make sure the water valve is turned on. (Keeping the valve padlocked in the "on" position is a good idea. Hang the key nearby.) Check the pipes and sprinklers to make sure nothing is hanging from them or obstructing them. Don't paint any part of your sprinkler system.

\*\*\*FM Global





## Where do I go from here?

You're ready to ask for home fire sprinklers, but you may have questions. Get more detailed information on HFSC's website [HomeFireSprinklerCanada.ca](http://HomeFireSprinklerCanada.ca) and follow HFSC on

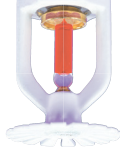


#AskForHomeFireSprinklers

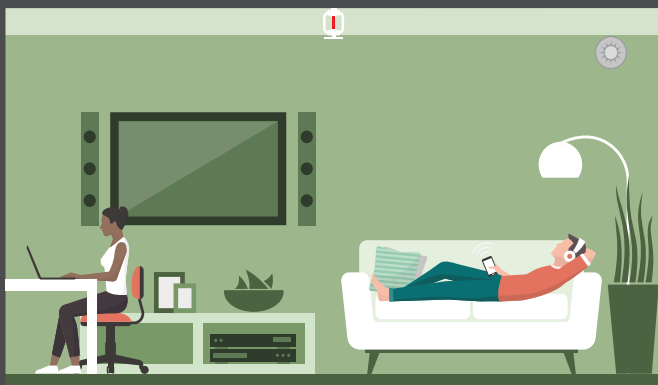
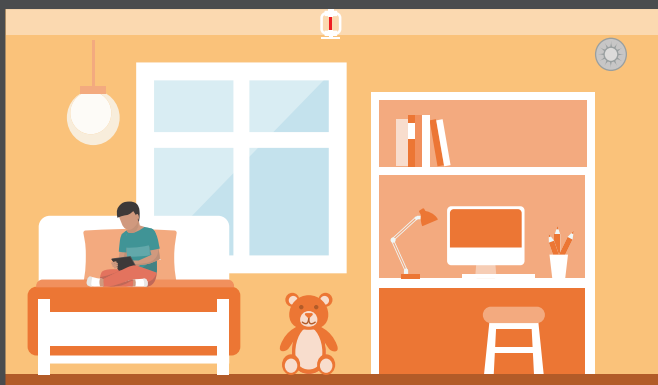


The Home Fire Sprinkler Coalition and HFSC Canada, the Canadian affiliate of HFSC is a national, nonprofit organization dedicated to educating the public about the dangers of home fires and the lifesaving value of fire sprinkler protection.





It's easy to live with  
home fire sprinklers.



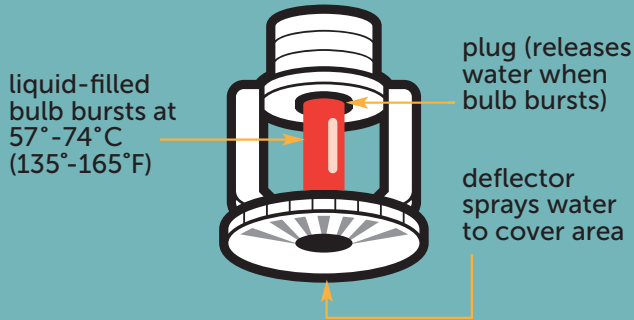
Do you know how  
to take care of them?



**Home Fire Sprinkler<sup>®</sup>**  
**COALITION CANADA**  
Protect What You Value Most™

[HomeFireSprinklerCanada.ca](http://HomeFireSprinklerCanada.ca)

## How Home Fire Sprinklers Work



Each sprinkler protects an area below, and when heated by fire, activates.



Only the sprinkler closest to the fire activates, spraying water directly on the fire.



## Fire Sprinklers Save Lives

When a fire starts, its high temperature causes the fire sprinkler closest to the fire to spray water. The water quickly controls deadly heat, smoke and flames while the fire is still small. That fast action prevents injuries and saves lives.

Because they are so effective at life safety and property protection, more houses today are being built with fire sprinklers.

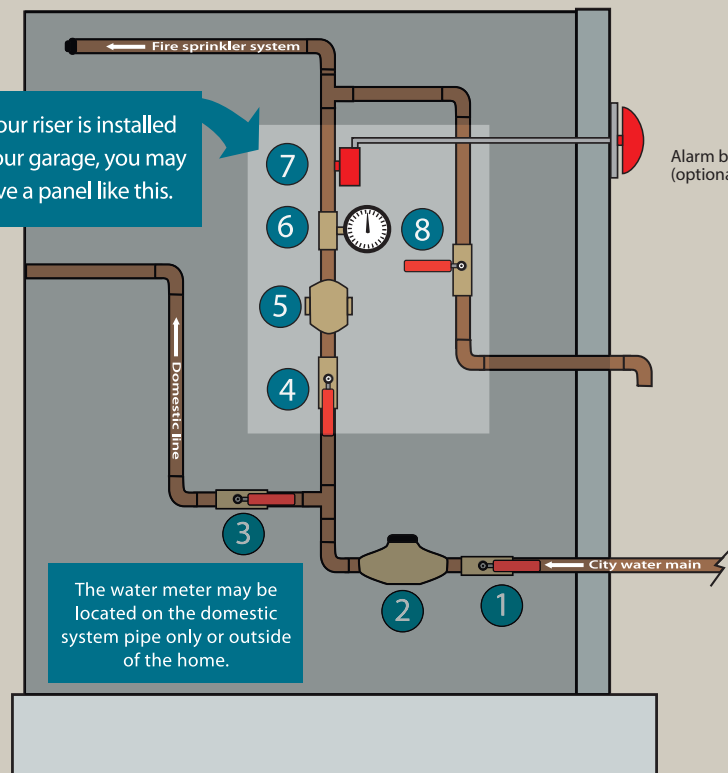
## Smoke Will Not Set Off Your Fire Sprinklers

No matter what you have seen in movies, fire sprinklers do not flow water all at once. They cannot be set off by smoke.

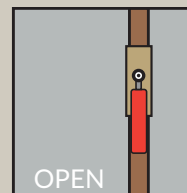
Each fire sprinkler has a glass or metal trigger. Only the heat of a fire can make it work. Studies have showed that 90% of the time only one fire sprinkler is needed to control a home fire.



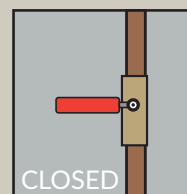
# Know Your Home Fire Sprinkler System



FOR WATER TO FLOW THROUGH THE PIPES THE CONTROL VALVES MUST BE IN THE OPEN POSITION.



CONTROL VALVES ARE CLOSED (TURNED OFF) WHEN PERPENDICULAR (AT A RIGHT ANGLE) TO THE PIPE.



