



# **FIREFIGHTER FATALITY INVESTIGATIONS**

## **Annual Report FY 2020**

October 2020

**State Fire Marshal's Office**

Orlando P. Hernandez, State Fire Marshal

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**[www.tdi.texas.gov/fire](http://www.tdi.texas.gov/fire)**

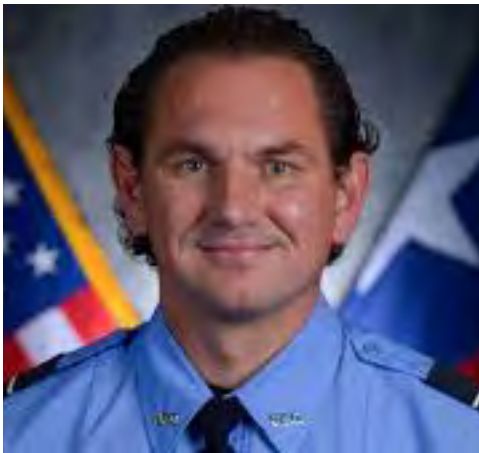
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## Executive Summary

From September 1, 2019 to August 31, 2020, the State Fire Marshal's Office (SFMO) conducted nine firefighter fatality incident investigations for nine deaths.



### **Firefighter Kenneth Stavinoha**

**Houston Fire Department**

September 21, 2019

Cardiac event



### **Firefighter Steven Henderson**

**Louise Volunteer Fire Department**

October 12, 2019

Traffic incident



**Firefighter Greg Garza**  
**San Antonio Fire Department**

October 15, 2019  
Traffic incident



**Lieutenant David Hill**  
**Lubbock Fire Department**

January 11, 2020  
Traffic incident



**Fire Chief Manual Galindo, Jr.**  
**Ft. Hancock Volunteer Fire Department**

February 12, 2020  
Traffic incident



**Firefighter Patrick Howell**  
**Gilmer Volunteer Fire Department**  
March 21, 2020  
Cardiac event



**Fire Suppression Technician**  
**Eduardo Ramirez**  
**El Paso Fire Department**  
April 21, 2020  
Cardiac event



**Firefighter Klayton Manning**  
**Southeast Caldwell County Volunteer**  
**Fire Department**  
June 9, 2020  
Shooting



**Assistant Chief  
Duncan Henderson**  
**Ringgold Volunteer Fire Department**  
June 14, 2020  
Traffic incident



## Texas Firefighter Fatality Investigation Authority

State law requires the SFMO to investigate firefighter fatalities occurring in the line of duty or in connection with an on-duty incident. It must investigate the circumstances surrounding the death of the firefighter, including factors that may have contributed to the firefighter's death.

The term "firefighter" includes any individual who performs fire suppression duties for a governmental entity or volunteer fire department.

The State Fire Marshal must coordinate the investigative efforts of local government officials and may enlist established fire service organizations and private entities to assist. The State Fire Marshal appointed an Investigation Panel to provide Firefighter Fatality Investigation Program policy guidance. The following groups serve on the panel:

- State Firefighters' and Fire Marshals' Association of Texas
- Texas A&M Engineering Extension Service
- Texas A&M Forest Service
- Texas Chapter of the International Association of Arson Investigators
- Texas Commission on Fire Protection
- Texas Fire Chiefs Association
- Texas Fire Marshals Association
- Texas State Association of Fire Fighters
- Texas metropolitan fire departments (including Austin, Dallas, El Paso, Fort Worth, Houston, and San Antonio)

TCFP establishes the criteria for gathering and analyzing firefighter injury data and sends its report to the State Fire Marshal for inclusion in this annual report.

Annual reports from TCFP's firefighter injury reporting program are attached and available at [www.tcfp.texas.gov/injuries/injury\\_reporting\\_overview.asp](http://www.tcfp.texas.gov/injuries/injury_reporting_overview.asp).

## **Fiscal Year 2020 Investigation Summary**

Note: Several firefighter fatality reports were delayed due to COVID-19 protocols.

**September 21, 2019**

**Firefighter Kenneth Stavinoha, 36 years old**

**Houston Fire Department**

**Cardiac event while on duty**

On September 21, 2019 at about 4:45 p.m., Houston Fire Department firefighters found Firefighter Kenneth Stavinoha unresponsive outside Fire Station 27 at 6515 Lyons Avenue in Houston. Firefighters did not initiate CPR because discoloration due to lividity indicated Stavinoha had been deceased for some time. Stavinoha had previously been performing lawn care maintenance at his regularly assigned station.

The Harris County Medical Examiner's Office responded to the scene, pronounced Stavinoha deceased and conducted an autopsy. On September 21, 2019, the Houston Fire Department notified the SFMO of Stavinoha's death. SFMO Sgt. Todd Johse initiated an investigation.

The medical examiner's report from Harris County Institute of Forensic Sciences concluded the cause of death was acute coronary thrombus due to atherosclerotic and hypertensive cardiovascular disease. The manner of death was deemed natural.

The death was classified an on-duty firefighter fatality.

**October 7, 2019**

**Firefighter Steven Henderson, 60 years old**

**Louise Volunteer Fire Department**

**Traffic Incident - struck by vehicle while on roadside**

On October 7, 2019, at about 9:05 p.m., a motorist struck Louise Firefighter Steven Henderson and another firefighter who had been checking the front tire of the fire

apparatus. The incident occurred on South FM 647, Louise, in Wharton County. Henderson was transported by LifeFlight to Memorial Hermann Hospital in Houston. The other firefighter was transported by El Campo EMS to Oak Bend Hospital in Rosenberg for minor injuries. Henderson died on October 12, 2019.

The Louise Fire Department notified the SFMO of the fatality on October 13, 2019. SFMO Sgt. Todd Johse was assigned to this investigation.

This death was classified an on-duty firefighter fatality.

## **October 15, 2019**

### **Firefighter Greg Garza, 49 years old**

#### **San Antonio Fire Department**

#### **Traffic Incident - struck by vehicle while exiting apparatus**

On October 15, 2019, the San Antonio Fire Department investigated a report of smoke at the Comfort Suites, 505 Live Oak St. While on the scene, Firefighter Greg Garza returned to the apparatus to retrieve a thermal visioning camera. At some point Garza went to the driver's side of Platform 1, which faced the roadway. Garza fell into the path of a passing vehicle and was run over. Garza was treated at the scene and transported to Brooke Army Medical Center (BAMC). Garza died at 8:04 a.m.

On October 15, 2019, SAFD District Chief Douglas Berry notified SFMO Lt. Brian Fine of the death, and SFMO initiated a firefighter fatality investigation.

An autopsy was conducted at the Bexar County Medical Examiner's Office and the cause of death was determined to be blunt force trauma.

This death was classified an on-duty firefighter fatality.

## **January 11, 2020**

### **Lieutenant David Hill, 39 years old**

#### **Lubbock Fire Department**

#### **Traffic Incident - struck by vehicle while working on traffic collision**

On, January 11, 2020, the Lubbock Fire Department (LFD) responded to a motor vehicle collision on north-bound I-27 at County Road 5800, Lubbock. At the scene of the collision, another vehicle traveling south-bound lost control and crossed the

center median. The vehicle struck Lubbock Fire Lieutenant David Hill, and a Lubbock firefighter.

Other firefighters on scene assessed and treated the injured firefighters, a police officer, and the driver of the vehicle. The Lubbock police officer was pronounced dead at the scene. Lt. Hill and the LFD firefighter were transported to University Medical Center in Lubbock. Lt. Hill died at 9:29 a.m.

On January 11, 2020, SFMO Sgt. Billy Lang notified SFMO of the incident. SFMO Sgts. Lang and Kelly Vandygriff responded to the scene to collect information for the investigation. SFMO Lt. Brian Fine initiated a firefighter fatality investigation.

Lt. Hill's cause of death was determined to be blunt force trauma.