1. Main Control Valve
2. Water Meter
3. Domestic Control Valve
4. Sprinkler Control Valve
5. Check Valve or Backflow Valve
6. Pressure Gauge
7. Flow Switch for Alarm
8. Flow Test Control Valve (Inspector Test Valve)

## A System of Fire Safety

### You Need Working Smoke Alarms and An Escape Plan

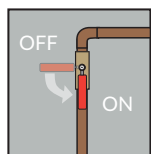
Even homes with fire sprinklers need working smoke alarms installed on each level. Plan how to get out if there is a fire and practice with occasional fire drills.

Test your smoke alarm at least once a month. Press the test button to be sure the alarm is working. Replace all smoke alarms in your home every 10 years.\*

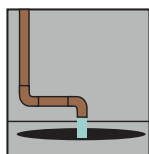
\* NFPA



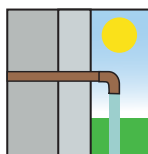
## How to Do a Flow Test\*



The flow test control valve is on when it is in line with the pipe. It is off when it is perpendicular to the pipe.



Water may run into a sump pump in the basement.



Water may run outside the home.

\*NFPA 13D recommends conducting a flow test two times a year.



## Fire Sprinklers Are Easy to Live With

Fire sprinklers are very reliable. You'll be happy to learn that your fire sprinkler system needs little maintenance. The National Fire Protection Association (NFPA) recommends these simple steps:

### Once a Month:

Check to be sure control valve is open.

If you have a water storage tank, make sure it is full.

Test the pump (if you have one), to be sure it starts.

### Twice a Year:

If you have a water flow device, test it and your monitoring service (if any).

### Year-Round:

Look at all your fire sprinklers and inspect any visible pipes to make sure nothing is hanging from them. Make sure nothing is obstructing any fire sprinkler.

## Good Practice

### Do Not Hang Anything from the Fire Sprinkler

Plants, clothing and other hanging items can damage or break the bulb on the fire sprinkler. If that happens, water will flow from the fire sprinkler.



### Protect Fire Sprinklers from Bumps

Be careful when carrying ladders and other large items. Don't bump fire sprinklers or exposed pipes. Teach children not to touch or play with fire sprinklers.



### Do Not Paint the Fire Sprinkler or the Cover

Paint may stop the fire sprinkler from working correctly. It may take longer for the fire sprinkler to go off or it may not work at all.

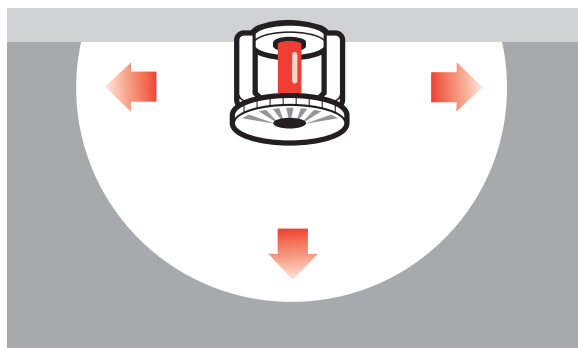


While doing messy work, such as painting, cover the fire sprinklers with plastic. Important: Remove the plastic as soon as you are finished.

### Give Your Fire Sprinklers Space

If a fire breaks out, the fire sprinkler protects your family by spraying water over the fire. Do not block wall mounted sprinklers with tall furniture or wall hanging artwork. Hang lamps and plants away from ceiling fire sprinklers.

### When hanging pictures or items on the wall, consider location of pipes behind the wall





# Find Out More

## Living With Sprinklers Hang Tag

You may have a tag attached to your fire sprinkler controls that explain the parts of your system and how to take care of them. If not, you can download it at **HomeFireSprinkler.org/living-with-fire-sprinklers**. There is no charge.



## HomeFireSprinklerCanada.ca

HFSC Canada has all the information you need about home fire sprinklers. You'll find answers to your questions, videos, and brochures. There is no charge to you.



HomeFireSprinklerCanada.ca

# Know Your Home Fire Sprinkler System

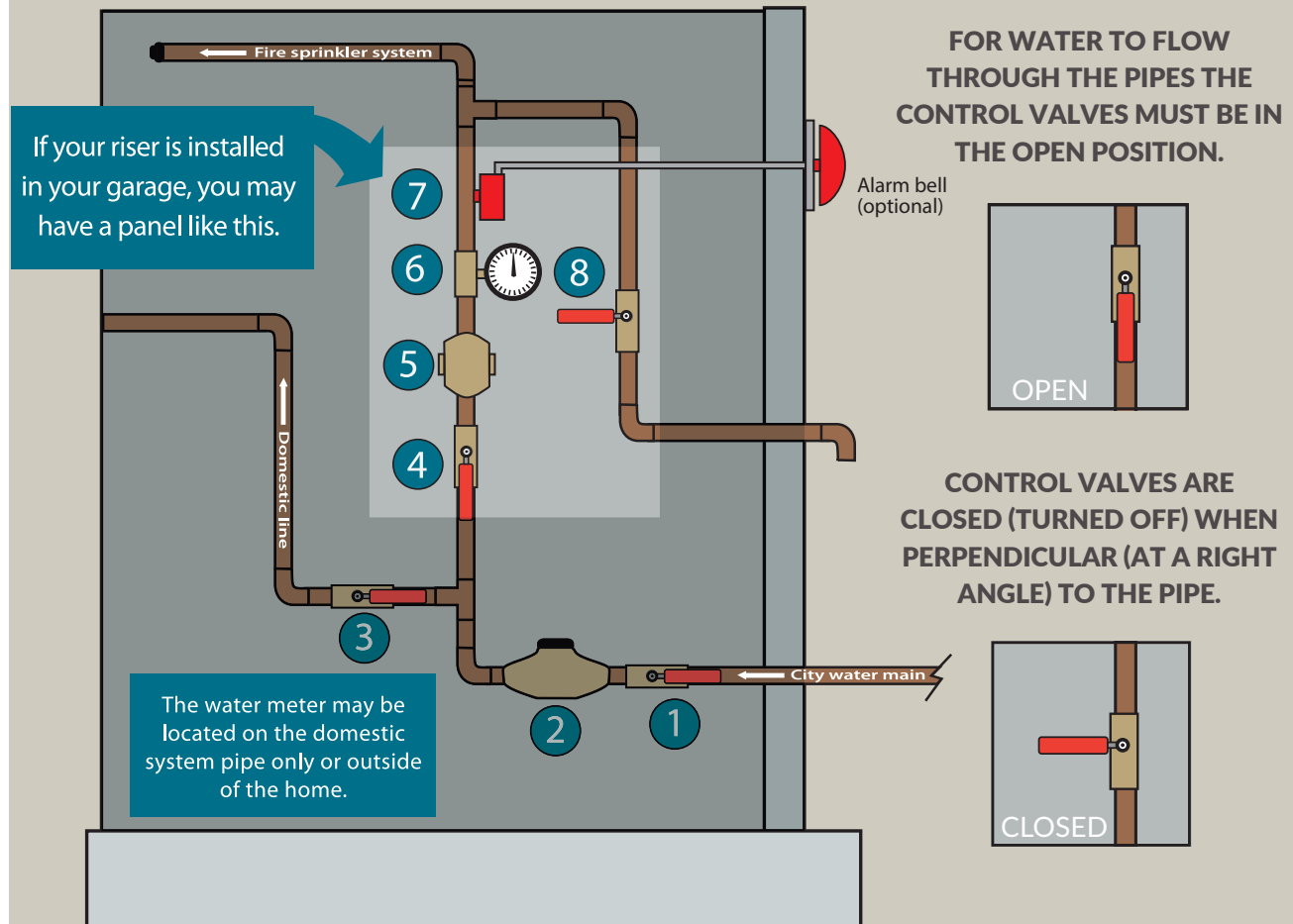
The water main coming into your home supplies the water for the fire sprinkler and the domestic (plumbing) systems.