This death was classified an on-duty firefighter fatality.

## **February 12, 2020**

### **Fire Chief Manuel Galindo Jr., 71 years old**

#### **Ft. Hancock Volunteer Fire Department**

#### **Traffic Incident - fire apparatus rollover**

On February 12, 2020, Chief Manuel Galindo was driving a fire department water tanker on a maintenance check when it left the roadway and flipped over. Chief Galindo was ejected from the vehicle as it rolled over. He was not wearing a seat belt during the crash and died at the scene. The water tanker was the only vehicle involved in the incident.

The Line of Duty Death (LODD) Task Force notified SFMO Lt. Brian Fine of the death. SFMO assigned Sgt. Tim Ware as the lead investigator.

The SFMO and the Texas LODD Task Force are awaiting additional information from the Ft. Hancock Volunteer Fire Department and the Hudspeth County Sheriff's Office.

At the time of this report, the SFMO has received only the Texas Peace Officer's Crash Report from the Texas Department of Public Safety.

This death was classified an on-duty firefighter fatality.

## **March 21, 2020**

### **Firefighter Patrick Howell, 52 years old**

#### **Gilmer Volunteer Fire Department**

#### **Cardiac event while off duty**

On March 21, 2020, at about 10:30 p.m., Emergency Medical Services was dispatched to Firefighter Patrick Howell's residence. Upon arriving, they found Howell unconscious and not breathing, and they initiated Advanced Life Support. Upshur Justice of the Peace Wyone Manes pronounced Howell deceased at 11:01 p.m. and ordered an autopsy.

On March 22, 2020, SFMO Sgt. Paul Steelman notified SFMO Lt. Brian Fine that Howell had died, and SFMO initiated a firefighter fatality investigation.

On March 24, 2020, Dr. Gulpreet Singh Bowman conducted an autopsy at Forensic Medical of Texas in Tyler. The cause of death was Atherosclerotic Cardiovascular Disease and the manner of death was deemed natural.

Based on a review, Howell's death was the result of a medical emergency. He had not complained of illness or injury while on-duty or within 24 hours of his death.

Howell's death did not meet SFMO criteria for on-duty or duty-related death.

## **April 21, 2020**

### **Fire Suppression Technician Eduardo Ramirez, 43 years old**

#### **El Paso Fire Department**

#### **Medical event while on-duty**

On April 21, 2020, Fire Suppression Technician (FST) Eduardo Ramirez collapsed while participating in physical training at El Paso Fire Department (EPFD) Station 8. Medical care was initiated and FST Ramirez was transported to the hospital, where he later died.

On April 22, 2020, EPFD Lt. James Younger notified SFMO Capt. Brian Fine of the incident and SFMO initiated a firefighter fatality investigation.

On April 22, 2020, Dr. Juan Contin conducted an autopsy at the El Paso Medical Examiner's Office. The cause of death was exercise-induced pulmonary hemorrhage. The manner of death was deemed natural.

This death was classified an on-duty firefighter fatality.

## **June 9, 2020**

### **Firefighter Klayton Manning, 18 years old**

#### **Southeast Caldwell County Volunteer Fire Department**

#### **Gunshot**

On June 9, 2020, at about 6:08 p.m., Southeast Caldwell County Volunteer Firefighter Klayton Manning and a juvenile civilian were found deceased in the 4000 block of Tenney Creek Road, Luling, Caldwell County. Both victims had multiple gunshot wounds. Manning was operating a department utility vehicle and was not on an assignment or responding to a known incident.

On June 10, 2020, the Texas LODD Taskforce notified the SFMO that Manning had died. Sgt. Todd Johse initiated a firefighter fatality investigation.

Caldwell County Justice of the Peace Precinct #2 Judge Shanna Conley performed an inquest and ordered an autopsy at the Travis County Medical Examiner's Office (TCMEO). The TCMEO determined his death was from multiple gunshots, and the manner of death deemed homicide.

The Caldwell County Sheriff's Office and the Texas Rangers are investigating the homicide. A 34-year-old suspect was identified and arrested at a home in Bastrop County.

Upon the conclusion of the firefighter fatality investigation, the SFMO determined FF Manning was not on duty at the time of his death.

FF Manning's death did not meet the SFMO criteria for on-duty or duty-related death.

## **July 14, 2020**

### **Assistant Chief Duncan Henderson, 65 years old**

#### **Ringgold Volunteer Fire Department**

#### **Traffic incident - wreck in personal vehicle while responding to the station**

On July 14, 2020, at about 9:20 p.m., Ringgold Volunteer Fire Department (VFD) Asst. Chief Duncan Henderson was returning to the station to respond to reports of a brush fire. According to the Texas Peace Officer's Crash Report from the Texas Department

of Public Safety, Henderson was traveling at an unsafe speed on a dirt road when his vehicle left the roadway and overturned. On July 15, 2020, at about 1:15 a.m., a passing motorist discovered the vehicle. EMS arrived and pronounced Henderson dead at the scene.

No autopsy was conducted.

On July 15, 2020, Nacona VFD Firefighter Rusty Henley notified SFMO Capt. Brian Fine of the death and he initiated a firefighter investigation.

This death was classified an on-duty firefighter fatality.

## **Prosecution for FY2017 Firefighter Fatality**

On May 18, 2017, at 9:12 p.m., the San Antonio Fire Department (SAFD) responded to a structure fire located in the 6700 block of Ingram Road, San Antonio reported by a passerby.

SAFD Ladder 35 (L35) and Engine 35 (E35) arrived on the scene and observed smoke inside the Spartan Box Gym. Firefighters made forcible entry into the business through the front doors. E35 crew was assigned suppression and L35 firefighters Scott Deem and Brad Phipps were assigned to search the Spartan Box Gym.

During their search, Deem and Phipps located the fire and called for a hose line. Conditions rapidly worsened and Deem and Phipps declared a "Mayday." Efforts were then focused on their rescue.

Several Rapid Intervention Teams (RIT) made entry in an attempt to locate the firefighters. Firefighter Robert Vasquez became separated from his RIT while searching for Phipps and Deem. Phipps and Vasquez were located and extricated. Phipps sustained life-threatening injuries and was transported to Brooke Army Medical Center. Vasquez suffered minor injuries and was transported and later released from an area hospital.

Continued attempts to contact Deem or to hear a PASS device were unsuccessful. Conditions worsened, and rescue operations were halted. Defensive tactics were used to suppress the fire. A secondary search was conducted, and Deem was eventually found deceased inside the gym.

Phipps was released from the hospital on August 1, 2017, to continue recovery at home. The SFMO Firefighter Fatality Coordinator was notified of the incident and responded, and the State Response Team was dispatched.

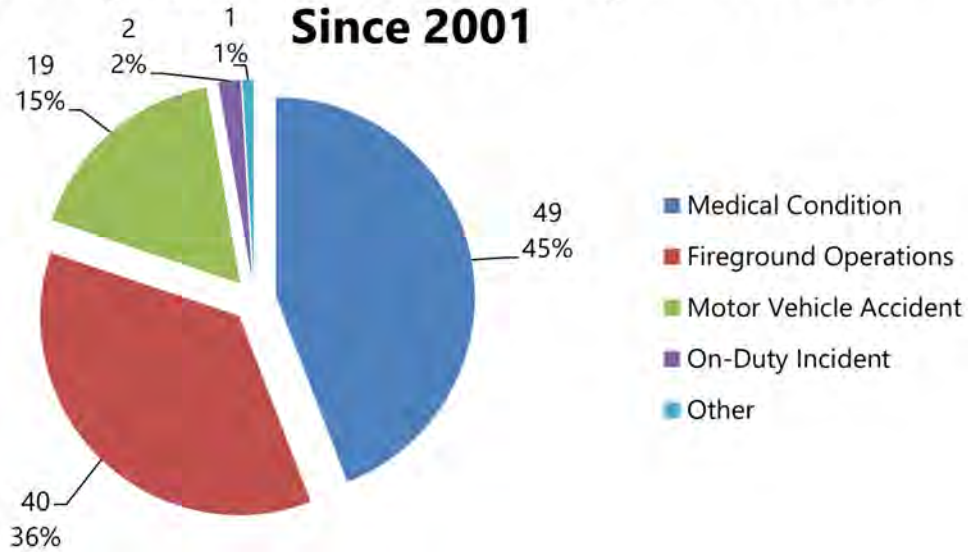
The joint investigation conducted by the SFMO, San Antonio Arson Bureau, and San Antonio Police Department resulted in the arrest of the owner of the Spartan Box Gym. The Grand Jury indicted the owner for the arson that resulted in the death of Deem and injuries to other firefighters.



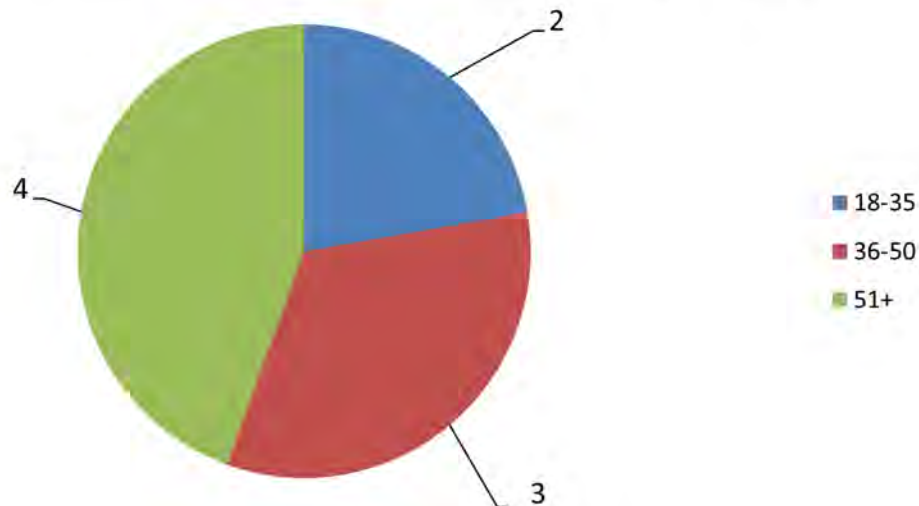
SFMO investigators continue to meet with the Bexar County District Attorney's Office to provide documentation on the fire's origin and cause investigation, as well as the firefighter fatality investigation. The judge has denied motions to move the trial, and the criminal case is pending prosecution.

# Statistics and Comparisons of Firefighter Fatalities

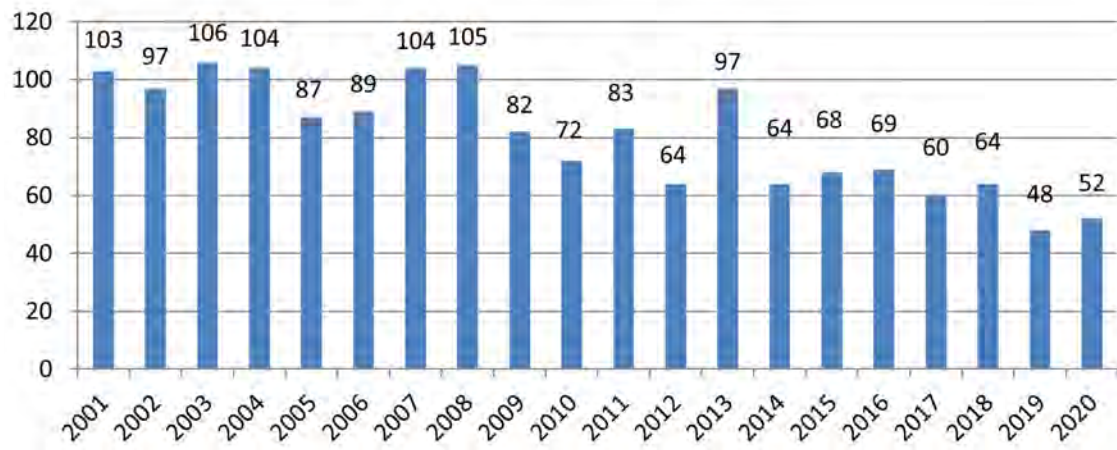
## Fatality Types Investigated by the SFMO Since 2001



## FY 2020 Fatalities Investigated by Age



## National On-Duty Firefighter Deaths 2001-2020



## Strategies for Preventing Firefighter Fatalities

The SFMO encourages use of strategies developed by the SFMO and nationally recognized organizations to reduce firefighter fatalities.

- The SFMO communicates “lessons learned” from firefighter fatality investigations through the publication of investigation reports, sharing information with the Firefighter Fatality Investigation Panel, and presentations at fire service conferences.
- Firefighter fatality investigation reports are sent to affected fire departments then placed on the SFMO’s website ([www.tdi.texas.gov/fire/fmloddinvesti.html](http://www.tdi.texas.gov/fire/fmloddinvesti.html)). The SFMO is visiting fire departments that experienced an operational LODD to see what improvements have been made since the incident.
- Participating in the “Firefighter Safety Stand Down,” sponsored by the International Association of Fire Chiefs ([www.iafc.org](http://www.iafc.org)) and the International Association of Fire Fighters ([www.iaff.org](http://www.iaff.org)).
- Participating in the “Courage to be Safe” (CTBS) program. that emphasizes the message “Everyone Goes Home.” Information on the CTBS program is available online at [www.everyonegoeshome.com](http://www.everyonegoeshome.com). (See The 16 Firefighter Life Safety Initiatives on page 16.)
- Implementing or expanding existing fire prevention programs to help reduce the number of fires.
- Participating in the National Fallen Firefighters Foundation’s National Fire Service Seat Belt Pledge ([www.firehero.org](http://www.firehero.org)), which encourages firefighters to wear seat belts when riding in a fire department vehicle.
- Exploring safer strategies and tactics for fighting fires in enclosed structures by publishing findings and recommendations revealed during firefighter fatality investigations.

- Providing information to the fire service and the public on the effectiveness of residential sprinklers in reducing civilian and firefighter fatalities as well as property loss caused by fire.
- Pre-fire incident planning by suppression personnel for high-risk occupancies. Pre-fire planning should include consideration of life safety for firefighters and occupants, water supply, and structural hazards.
- Including fire prevention and firefighter fatality prevention in all firefighter training and education, including initial training in firefighter academies across the state.
- Emphasizing the need for firefighter training on how modern construction technologies, such as lightweight structural materials and green building practices, can change building performance and fire behavior, and how these technologies impact firefighter safety and fire-ground operations ([www.greenbuildingfiresafety.org/](http://www.greenbuildingfiresafety.org/)).

## **Everyone Goes Home: The 16 Firefighter Life Safety Initiatives**

The 16 Firefighter Life Safety Initiatives were developed in 2004 by representatives of major fire service constituencies at a Firefighter Safety Summit in Tampa, Florida.

At that time, the National Fallen Firefighters Foundation was tasked with spreading word about the initiatives throughout the fire service and developing material to support their implementation.

Since then, the initiatives have become the foundation for thousands of fire departments and EMS organizations working to ensure their firefighters and medics return home safely after every shift.

### **1. Cultural Change**

Define and advocate the need for a cultural change within the fire service relating to safety; incorporating leadership, management, supervision, accountability and personal responsibility. (See Appendix 1: *Changing the Culture of Safety in the Fire Service*, by Ronald J. Siarnicki and Richard Gist.) U.S. Fire Administration National Safety Culture Change Initiative FA-342/April 2015.

### **2. Accountability**

Enhance the personal and organizational accountability for health and safety throughout the fire service.

### **3. Risk Management**

Focus greater attention on the integration of risk management with incident management at all levels, including strategic, tactical and planning responsibilities.

### **4. Empowerment**

All firefighters must be empowered to stop unsafe practices.