A main water control valve (1) is on the pipe that supplies water to the sprinkler system. You may also have a control valve on your domestic (3) and sprinkler (4) pipes. The water flows through a check valve (5), or if required by plumbing code, a backflow valve. The water meter (2) is located on the domestic system pipe only or outside of the home.

## WARNING

Turning off the water to your home will also turn off the water to your fire sprinkler system. Contact your fire sprinkler contractor if you have questions.

Contractor /Fire Department  
Contact Information



1. Main Control Valve
2. Water Meter
3. Domestic Control Valve
4. Sprinkler Control Valve

5. Check Valve or Backflow Valve
6. Pressure Gauge
7. Flow Switch for Alarm
8. Flow Test Control Valve (Inspector Test Valve)

# Keep Your Fire Sprinklers Working To Protect Your Family and Home

**DO NOT HANG** anything on fire sprinklers or pipes. Even lightweight items can damage sprinklers.

**PROTECT FIRE SPRINKLERS FROM BUMPS.** Be careful when carrying ladders and other large or tall items. Don't bump fire sprinklers or exposed pipes.

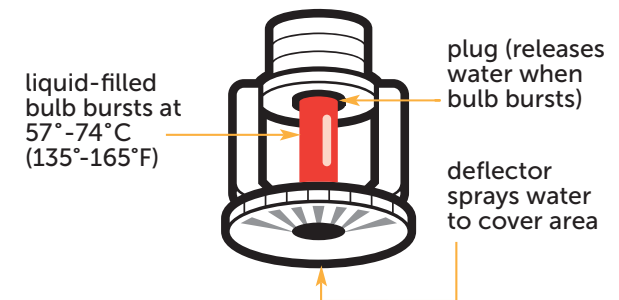
**DO NOT PAINT** the fire sprinkler or the cover. While doing messy work, such as painting, cover the sprinklers with plastic. Remove the plastic as soon as you are finished painting.

**DO NOT BLOCK** your fire sprinklers. Keep pictures and large/tall furniture away from sprinklers on the walls. Hang lamps and plants away from ceiling fire sprinklers.

**CONSIDER LOCATION OF PIPES BEHIND THE WALL.** Avoid using nails or screws to hang pictures on the wall near the sprinkler pipe.

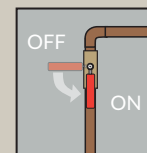
**TEACH CHILDREN** not to touch or play with sprinklers or exposed pipes.

Your home has a built-in fire sprinkler system. If you have a fire, the high heat will activate the sprinkler closest to it. Water will control it or put it out so you can escape.

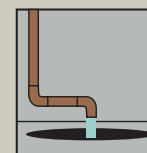


## HOW TO DO A FLOW TEST\*

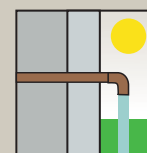
1. Find your flow test control valve. It may be labeled main drain, inspector test or test and drain. The valve is located on the sprinkler drain and test connection.
2. If your sprinklers are connected to a central alarm, inform the alarm monitoring company or fire department that you are going to do a test.
3. Slowly turn the flow test control valve to the "on" position (bring the valve in line with the pipe). This will start the water running. Let the water run for about 90 seconds. If your system has an alarm, you will hear it as the water is running.
4. You may see a drop in water pressure upon opening the valve. The pressure should stabilize for the 90 seconds it is left open. The stream should be steady and not choppy with air pockets after the initial opening. Water should look relatively clear.
5. Slowly turn the flow test control valve to the "off" position (the valve handle will be perpendicular to or make a right angle to the pipe).
6. Write down the date you tested your system.



The flow test control valve is on when it is in line with the pipe. It is off when it is perpendicular to the pipe.



Water may run into a sump pump in the basement.



Water may run outside the home.

Write down the date of each test here:

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



HomeFireSprinklerCanada.ca

**CONTACT YOUR FIRE SPRINKLER CONTRACTOR IF YOU HAVE QUESTIONS.**

\*NFPA 13D recommends conducting a flow test two times a year.

# MARKETING HOMES PROTECTED BY FIRE SPRINKLER SYSTEMS

**A GUIDE FOR REAL ESTATE PROFESSIONALS**



**Home Fire Sprinkler®**

**C O A L I T I O N**

Protect What You Value Most™

**HomeFireSprinkler.org**

## **HOME FIRE SPRINKLER SYSTEMS – A GROWING TREND THAT’S HERE TO STAY**

If you’re marketing a home with a fire sprinkler system, you’ve got a great selling feature. The nonprofit Home Fire Sprinkler Coalition (HFSC) wants to help you make the most of it.

Each year, fires kill or injure tens of thousands of people, more than 80% of them in homes. Among those most at risk are young children and older adults. Fire sprinklers are comparable to having the protection of a firefighter on duty 24 hours a day.

### **Fire Sprinklers Save Lives**

Fire sprinkler systems provide the ultimate fire protection. They control or extinguish fires fast, limiting the spread of deadly heat and toxic smoke. That saves lives and protects property, family heirlooms and other valuables.

### **If you haven’t yet listed a home with fire sprinklers, you will soon.**

Fire sprinklers have been saving lives for more than a century, but now reduced labor costs and low-profile sprinklers have helped make fire sprinklers affordable for homes. And because fire sprinklers simply have no life safety equal, national codes, which have been adopted by some states, now require sprinklers in new home construction. Similar local ordinances are in place in hundreds of jurisdictions across the U.S. and Canada.

HOMEOWNERS WILL ALSO FIND THAT A FIRE SPRINKLER SYSTEM CAN PROVIDE A GENEROUS DISCOUNT ON INSURANCE. A RECENT POLL OF PROPERTY AND CASUALTY INSURERS BY HFSC SHOWED THAT DISCOUNTS AS HIGH AS 35% ARE OFFERED FOR HOMES WITH SPRINKLERS. BECAUSE DISCOUNTS VARY, HOMEOWNERS SHOULD SHOP AROUND FOR THE BEST DISCOUNT.