### **5. Training and Certification**

Develop and implement national standards for training, qualifications, and certification

(including regular recertification) that are equally applicable to all firefighters based on the duties they are expected to perform.

## **6. Medical and Physical Fitness**

Develop and implement national medical and physical fitness standards that are equally applicable to all firefighters, based on the duties they are expected to perform.

## **7. Research Agenda**

Create a national research agenda and data collection system that relates to the 16 Firefighter Life Safety Initiatives.

## **8. Technology**

Utilize available technology wherever it can produce higher levels of health and safety.

## **9. Fatality, Near-Miss Investigation**

Thoroughly investigate all firefighter fatalities, injuries, and near-misses.

## **10. Grant Support**

Grant programs should support the implementation of safe practices and procedures and/or mandate safe practices as an eligibility requirement.

## **11. Response Policies**

National standards for emergency response policies and procedures should be developed and championed.

## **12. Violent Incident Response**

National protocols for response to violent incidents should be developed and championed.

## **13. Psychological Support**

Firefighters and their families must have access to counseling and psychological support.

## **14. Public Education**

Public education must receive more resources and be championed as a critical fire and life safety program.

## **15. Code Enforcement and Sprinklers**

Advocacy must be strengthened for the enforcement of codes and the installation of

home fire sprinklers.

## **16. Apparatus Design and Safety**

Safety must be a primary consideration in the design of apparatus and equipment.



## Firefighter Safety Recommendations

Recommendations from past SFMO investigation reports:

1. Define and advocate the need for a cultural change within the fire service relating to safety; incorporate leadership, management, supervision, accountability and personal responsibility. **U.S. Fire Administration National Safety Culture Change Initiative FA-342/April 2015.**
2. Establish standard operating procedures (SOPs) for minimum requirements of a fire service-related occupational safety and health program in accordance with the **National Fire Protection Association (NFPA) Standard 1500, Standard on Fire Department Occupational Safety and Health Program**, 2018 Edition.
3. Provide mandatory pre-placement and annual medical evaluations to all firefighters, consistent with **NFPA 1582, Standard on Comprehensive Occupational Medical Program for Fire Departments**, 2018 Edition, to determine their medical ability to perform duties without presenting a significant risk to the safety and health of themselves or others.
4. Perform an annual physical performance (physical ability) evaluation to ensure firefighters are physically capable of performing the essential job tasks of firefighting. **NFPA 1583, Standard on Health Related Fitness Programs for Firefighters**, 2015 Edition.
5. Ensure that firefighters are cleared for duty by a physician knowledgeable about the physical demands of firefighting, the personal protective equipment used by firefighters, and the various components of **NFPA 1582, Standard on Comprehensive Occupational Medicine Program for Fire Departments**, 2018 Edition.
6. No risk to the safety of personnel shall be acceptable where there is no possibility to save lives or property. **NFPA 1561**, Chapter 5, Section 5.3.16 2014 Edition; **TCFP Standards Manual**, Chapter 435, Section 435.15, Part b, Paragraphs 1 and 2.
7. Always attack a wildland fire from the burned area. If this is done and a sudden

change in conditions or wind occurs, the unit can retreat farther into the black where fuel has previously been consumed. "Attack from the Black," a Texas Forest Service training DVD, "The black is the best safety zone." <http://tfsweb.tamu.edu/AttackFromTheBlack>.

The Fireline Handbook has been retired and replaced with an electronic file called the **Wildland Fire Incident Management Field Guide** (PMS 210). April 2013.

**8.** Egress routes and safety zones should be well identified and communicated to everyone on the scene before fire operations begin. Staging areas should not interfere with ingress or egress to afford safety to the firefighters. **NFPA 1143**, Annex Section 5.4.2 Section (2) (b) 2014 Edition; **Texas Commission on Fire Protection Standards Manual**, Chapter 435, Section 435.15, Part a; **IFSTA (2013) Essentials of Fire Fighting**, (6th Edition), Chapter 6, page 315, Fire Protection Publications, Oklahoma State University; **National Wildfire Coordinating Group**, *Wildland Fire Incident Management Field Guide* (PMS 210), April 2013, Chapter 1, Firefighter Safety.

**9.** All firefighters on the scene of a fire and actively engaged in firefighting operations should be in approved, full personal protective equipment (PPE) suitable for the incident. **National Wildfire Coordinating Group**, *Wildland Fire Incident Management Field Guide* (PMS 210), April 2013, Chapter 1, Firefighter Safety; **IFSTA (2013) Essentials of Fire Fighting**, (6th Edition), Chapter 6, Fire Protection Publications, Oklahoma State University.

**10.** Fire departments must use a system of accountability whereby the incident commander can easily and immediately be able to determine not only that a firefighter is on the fire ground but also his or her location and task assignment at any given time. **Texas Commission on Fire Protection Standards Manual**, Chapter 435, Section 435.13, Part b, Paragraphs 3 and 4; and Part d.

**11.** Instruct firefighters and command staff that hydration alone will not prevent heat-related illness (HRI). **NIOSH Report F2011-17**, April 2012.

**12.** Establish a stationary command. A stationary command offers many advantages; one of the most important is a quiet vantage point from which to receive, process, and relay information. A stationary command post remote from task level operations is also beneficial in building and maintaining an effective fire ground organization. **NFPA 1561**, 5.3.7.1 2014 Edition, Following the initial stages of the incident, the incident commander shall establish a stationary command post. *Fire Command*, (2nd Edition, 2002), Chapter 1, "The Command Post," Allan V. Brunacini,

Von Hoffman Corp.

**IFSTA (2013) Essentials of Fire Fighting**, (6th Edition), Chapter 1, page 39, Fire Protection Publications, Oklahoma State University.

**13.** The use of all Personal Protective Equipment (PPE), including Self-contained Breathing Apparatus is mandatory when operating in areas where members are exposed or potentially exposed to the hazards for which PPE is provided.

**NFPA 1500**, Chapter 7, 2013 Edition; Protective Clothing

**IFSTA (2013) Essentials of Fire Fighting**, (6th Edition), Chapter 5

**Texas Commission on Fire Protection Standards Manual**, Chapter 435, Fire Fighter Safety

**14.** Use tools and tactics that help reduce the dangers of roof operations. Become familiar with those indicators that are a precursor to collapse.

**IFSTA (2013) Essentials of Fire Fighting**, (6th Edition), Chapter 11, pp. 476 and 556-560, Fire Protection Publications, Oklahoma State University

**IFSTA (1994) Fire Service Ventilation**, (7th Edition), pp. 86-89, Fire Protection Publications, Oklahoma State University

**15.** Consider monitoring and recording fire ground activity. **NFPA 1221**, Chapter 7, Sec. 7.6, 2016 Edition; Recording.



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# TEXAS COMMISSION ON FIRE PROTECTION INJURY REPORT

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January 1, 2019 to December 31, 2019



TEXAS COMMISSION ON FIRE PROTECTION

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# Mission

The commission shall gather and evaluate data on fire protection personnel injuries and develop recommendations for reducing injuries.

## Why we are collecting injury data

Under Texas Government Code §419.048, the Texas Legislature charged the commission with gathering and evaluating data on injuries. The rules requiring regulated entities to report injuries to the commission are in Texas Administrative Code §435.23. The commission encourages volunteer entities to report injuries so that it can gain as accurate a picture as possible concerning injury trends in the Texas fire service. The injury reporting program began in March 2010.

## Information the commission collects

- Minor, serious, and fatal injuries, as well as toxic exposures
- Activities where fire personnel are injured
- Types of injuries (burns, strain-sprains, wounds, etc.)
- Body parts being injured
- Tasks performed at the time of injury
- Missed time
- Work assignment after injury
- Malfunctions/failures of personal protective equipment (PPE), self-contained breathing apparatus (SCBA), personal alert safety systems (PASS devices) and standard operating procedures (SOPs)

## How this will help the fire service

- Identify common injuries and exposures
- Identify trends in injuries and exposures
- Identify needed training
- Evaluate and find improvements in procedures
- Track lost time injuries (requested by user community)

## Executive Summary

The information in this report is collected by the Texas Commission on Fire Protection (TCFP) via an on-line injury reporting application. The report is a comprehensive analysis of injuries and exposures to Texas fire fighters. These injuries and exposures were reported to the TCFP in 2019 by fire departments throughout the state, and this report contains charts and graphs depicting the results of the information that was collected. The report also compares Texas fire fighter injury statistics with national statistics that were gathered by the National Fire Protection Association (NFPA) in 2018.

Under Texas Government Code §419.048, the Texas Commission on Fire Protection is charged with developing and establishing criteria to receive and analyze injury information pertaining to Texas fire fighters. The commission reviews this information to develop recommendations to help reduce injuries to fire protection personnel. The commission provides this information to the State Fire Marshal's Office (SFMO) by September 1 of each year for inclusion in the SFMO's annual *Firefighter Fatality Investigations Report*. The commission has enacted rules about reporting injuries in the Texas Administrative Code (TAC) Title 37, Chapter 435, and has established the criteria and policies for reporting and analyzing the information.

The commission originally built the data systems necessary to gather this information in 2010. In 2017 the data systems were then migrated from a Microsoft Access database structure to a new system which was developed in-house and designed specifically to meet the information resource needs of the TCFP. Fine-tuning of this new system is ongoing as we receive feedback from stakeholders. The reporting process is accomplished online. Fire departments regulated by the commission have been notified of the requirement to report. Several volunteer departments, which are not regulated by the commission, are also participating voluntarily.

This report concludes with recommendations from the commission to help reduce the number of fire fighter injuries in Texas and to improve the injury reporting program.



# Abstract

This report contains data submitted by regulated and non-regulated entities. The data collected in 2019 was the ninth full year of reporting.

## *Grand Totals - 2019*

Total number of incidents (injury reports) submitted: 3,537

Total number of individuals who sustained an injury or exposure: 3,780\*

Total number of injuries reported: 2,849

Total number of exposures reported: 963

*\*Note that an individual could have more than one injury or could have an injury and an exposure. This explains why the total number of individuals who sustained an injury is less than the total number of injuries + total number of exposures. (3,780 < 2,849 + 963)*

Because the injury reporting system was reconfigured in 2018, the information collected by the TCFP has evolved over the last couple of years. It's important to remember that one incident report can have multiple individuals involved, and **each** of those individuals can have **one or more** injuries. For example:

- Joe and Bob were burned in a fire while on duty. This resulted in:
  - One incident (one injury report), with
  - Two individuals who...
  - Sustained three injuries
    - Joe was burned on the hand and arm (two injuries)
    - Bob was burned on the leg (one injury)

550 of the 748 regulated departments used TCFP's injury reporting system in 2019. That's a reporting rate of 74%. These departments reported a total of 3,780 individuals who were either injured or exposed in calendar year 2019. Of these, **763** individuals incurred their injuries/exposures during fire suppression activities, representing 20 percent of the total reported injuries (see Table 1).

Injuries and exposures from emergency medical services (EMS) activities surpassed those from fire suppression activities in 2019. EMS activities accounted for **922** of the 3,780 total individuals who were injured or exposed, or 24 percent.

After EMS and fire suppression, the next highest number reported in 2019 occurred in the performance of station duties, with **739**, or 20 percent, of the total reported injuries.

Skills training and wellness/fitness activities again rounded out the top five activities: **469** skills training injuries (12 percent of the total) and **407** wellness/fitness injuries (11 percent of the total).

We feel it's important to note that the total number of injured or exposed individuals reported in station duties, wellness/fitness activities, and skills training (which are all non-emergency activities) accounted for 43 percent of the total injuries reported in 2019.

# State of Texas vs. NFPA

## Comparison between the State of Texas (2019) and National Fire Protection Association (NFPA), U.S. Firefighter Injuries - 2018

For the purposes of comparison, the commission has mapped its categories to the NFPA categories as follows:

- “Fireground” includes the commission’s Fire Suppression and Rescue - Fire Related categories.
- “Non-Fire” includes Rescue Non-Fire, EMS and Hazmat.
- “Other On-Duty” includes Fire Prevention, Station Duties and Wellness/Fitness.

The NFPA’s “Responding and Returning” and “Training” categories appear to correspond closely to the commission’s categories. (The NFPA numbers include Texas statistics, although the reporting populations may not be the same.)

### Comparing Texas 2019 and NFPA 2018

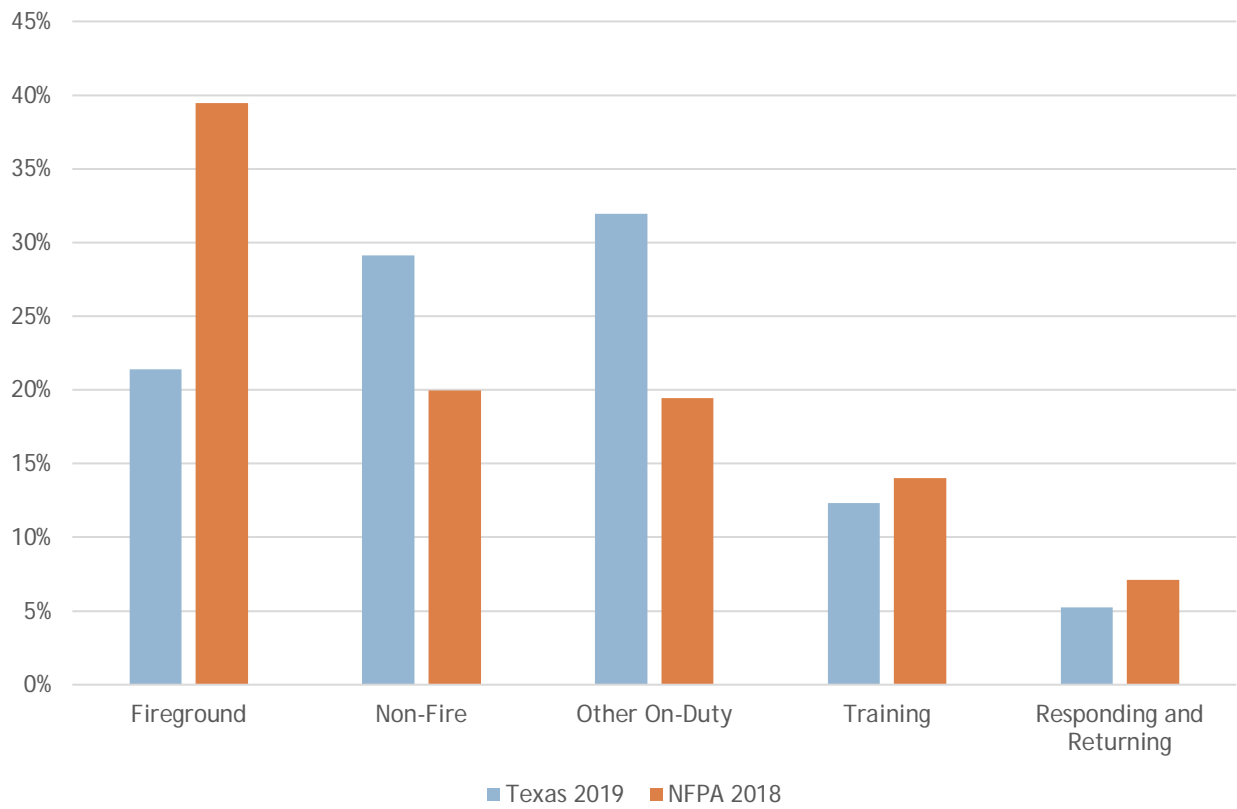
**Table 28: Comparison of Texas 2019 and NFPA 2018**

| Category                 | Texas 2019   |             | NFPA 2018     |             |
|--------------------------|--------------|-------------|---------------|-------------|
|                          | Count        | Percent     | Count         | Percent     |
| Fireground               | 804          | 21%         | 22,975        | 39%         |
| Non-Fire                 | 1,105        | 29%         | 11,625        | 20%         |
| Other On-Duty            | 1,206        | 32%         | 11,325        | 19%         |
| Training                 | 469          | 12%         | 8,175         | 14%         |
| Responding and Returning | 196          | 5%          | 4,150         | 7%          |
| <b>Total</b>             | <b>3,780</b> | <b>100%</b> | <b>58,250</b> | <b>100%</b> |

*While Texas seems to be doing similarly to the rest of the US in terms of training injuries and injuries resulting from responding and returning from incidents, we appear to have a much better track record on the fireground. Unfortunately, though, Texas appears to be doing significantly worse than the rest of the country when it comes to sustaining injuries in the “non-fire” and “other on-duty” categories.*

NFPA data is from the [United States Firefighter Injuries in 2018 report](#), copyright ©2018 National Fire Protection Association, Quincy, MA.