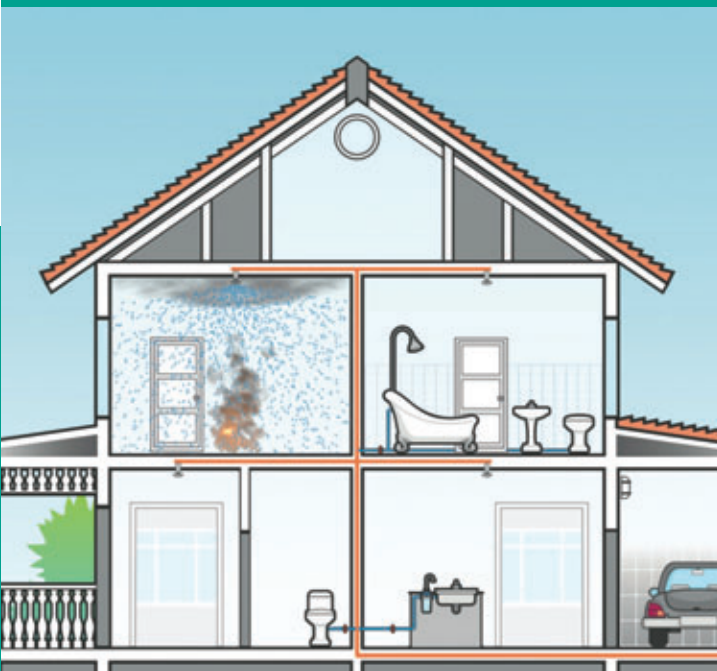


## HOW HOME FIRE SPRINKLERS WORK

FIRE SPRINKLERS ARE LINKED BY A NETWORK OF PIPING, TYPICALLY HIDDEN BEHIND WALLS AND CEILINGS AND USUALLY DRAWING UPON HOUSEHOLD WATER SOURCES.

EACH SPRINKLER PROTECTS AN AREA BELOW IT, AND WHEN HEATED BY FIRE, ACTIVATES.

ONLY THE SPRINKLER CLOSEST TO THE FIRE WILL ACTIVATE, SPRAYING WATER DIRECTLY ON THE FLAMES.



## FIRE SPRINKLERS ADD VALUE

By being ready with fire sprinkler facts, you can keep buyers focused on the assets – life safety, property protection and increased value – and sell the home faster.

Despite all the good things about fire sprinklers, prospective buyers are likely to have heard inaccurate information about fire sprinklers and be concerned by incorrect special effects they've seen in movies.

### **Fire sprinklers do not go off all at once.**

They are individually activated by the heat from a fire, and 90% of fires are stopped by a single sprinkler.

Fire sprinklers protect the home 24 hours a day, automatically. Fire sprinklers are linked by a network of piping, primarily a strong, non-combustible plastic pipe, hidden behind walls and ceilings. Most fire sprinkler systems operate off the household water main. When water pressure is a problem, the system is fed by a pump and storage tank.



*Sidewall Sprinkler*



*Concealed Sprinkler*



*Pendent Sprinkler*

There are several types of fire sprinklers made for homes; some are for installation on walls and others in ceilings. They can even be concealed by a plate. Home fire sprinklers are much smaller and lower-profile than the types of sprinklers used in commercial properties.

Each sprinkler has a heat-sensitive element. A fire sprinkler individually activates when the temperature reaches between 135°-165°F. Fire sprinklers control the fire while the fire department arrives.

## HARRIS INTERACTIVE® SURVEY FINDINGS

- 69% OF HOMEOWNERS SAY FIRE SPRINKLERS INCREASE A HOME'S VALUE.
- 38% SAY THEY WOULD BE MORE LIKELY TO PURCHASE A NEW HOME WITH FIRE SPRINKLERS THAN WITHOUT THEM.
- 45% SAY A SPRINKLERED HOME IS MORE DESIRABLE THAN AN UNSPRINKLERED HOME, MOST OFTEN BECAUSE OF ADDED SAFETY PROVIDED BY FIRE SPRINKLERS (51%).
- 63% OF HOMEOWNERS ARE AWARE FIRE SPRINKLERS ARE AVAILABLE FOR HOME USE.
- HOMEBUILDERS WHO OFFER FIRE SPRINKLERS ARE SEEN BY HOMEOWNERS AS BEING "SAFETY CONCERNED" (70%), "INNOVATIVE" (52%) AND "CARING" (51%).

Smoke, cooking vapors or steam cannot cause the sprinklers to activate – **sprinklers only operate in response to the high heat of a fire.**

### **Maintenance is a Snap**

Fire sprinklers require very little maintenance. It's essential to keep the water valve turned on, so a simple visual inspection should be done routinely to ensure the valve is open. (Keeping the valve padlocked in the "on" position is a good idea.) And, inspect the pipes and sprinklers occasionally to make sure nothing is obstructing them.

Every home sprinkler system should have a water flow test on a regular basis. It's a simple test that can be done by the homeowner or a fire sprinkler contractor.

# THE ADVANTAGES OF A HOME FIRE SPRINKLER SYSTEM

## With Fire Sprinklers

- The sprinkler closest to the fire activates
- Water contains or extinguishes fire
- Residents have time to safely escape
- Surrounding rooms are protected from fire and water damage

## Without Fire Sprinklers

- Flames grow and spread
- Heat and toxic gases spread room to room
- In as few as three minutes, the fire becomes deadly
- Flashover occurs and the gases and combustible materials burst into flames

It typically takes fire departments nine to 12 minutes after a fire has started to arrive. By then, firefighters will have to use high-pressure hoses, applying water at 250 gallons per minute. The home may be lost and the family displaced.

Fire sprinklers work so fast that they often put out a fire before the fire department arrives.

IN SCOTTSDALE, ARIZONA, A 15-YEAR STUDY OF HOME FIRE SPRINKLERS SHOWED THAT THE AVERAGE LOSS PER SPRINKLERED FIRE INCIDENT WAS \$2,166, COMPARED TO MORE THAN \$45,000 FOR UNSPRINKLERED HOMES.



## KNOW THE MYTHS ABOUT FIRE SPRINKLERS

Be prepared to “bust” these common myths about home fire sprinklers:

### **Myth: If one goes off, they all go off.**

Fact: Fire sprinklers activate independently; only the sprinkler closest to the fire will activate.

### **Myth: Sprinklers will leak.**

Fact: Fire sprinkler mishaps are generally no more likely or severe than home plumbing system problems.

### **Myth: Water damage from sprinklers is worse than fire damage.**

Fact: A fire sprinkler flows 10 to 26 gallons of water per minute. The property loss in a sprinklered home fire is a small fraction of the typical loss in an unsprinklered home fire.