*Injuries by Activity, percentages  
(Comparing Texas 2019 and NFPA 2018)*

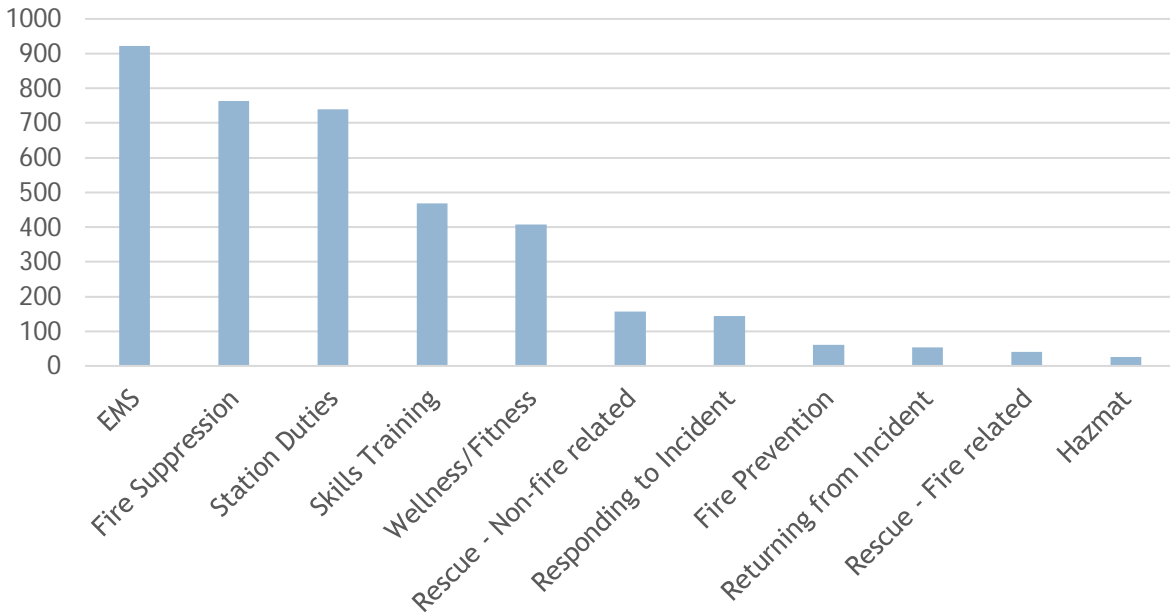


# Fire Protection Personnel Injuries

Table 1: Total Injured or Exposed Individuals by Activity and Severity, 2019

| Activity                  | Minor       | Serious    | Fatal    | Total       | 2018        | 2017        |
|---------------------------|-------------|------------|----------|-------------|-------------|-------------|
| EMS                       | 776         | 146        | 0        | 922         | 1027        | 1079        |
| Fire Suppression          | 616         | 145        | 2        | 763         | 799         | 827         |
| Station Duties            | 591         | 147        | 1        | 739         | 639         | 668         |
| Skills Training           | 330         | 139        | 0        | 469         | 400         | 412         |
| Wellness/Fitness          | 290         | 117        | 0        | 407         | 417         | 384         |
| Rescue - Non-fire related | 140         | 17         | 0        | 157         | 183         | 233         |
| Responding to Incident    | 114         | 28         | 1        | 143         | 163         | 209         |
| Fire Prevention           | 46          | 14         | 0        | 60          | 90          | 66          |
| Returning from Incident   | 39          | 14         | 0        | 53          | 91          | 70          |
| Rescue - Fire related     | 37          | 4          | 0        | 41          | 44          | 120         |
| Hazmat                    | 24          | 2          | 0        | 26          | 28          | 22          |
| <b>Total</b>              | <b>3003</b> | <b>773</b> | <b>4</b> | <b>3780</b> | <b>3881</b> | <b>4090</b> |

Figure 1: Total Injured or Exposed Individuals by Activity, 2019



## Injuries by Activity

EMS activities resulted in the highest number of minor injuries for 2019 (see Table 2). The total number of serious fire suppression injuries is down significantly, compared with previous years. (See Table 3. The commission defines a serious injury as one which results in the employee missing one or more full duty shifts.)

| <i>Definitions</i> |  |
|--------------------|--|
| <i>Minor</i>       | = Injury that does <u>not</u> result in the employee missing a full duty period. |
| <i>Serious</i>     | = Injury that results in the employee missing one or more full duty periods.     |
| <i>Fatal</i>       | = The injured individual did not survive.  |

*Table 2: Minor Injury Activities, 2015 - 2019*

| Activity                | 2015        |                | 2016        |                | 2017        |                | 2018        |                | 2019        |                |
|-------------------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|
|                         | Count       | Percent        | Count       | Percent        | Count       | Percent        | Count       | Percent        | Count       | Percent        |
| EMS                     | 792         | 28.24%         | 882         | 27.89%         | 929         | 28.99%         | 843         | 29.09%         | 776         | 25.84%         |
| Fire Suppression        | 618         | 22.03%         | 866         | 27.39%         | 662         | 20.66%         | 607         | 20.95%         | 616         | 20.51%         |
| Station Duties          | 396         | 14.12%         | 434         | 13.73%         | 481         | 15.01%         | 437         | 15.08%         | 591         | 19.68%         |
| Skills Training         | 288         | 10.27%         | 311         | 9.84%          | 291         | 9.08%          | 277         | 9.56%          | 330         | 10.99%         |
| Wellness/Fitness        | 278         | 9.91%          | 252         | 7.97%          | 254         | 7.93%          | 286         | 9.87%          | 290         | 9.66%          |
| Rescue - Non-Fire       | 204         | 7.27%          | 161         | 5.09%          | 206         | 6.43%          | 157         | 5.42%          | 140         | 4.66%          |
| Responding to Incident  | 122         | 4.35%          | 117         | 3.70%          | 156         | 4.87%          | 99          | 3.42%          | 114         | 3.80%          |
| Fire Prevention         | 41          | 1.46%          | 47          | 1.49%          | 50          | 1.56%          | 69          | 2.38%          | 46          | 1.53%          |
| Returning from Incident | 33          | 1.18%          | 37          | 1.17%          | 42          | 1.31%          | 57          | 1.97%          | 39          | 1.30%          |
| Rescue - Fire Related   | 22          | 0.78%          | 20          | 0.63%          | 113         | 3.53%          | 39          | 1.35%          | 37          | 1.23%          |
| Hazmat                  | 11          | 0.39%          | 35          | 1.11%          | 21          | 0.66%          | 27          | 0.93%          | 24          | 0.80%          |
| <b>Total</b>            | <b>2805</b> | <b>100.00%</b> | <b>3162</b> | <b>100.00%</b> | <b>3205</b> | <b>100.00%</b> | <b>2898</b> | <b>100.00%</b> | <b>3003</b> | <b>100.00%</b> |

(Numbers in green = least amount of injuries for the five-year period.)

Table 3: Serious Injury Activities, 2015 - 2019

| Activity                | 2015       |                | 2016       |                | 2017       |                | 2018       |                | 2019       |                |
|-------------------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|
|                         | Count      | Percent        | Count      | Percent        | Count      | Percent        | Count      | Percent        | Count      | Percent        |
| Station Duties          | 174        | 19.31%         | 172        | 18.76%         | 185        | 21.29%         | 201        | 20.49%         | 147        | 19.02%         |
| EMS                     | 185        | 20.53%         | 158        | 17.23%         | 147        | 16.92%         | 184        | 18.76%         | 146        | 18.89%         |
| Fire Suppression        | 160        | 17.76%         | 179        | 19.52%         | 157        | 18.07%         | 191        | 19.47%         | 145        | 18.76%         |
| Skills Training         | 126        | 13.98%         | 141        | 15.38%         | 120        | 13.81%         | 123        | 12.54%         | 139        | 17.98%         |
| Wellness/Fitness        | 125        | 13.87%         | 146        | 15.92%         | 129        | 14.84%         | 131        | 13.35%         | 117        | 15.14%         |
| Responding to Incident  | 44         | 4.88%          | 36         | 3.93%          | 53         | 6.10%          | 64         | 6.52%          | 28         | 3.62%          |
| Rescue - Non-Fire       | 46         | 5.11%          | 52         | 5.67%          | 27         | 3.11%          | 26         | 2.65%          | 17         | 2.20%          |
| Returning from Incident | 13         | 1.44%          | 18         | 1.96%          | 28         | 3.22%          | 34         | 3.47%          | 14         | 1.81%          |
| Fire Prevention         | 12         | 1.33%          | 11         | 1.20%          | 15         | 1.73%          | 21         | 2.14%          | 14         | 1.81%          |
| Rescue - Fire Related   | 12         | 1.33%          | 3          | 0.33%          | 7          | 0.81%          | 5          | 0.51%          | 4          | 0.52%          |
| Hazmat                  | 4          | 0.44%          | 1          | 0.11%          | 1          | 0.12%          | 1          | 0.10%          | 2          | 0.26%          |
| <b>Total</b>            | <b>901</b> | <b>100.00%</b> | <b>917</b> | <b>100.00%</b> | <b>869</b> | <b>100.00%</b> | <b>981</b> | <b>100.00%</b> | <b>773</b> | <b>100.00%</b> |

(Numbers in green = least amount of injuries for the five-year period.)

Table 4: Number of Individuals Who Sustained Fatal Injuries, 2019

| Activity               | Count    | Percent        |
|------------------------|----------|----------------|
| Fire Suppression       | 2        | 50.00%         |
| Station Duties         | 1        | 25.00%         |
| Responding to Incident | 1        | 25.00%         |
| <b>Total</b>           | <b>4</b> | <b>100.00%</b> |

## Emergency vs. Non-Emergency Injuries

*Table 5: Number of Injured Individuals by Emergency Activity and Severity, 2019*

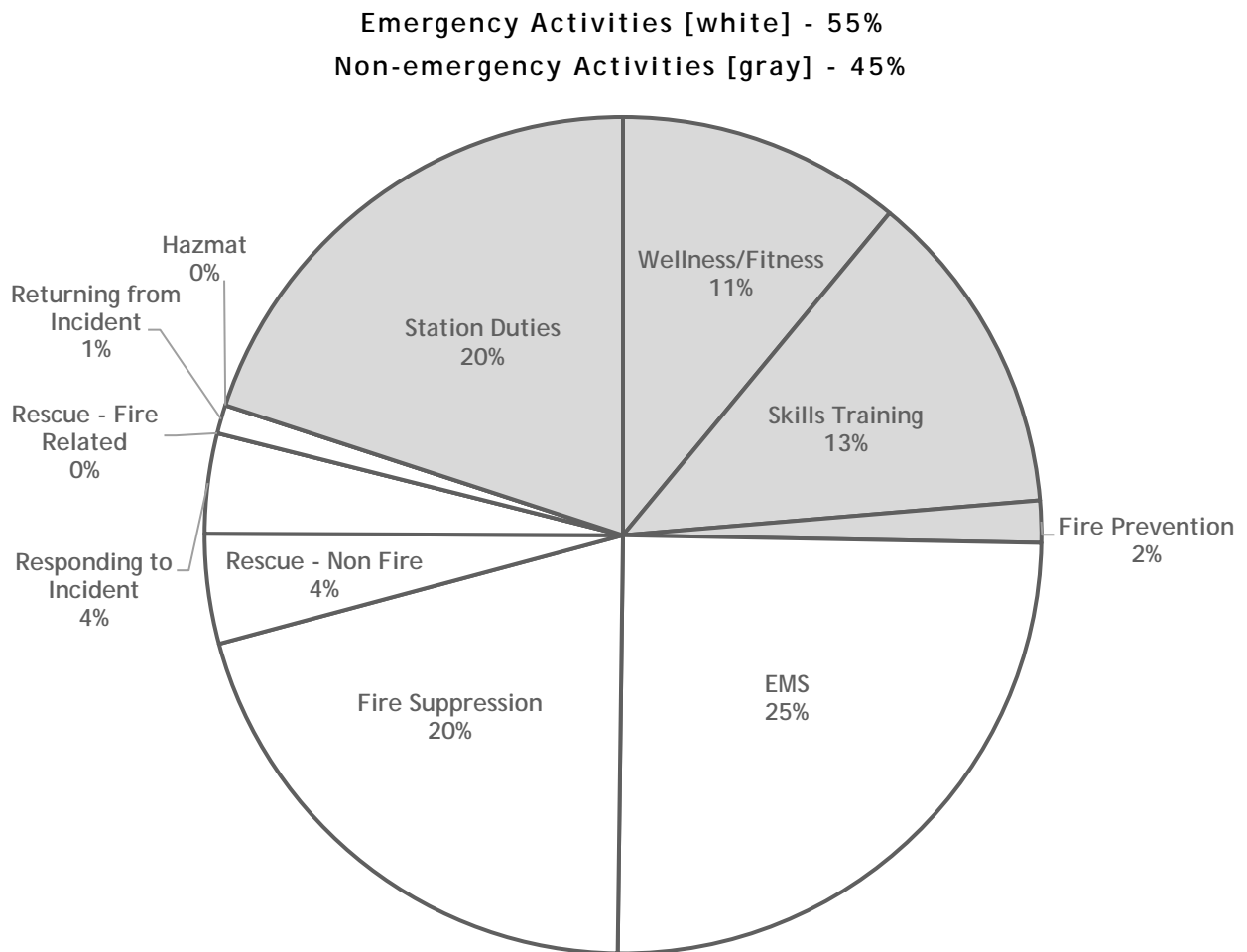
| <b>Activity</b>         | <b>Minor</b> | <b>Serious</b> | <b>Fatal</b> | <b>Total</b> |
|-------------------------|--------------|----------------|--------------|--------------|
| EMS                     | 776          | 146            | 0            | 922          |
| Fire Suppression        | 616          | 145            | 2            | 763          |
| Rescue - Non-Fire       | 140          | 17             | 0            | 157          |
| Responding to Incident  | 114          | 28             | 1            | 143          |
| Returning from Incident | 39           | 14             | 0            | 53           |
| Rescue - Fire Related   | 37           | 4              | 0            | 41           |
| Hazmat                  | 24           | 2              | 0            | 26           |
| <b>Total</b>            | <b>1746</b>  | <b>356</b>     | <b>3</b>     | <b>2105</b>  |