### **Myth: Sprinklers will freeze in winter.**

Fact: Freezing is not a problem when the home fire sprinkler system is correctly installed to the requirements of NFPA 13D. Methods include installing sprinkler piping in interior walls, avoiding placement of pipes in unheated attics, or if installing in attics, using proper insulation.

### **Myth: The fire department will be able to put out the fire and save the contents of a home.**

Fact: In the nine to 12 minutes a fire department needs to respond, an uncontrolled fire will grow and spread through the home, causing tremendous smoke and fire damage.

### **Myth: A home with smoke alarms doesn't need fire sprinklers.**

Fact: Smoke alarms are essential in every home. But they can only detect a fire. Fire sprinklers detect the fire and automatically control it, saving lives and property.



# MAKE THE FIRE SPRINKLER SYSTEM A SELLING POINT

Promote the benefits of living in a home protected by fire sprinklers, just as you would a security system, central air, custom kitchen or master suite.

Be sure to feature fire sprinklers in listing materials, advertising, open houses, virtual tours and other presentations.

Contact a local home fire sprinkler contractor or your local fire department to answer questions for prospective buyers and home inspectors.

## HFSC MEMBERS



FEMA

Learn more at **HomeFireSprinkler.org**.

HFSC offers a variety of free materials online and in hard copy that will help you educate prospective buyers.



**Home Fire Sprinkler**

**COALITION**

Protect What You Value Most™

# The truth about home fire sprinklers

*Fires in the home pose one of the biggest threats to the people of your community. In 2013, U.S. fire departments responded to an estimated 1,240,000 fires. These fires caused 3,240 civilian deaths. Of those deaths, 83% occurred in the home, the very place people feel most safe.*

*All national model safety codes include fire sprinklers as a minimum safety requirement for new home construction. Homes built without sprinklers lack a crucial element of fire protection.*

*Because sprinklers have been around for so long, the evidence is clear that they are a proven way to protect lives and property against fires at home – responding quickly and effectively to the presence of a nearby fire, and requiring minimal maintenance by homeowners.*

## Fast Facts

- In 2013, there was a civilian fire death every 2 hours and 42 minutes in the United States.
- The risk of dying in a home fire decreases by about 80% if sprinklers are present.
- Home fire sprinklers reduce direct property damage by about 70%.
- The cost of installation averages \$1.35 per sprinklered square foot for new construction.

**MYTH:** *“A smoke alarm provides enough protection.”*

**FACT:** Smoke alarms alert occupants to the presence of danger, but do nothing to extinguish the fire. In a fire, sprinklers can control and may even extinguish a fire in less time than it would take the fire department to arrive.

**MYTH:** *“Newer homes are safer homes.”*

**FACT:** In a fire, lightweight construction materials, used in many modern homes, burn quicker and fail faster. New homes often contain modern furnishings made of synthetic materials which, in a fire, can create a highly toxic environment, greater fuel load, and faster fire propagation.

**MYTH:** *“Home fire sprinklers often leak or activate accidentally.”*

**FACT:** Leaks are very rare, and are no more likely than leaks from a home's plumbing system. A sprinkler is calibrated to activate when it senses a significant heat change. They don't operate in response to smoke, cooking vapors, steam, or the sound of a smoke alarm.

**MYTH:** *“When a fire occurs, every sprinkler will activate and everything in the house will be ruined.”*

**FACT:** In the event of a fire, typically only the sprinkler closest to the fire will activate, spraying water directly on the fire, leaving the rest of the house dry and secure. Roughly 85% of the time, just one sprinkler operates.

**MYTH:** *“Sprinklers are unattractive and will ruin the aesthetics of the home.”*

**FACT:** New home fire sprinkler models are very unobtrusive, can be mounted flush with walls or ceilings, and can be concealed behind decorative covers.

**MYTH:** *“Sprinklers are not practical in colder climates, as the pipes will freeze and cause water damage.”*

**FACT:** With proper installation, sprinklers will not freeze. NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, includes guidelines on proper insulation to prevent pipes from freezing.

**MYTH:** *“The water damage caused by sprinklers will be more extensive than fire damage.”*

**FACT:** In a fire, sprinklers quickly control heat and smoke. Any water damage from the sprinkler will be much less severe than the damage caused by water from firefighting hose lines. Fire departments use up to 10 times as much water to extinguish a home fire as fire sprinklers would use to extinguish the same fire.

## Free information about home fire sprinklers



The Fire Sprinkler Initiative (FSI), a project of the National Fire Protection Association, aims to increase the number of new, one- and two-family homes protected by sprinklers. The FSI website offers free research and resources to help advocates promote the fact that sprinklers are necessary in new construction.  
[www.firesprinklerinitiative.org](http://www.firesprinklerinitiative.org)



The Home Fire Sprinkler Coalition (HFSC) is a leading resource for accurate, noncommercial information and materials about home fire sprinklers for consumers, the fire service, builders, and other professionals. HFSC offers free educational materials about sprinklers and how they provide affordable protection to your community.  
[www.homefiresprinkler.org](http://www.homefiresprinkler.org)

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

**One Stop Data Shop  
Fire Analysis and Research  
June 2011**



**National Fire Protection Association  
Fire Analysis and Research Division**

For more information about the National Fire Protection Association, visit [www.nfpa.org](http://www.nfpa.org) or call 617-770-3000. To learn more about the One-Stop Data Shop go to [www.nfpa.org/osds](http://www.nfpa.org/osds) or call 617-984-7443

Copies of this analysis are available from:

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One-Stop Data Shop  
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Quincy, MA 02169-7471  
[www.nfpa.org](http://www.nfpa.org)  
e-mail: [osds@nfpa.org](mailto:osds@nfpa.org)  
phone: 617-984-7443

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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*.

The incidents that follow include one- and two-family homes and apartments. 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.

FIDO is the source for articles published in the "Firewatch" column of the *NFPA Journal* and many of the articles in this report NFPA's Fire Incident Data Organization (FIDO) identifies significant fires through a clipping service, the Internet and other sources. Additional information is obtained from the fire service and federal and state agencies.

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

Automatic sprinklers are highly effective and reliable elements of total system designs for fire protection in buildings. According to the 2009 American Housing Survey, in 2009, 4.6% of occupied homes (including multi-unit) had sprinklers, up from 3.9% in 2007, and 18.5% of occupied home built in the previous four years had sprinklers.

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



## ONE-AND TWO-FAMILY HOMES

### **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

### **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.

# BENEFITS of RESIDENTIAL FIRE SPRINKLERS:

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Prince George's County  
15-Year History with its  
Single-Family Residential Dwelling  
Fire Sprinkler Ordinance



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Prepared by Steve Weatherby  
August 2009

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Produced in cooperation with the Home Fire Sprinkler Coalition, University of Maryland University College, Prince George's County Fire Department and the Maryland State Fire Marshal's Office.



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Prince George's County Fire/EMS Department**

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## Executive Summary

In 1992, Prince George's County in Maryland enacted an ordinance mandating the installation of automatic fire sprinkler systems in new one- and two-family structures. Through a partnership with the Home Fire Sprinkler Coalition (HFSC), the Maryland State Fire Marshal's Office, the Prince George's County Fire Department, and the University of Maryland University College, a study was conducted to review Prince George's County's experience with this ordinance over the 15-year period of 1992-2007.

The most obvious benefit of the ordinance is the direct impact that home fire sprinkler systems have made in saving lives and reducing fire-related injuries.

From 1992-2007, there were 101 fire deaths and 328 civilian injuries in single-family or townhouse fires that were not protected with fire sprinkler systems. No fire deaths occurred in sprinklered-structure fires during the period studied, and there were only six civilian injuries.

Property protection is another important benefit. Looking at the average loss per event in a structure that did not have a residential sprinkler system installed, the damages averaged \$9,983 per incident, and \$49,503 per incident when there was a fatality. The average loss for a single-family/ townhouse structure protected by fire sprinklers was \$4,883 per event. Having sprinklers cut the property loss by almost one-half.

Prince George's County experienced 13,494 single-family or townhouse fires during the period,

with an average of 900 fires per year. The County's total fire loss for single-family/townhouse structures topped \$134 million, averaging almost \$9 million per year. Prince George's County's data indicates that more than 45,000 permits were issued for single-family/townhouse structures from 1992 through 2007, with an average issuance of 3,019 permits per year.

During the period studied, Prince George's County Fire Department (PGFD) recorded 245 sprinkler activations in single-family and townhouse structure fires. In the 245 activation incidents, PGFD recorded no lives lost and only six civilian injuries. PGFD reports 446 residents were present in the structures during the time of sprinkler activation. More than 80 of those residents were present when sprinklers activated during the hours of 10:00 p.m. to 5:59 a.m., which is the most common time for fire deaths to occur, according to NFPA fire data. In the 245 activation incidents, the PGFD estimated the fire loss at \$1,352,820, compared to a total potential loss of \$42,578,420.

The cost impact to developers/builders was determined by interviewing several Prince George's County sprinkler contractors, who indicated that the per-square-foot cost to install a fire protection system in a single-family home in the County has decreased over the years to under \$2.00 per square foot. This is consistent with a recent NFPA study that found the average cost of installation nationally to be \$1.61 per sprinklered square foot. ❖



## Demographics

Prince George's County, Maryland, is roughly 500 square miles and is situated in close proximity to Washington, DC. Prince George's County has a mixture of light industrial, retail, residential and institutional structures that are protected by the county's fire department. Prince George's County is known for providing affordable

living for many people who commute to work in the Washington, DC area(1).

Most of Prince George's County's population is concentrated in the northern two-thirds of the County(1). The southern part of the County is predominantly rural(1) but urban sprawl has pushed development into these areas, which are affected by Prince George's County's residential sprinkler code. According to Census figures(6), the average population in the County from 1992-2006 was 846,000 residents. In 2007, it was 828,770. The overall population of Prince George's County has grown 11 percent on average since the enactment of the residential sprinkler ordinance(6).

The average median income in Prince George's County in 2004 was \$55,129.00(6). The percentage of home ownership in Prince George's County is 61.8 percent, which is almost 6 percent less than the average for the State of Maryland and in 2008 the median value of a single-family dwelling in Prince George's County is \$145,600(6).



YEAR	POPULATION	% CHANGE	No. of Permits
1992	740,390	N/A	3680
1993	743,156	1.00%	3858
1994	751,282	1.01%	2418
1995	757,795	1.00%	4344
1996	764,644	1.00%	3635
1997	769,840	1.00%	2920
1998	776,907	1.00%	2664
1999	781,781	1.00%	2927
2000	803,291	1.02%	2506
2001	815,203	1.01%	2467
2002	824,365	1.01%	3068
2003	830,513	1.00%	2088
2004	835,021	1.00%	2233
2005	838,156	1.00%	2782
2006	834,660	-1.00%	2233
2007	828,770	-1.00%	1462
		<b>11.05%</b>	<b>45,285</b>

Source: US Census Bureau Estimates

Source: Prince George's County Planning Department Estimates

Since 1992, Prince George's County has issued more than 45,285 building permits for one- and two-family dwellings. The average yearly issuance of one- and two-family dwelling building permits is 3,019.

The Prince George's County Fire Department has 44 stations with a career staff of more than 800 individuals and a volunteer force of 2,000 members. There are 1,200 active emergency responders. In 2007, Prince George's County Fire Department responded to nearly 127,000 calls for service(7). ❖

# Prince George's County Residential Sprinkler Ordinance

In 1987, Prince George's County signed a mandatory fire sprinkler law for all residential structures. This law covered every type of residential dwelling from multi-family structures to townhomes to one- and two-family structures.



This law was to be phased in over the next five years with the final phase requiring all newly constructed single-family structures to be protected by an NFPA 13D fire sprinkler system(1).

The ordinance was phased as follows: one- and two-family model homes were to feature residential fire sprinklers by February 1, 1988. All newly constructed multi-family structures were to have residential fire sprinklers installed by January 1, 1989. In the final phase, January 1, 1992, all newly constructed single-family homes were to be fully protected by an NFPA 13D residential sprinkler system (1). ❖



# Statistical Comparisons

This report consolidates the data collected from Prince George's County Fire Department. The fire department tracked each sprinkler activation by dispatching an on-duty Fire Marshal to the scene. The Fire Marshal was required to complete a Sprinkler Activation Report, which included the type of structure, documentation of the number of sprinklers activated, the potential cause, the type of sprinkler system, the room(s) involved, total dollar value of the property, the estimated dollar loss, and the number of residents present in the structure during activation.

From the years 1992 to 2007, Prince George's County recorded a total of 13,494 single family/townhouse fires and 245 of those were protected by fire sprinkler systems. In those 245 incidents, no deaths were recorded and only six injuries were reported. In the 13,249 fires that occurred in homes that were not protected by sprinklers, 101 residents were killed and 328 were injured. Fire deaths in residential dwellings made up 89% of the fire deaths in Prince George's County during the years.

Four hundred forty-six persons were present in the structures at the time of sprinkler activation. According to the NFPA, the most vulnerable time of day for home fire deaths is between the hours of 10:00 p.m. and 6:00 a.m. Eighty-one occupants were present in their homes during this time period. Another 294 residents were home at the time of sprinkler activation between the hours 6:00 a.m. and 9:59 p.m. Seventy-one residents were home during activation at unrecorded times.

During the study period, there were 45 recorded residential fire deaths between the hours of 6:00 a.m. and 9:59 p.m., 38 recorded residential fire deaths between 10:00 p.m. and 5:59 a.m. and 18 recorded residential fire deaths where the timeframe was not known in residences without sprinklers.

## Fire Deaths and Fire-Related Injuries



These findings clearly show the benefits of an automatic sprinkler system. The most compelling data is that no deaths occurred in any fire where a fire sprinkler system was present. In a tragic contrast, 101 people lost their lives to fires in nonsprinklered home fires during the same period. When one looks at the large number of residents present during fires in sprinklered homes, the protective value of home fire sprinklers is underestimated even more. These residents would have been at a much higher risk of death due to flame and smoke spread had their residences not been sprinklered.

In some of the cases analyzed, residents were impaired or asleep at the time of the fires and were awakened by fire crews. In these instances, the sprinkler system's ability to keep the fire controlled with just one or two sprinklers allowed responding fire crews to rescue the residents in a

## Statistical Comparisons *(continued)*

less hazardous environment. In 96 percent of the 245 reported fire-related sprinkler activations only one or two sprinklers operated.

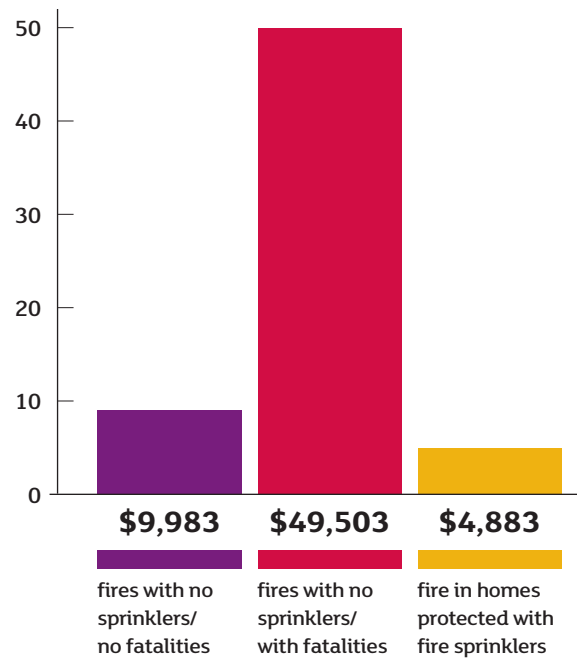
Another important advantage of home fire sprinklers is property protection. From the years 1992 to 2007, Prince George's County Fire Department recorded fire loss for single-family homes and townhouses at \$134,711,199. Property loss from the 245 activated sprinkler events was \$1,352,820. The average loss per event in a structure that did not have a sprinkler system installed averaged \$9,983 per incident. The average fire loss in a structure that was not protected by a sprinkler system and resulted in a fatality came to \$49,503. The average loss for a sprinklered single-family/townhouse structure was \$4,883 per event. (See chart.) This cut the property loss by almost one-half in single-family and townhouse residences and is at least 10 times less than a fatal non-sprinklered residential fire.

The average water output of a residential fire sprinkler is between 13-15 gallons per minute. The average flow from a fire hose is 95 to 200 gallons per minute, under high pressure. Obviously, the activation of a fire sprinkler will create far less water damage.

Another benefit to the residents of Prince George's County is lower insurance costs for homeowners. Having a home fire sprinkler system helps protect the structure and its contents, lowering the replacement risk of the dwelling. When the sprinklered housing stock increases, the overall fire loss will decrease, which potentially decreases the insurance premiums for everyone.

The cost of installing a residential fire sprinkler system has long been debated. A 2008 study by the Fire Protection Research Foundation showed

**Average Property Loss Per Incident**



that the national average cost for fire sprinkler installation is \$1.61 per sprinklered square foot. In the report, the average median sprinkler-protected area of a new construction single-family home is 4,124 square foot, which makes the cost of a full NFPA 13D system \$6,640 for an average sprinklered structure(4). The Research Foundation study used Prince George's County as one of Its models and showed that within five years of the ordinance being enacted, the average installation cost dipped below \$1.00 per square foot. At this price point, sprinkler installation should be less than a 5 percent increase over the entire cost of construction for the single-family structure. ❖

## Conclusion

This study shows numerous benefits that residential fire sprinklers provide to the public. Prince George's County's residential sprinkler ordinance has had a significant impact on life safety and reduction of property damage. Prince George's County's experience of suffering no loss of life in a sprinklered home should provide ample justification for other jurisdictions throughout the country to pass similar ordinances. ❖

## References

- 1 **Residential Sprinklers: One Community's Experience Twelve Years after Mandatory Implementation**  
*Fire Chief Ron Siarnicki, Prince George's County Fire Department, January 2001.*
- 2 Source: **National Fire Protection Association: Fire Loss in the U.S. 2007** and **USFA's Firefighter Fatalities in the United States in 2007**
- 3 **Automatic Sprinklers: A 10-Year Study**  
*City of Scottsdale, AZ, Rural/Metro Fire Department and the Home Fire Sprinkler Coalition, 1997.*
- 4 **Home Fire Sprinkler Cost Assessment**  
*The Fire Protection Research Foundation, Newport Partners, 2008.*
- 5 <http://www.realestatemapsmdva.com/princegeorges.shtml>
- 6 <http://www.quickfacts.census.gov/qfd/states/24/24033.html>
- 7 <http://www.co.pg.md.us/Government/PublicSafety/Fire-EMS/index.asp>



## LETTER OF WARRANTY

As part of the consideration for the Contract identified below, Troy Life & Fire Safety Ltd., hereby warrants to the owner of the Premises for a period of Two (2) years from date of installation the work and services under the said Contract were performed in a workmanlike manner and in accordance with all mutually determined specifications in writing and; the materials and parts ("Products") used by Troy Life & Fire Safety Ltd., for Two (2) years from date of installation (excepting Products listed in Appendix A), were, when installed, free from defects in material, workmanship and title, when paid for, and all to the extent and on the conditions herein specifically set forth, that is:

Troy Life & Fire Safety Ltd. shall replace, without cost or charge to the owner for labour or materials, such individual Products installed under said Contract that may become defective or unserviceable within the period of the warranty by reason of inherent manufacturing or mechanical defect in any Products purchased and installed by Troy Life & Fire Safety Ltd., provided:

- The owner notifies Troy Life & Fire Safety Ltd., in writing, of any failure or default within ten (10) days of the date of such failure of default becomes apparent.
- No third party being a person, firm, corporation or otherwise other than Troy Life & Fire Safety Ltd., has, during or since the completion of the work, performed or attempted to perform any of the work included in the said contract or repaired or attempted to repair any of the work performed by Troy Life & Fire Safety Ltd.
- The defect or failure was not caused or affected by, improper maintenance, use, or operation of the facilities installed under Contract, unsuitable physical or operating environment including but not limited to incompatible chemicals/materials, corrosion, vandalism, accident or any act or omission of the owner, its employees, representatives, agents or whom responsible for at law.
- The Products have been maintained or repaired in accordance with applicable Standards of the National Fire Protection Association and/or the standards of any other authorities having jurisdiction.

Failure to comply with the above listed conditions will render the warranty null and void. The Product warranty does not exceed the manufacturer's warranty and Troy Life & Fire Safety Ltd., will not be held liable for any damages resulting from the systems failure to operate as designed and does not warrant any repaired or replacement Products against normal wear and tear. Warranty will be immediately voided by substitution of non-approved Products. This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in Products whether the claim is made in contract, tort, strict liability or any other legal theory. This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

THE WARRANTIES PROVIDED ARE EXCLUSIVE AND IN LIEU OF, AND TROY LIFE & FIRE SAFETY LTD., EXPRESSLY EXCLUDES ANY AND ALL OTHER WARRANTIES, GUARANTEES, OBLIGATIONS, LIABILITIES, REPRESENTATIONS (INNOCENT OR NEGLIGENT) OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, DURABILITY, SUITABILITY, QUALITY OR CONDITION OR ANY CONDITION OR WARRANTY ARISING BY STATUTE OR OTHERWISE IN LAW OR IN EQUITY OR FROM A COURSE OF DEALING OR USAGE OF TRADE.

### Appendix A

Extended Product manufacturer warranty Ten (10) years from date of installation subject to the terms herein (excepting labour):

Business	Product	Product Manufacturer Warranty
BLAZEMASTER®	BLAZEMASTER® CPVC	Ten (10) Years
Sprinklers	Sprinklers	Ten (10) Years
Valves & Accessories	TYCO Branded Valves	Ten (10) Years

#### Contract With:

#### Customer Contact:

Email Address (where applicable for delivery purposes):

#### Premises:

General description of work as per contract:

Date of Installation:

This warranty shall pass with title of the Premises to the new owner or owners thereof.

IN WITNESS WHEREOF, this warranty has been executed and delivered by courier contact this 1 day of July ,2016 .

to the above-mentioned



Name and job title  
Troy Life & Fire Safety Ltd.

# IN THE EVENT OF A FIRE

**Leave your home with your family immediately.** Dial 911, ask for the fire department and provide your address so that Calgary Fire can get to your home as fast as possible. **Never re-enter your home after you have escaped a fire.**

## WARNING:

The water system for this home supplies fire sprinklers that require certain flows and pressures to fight a fire. Devices that restrict the flow or decrease the pressure or automatically shut off the water to the fire sprinkler system, such as water softeners, filtration systems, and automatic shutoff valves, shall not be added to this system without a review of the fire sprinkler system by a fire protection specialist.

*See our **Information Package** for more information on residential sprinklers.*

## DO NOT REMOVE THIS TAG



Life & Fire Safety Ltd.

More resources on  
other side.



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# RESOURCES

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## EMERGENCY

Dial 911

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## Calgary Fire Department

Non-Emergency: Dial 311

[www.calgary.ca/fire](http://www.calgary.ca/fire)

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## Calgary Planning and Development

Dial 311

[www.calgary.ca/property-owners.html](http://www.calgary.ca/property-owners.html)

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## Troy Life & Fire Safety

(403)547-1647

[www.troylfs.com](http://www.troylfs.com)

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## Home Fire Sprinkler Coalition

<https://homefiresprinklercanada.ca/>

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## (NFPA) National Fire Protection Association

[www.nfpa.org/](http://www.nfpa.org/)

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## Fire Sprinkler Initiative

[www.firesprinklerinitiative.org](http://www.firesprinklerinitiative.org)

**READ WARNING ON OTHER SIDE  
BEFORE ALTERING THIS WATER SYSTEM**

# DO NOT REMOVE THIS TAG



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More information  
on other side.



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# Safe and Sound

**Fire protection for your new home, and everyone in it.**

Fire Sprinklers are considered essential life safety equipment in commercial facilities. Studies have shown they play a critical role in life safety and property protection, but they are a relatively new idea in the Canadian residential market.

**It's win-win for you, because your new home will feature a Rapid Response Fire Sprinkler system.**

Our system is reliable, easy to inspect and test, and designed to blend with your decor. Most of the time you won't know it's there, but if you ever need it our system will help protect your home and everyone in it.

You'll be glad to know it also comes with one of the best warranties available.

**Find out more on the other side of this flyer.**



[www.troylfs.com](http://www.troylfs.com)

**1-877-441-8769**

## Sprinklers Save Lives and Property

In 1986, Scottsdale Arizona introduced a residential fire sprinkler program for single family dwellings. Since then, there has been no loss of life in a Scottsdale property protected by fire sprinklers.

Vancouver BC followed suit. Since they introduced a residential fire sprinkler program in 1990, there has been no loss of life recorded in a Vancouver home protected by a fire sprinkler system installed to NFPA 13D standard.

There is a popular misconception that sprinkler systems will cause more water damage during a fire than the Fire Department will with their hoses.

Here's how fire extinguishing can affect a home:

Average water amount used to extinguish a fire	HOMES WITH SPRINKLER	WITHOUT SPRINKLER
	209 Gallons	3290 Gallons (from Fire Department)
Average monetary loss due to fire	\$2,925.00	\$60,750.00

## Our Design Approach

A sprinkler system consists of water supply, piping, and fire sprinkler heads. It sounds straight forward, but in fact every sprinkler system is unique and requires individual design layout and hydraulic calculations, even if the building layouts are the same. When we designed your system we looked at water supply information, dimensioned floor plans, reflected ceiling plans, structural framing plans, mechanical and electrical plans in order to determine the best route for our piping.

Coordinating our system design and installation with all of the trades involved in building your new home allowed us to build the best, most efficient system we could for your home.

## About your Sprinkler System



Your **Rapid Response** fire sprinkler system comes with a **10 Year Limited Manufacturer's Warranty**, one of the best available in the industry.

The system has been designed and installed to meet NFPA 13D, the National Fire Protection Association fire code standard which governs the installation of sprinkler systems in one and two-family dwellings and manufactured homes.

Testing and inspecting your fire sprinkler system is not required for Fire Code compliance, but most homeowners can easily perform the Visual Inspection and we do recommend it.



*When you move into your new home, you will find a package from us that outlines the Visual Inspection procedures, and provides more information about your fire sprinkler system.*



## Our Company

Established in 1979, Troy Life & Fire Safety Ltd. is a private Canadian corporation with over 1,100 talented employees coast-to-coast. We have everything you need for life and fire safety, and our manufacturer-trained technicians and sprinkler fitters are available 24 hours a day, coast-to-coast.

We are an Edwards National Partner.

## Trained to be the Best

All of our Fitters must meet the Canadian Standards of Excellence as governed by the UA and the Canadian Automatic Sprinkler Association. Every sprinkler inspector must have a Certificate of Qualification for Sprinkler Fitters. These positions are held by extremely experienced fitters who have been in the trade for many years and have experience with all types of systems and building layouts.

We offer complete sprinkler design and installation service, and support our Sprinkler Fitters with three fully-equipped metal fabrication shops in Grimsby ON, Calgary AB, and Moncton NB.