*Table 6: Number of Injured Individuals by Non-Emergency Activity and Severity, 2019*

| <b>Activity</b>  | <b>Minor</b> | <b>Serious</b> | <b>Fatal</b> | <b>Total</b> |
|------------------|--------------|----------------|--------------|--------------|
| Station Duties   | 591          | 147            | 1            | 739          |
| Skills Training  | 330          | 139            | 0            | 469          |
| Wellness/Fitness | 290          | 117            | 0            | 407          |
| Fire Prevention  | 46           | 14             | 0            | 60           |
| <b>Total</b>     | <b>1257</b>  | <b>417</b>     | <b>1</b>     | <b>1675</b>  |



Figure 2: Percentages of Injured Individuals in Emergency and Non-Emergency Activities, 2019

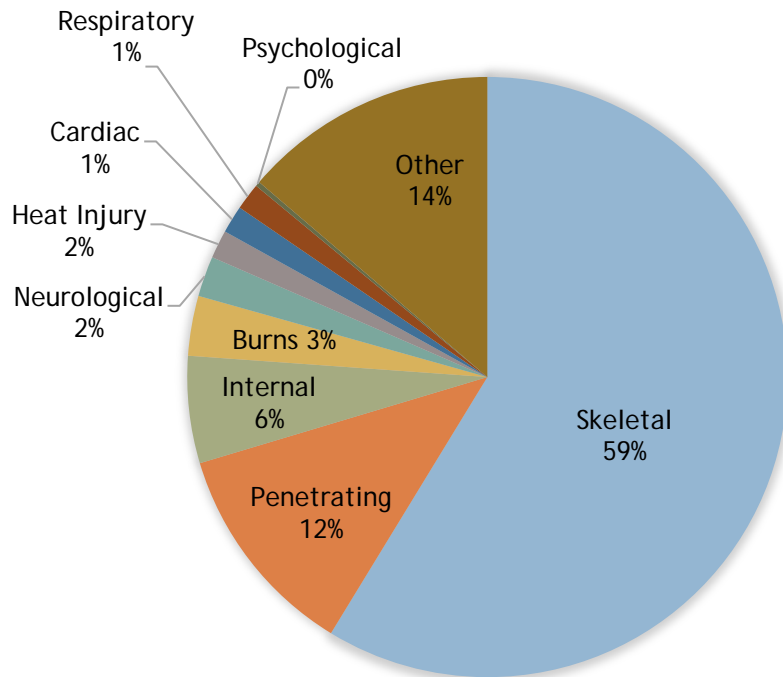


# Types of Injuries

Table 7: Types of Injury, 2019

| Type of Injury | 2019        |             |
|----------------|-------------|-------------|
|                | Count       | Percent     |
| Skeletal       | 1691        | 59%         |
| Penetrating    | 325         | 11%         |
| Internal       | 162         | 6%          |
| Burns          | 90          | 3%          |
| Neurological   | 60          | 2%          |
| Heat Injury    | 45          | 2%          |
| Cardiac        | 41          | 1%          |
| Respiratory    | 40          | 1%          |
| Psychological  | 7           | 0%          |
| Other          | 388         | 14%         |
| <b>Total</b>   | <b>2849</b> | <b>100%</b> |

Figure 3: Types of Injuries, 2019

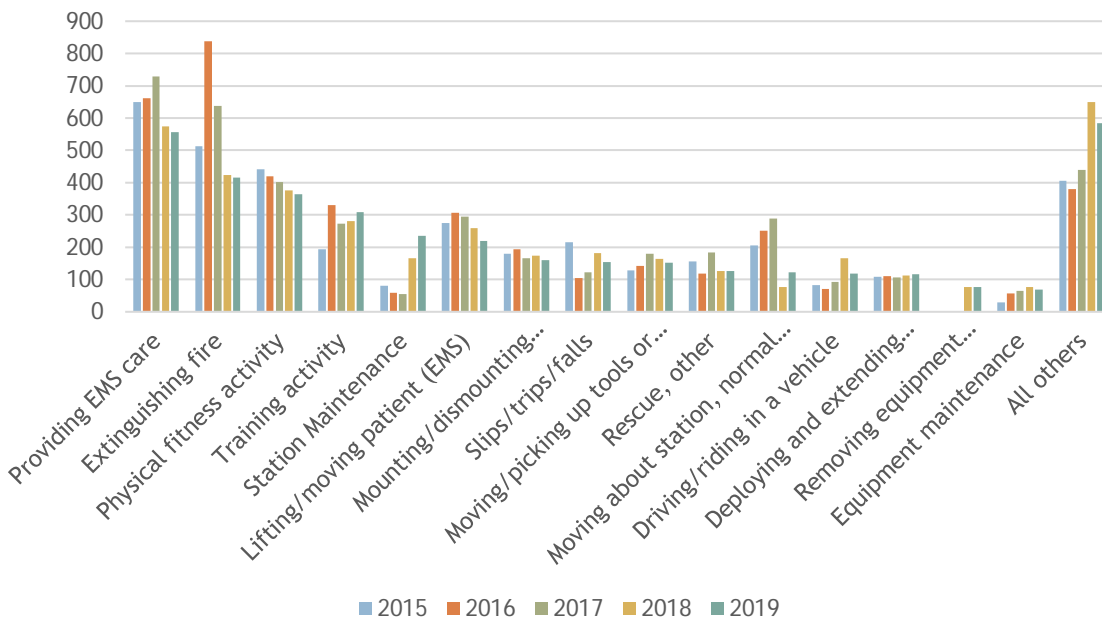


# Task at Time of Injury

**Table 8: Top 15 Tasks at Time of Injury, 2015-2019 (ordered by 2019, descending)**

| Task   | 2015        | 2016        | 2017        | 2018        | 2019        |
|--|-------------|-------------|-------------|-------------|-------------|
| Providing EMS care                                     | 649         | 661         | 728         | 575         | 556         |
| Extinguishing fire                                     | 513         | 837         | 638         | 423         | 416         |
| Physical fitness activity                              | 442         | 420         | 401         | 376         | 364         |
| Training activity                                      | 193         | 331         | 273         | 281         | 309         |
| Station Maintenance                                    | 81          | 59          | 55          | 166         | 235         |
| Lifting/moving patient (EMS)                           | 275         | 306         | 294         | 259         | 220         |
| Mounting/dismounting apparatus                         | 180         | 193         | 166         | 173         | 159         |
| Slips/trips/falls                                      | 215         | 105         | 122         | 181         | 154         |
| Moving/picking up tools or equipment                   | 128         | 142         | 179         | 163         | 153         |
| Rescue, other  | 155         | 118         | 183         | 126         | 126         |
| Moving about station, normal activity                  | 206         | 252         | 289         | 77          | 122         |
| Driving/riding in a vehicle                            | 82          | 70          | 92          | 166         | 119         |
| Deploying and extending hoseline                       | 108         | 111         | 106         | 113         | 117         |
| Removing equipment from/returning equipment to storage | n/a         | n/a         | n/a         | 76          | 76          |
| Equipment maintenance                                  | 29          | 57          | 65          | 77          | 69          |
| All others   | 406         | 380         | 440         | 649         | 585         |
| <b>Total</b>   | <b>3721</b> | <b>4097</b> | <b>4090</b> | <b>3881</b> | <b>3780</b> |

**Figure 4: Top 15 Tasks at Time of Injury, 2015 - 2019**



## Injuries by Body Part

**Table 9: Injuries by Body Part, 2015 - 2017 (ordered by 2017, descending)**

| Injured Body Part                        | 2015        | 2016        | 2017        |
|--|-------------|-------------|-------------|
| Multiple body parts, whole body          | 659         | 1007        | 1064        |
| Hand and fingers                         | 328         | 359         | 365         |
| Knee                                     | 369         | 376         | 315         |
| Hip, lower back, or buttocks             | 316         | 283         | 292         |
| Back, except spine                       | 207         | 244         | 248         |
| Shoulder                                 | 241         | 238         | 221         |
| Ankle                                    | 202         | 192         | 179         |
| Multiple Parts                           | 180         | 124         | 151         |
| Face                                     | 140         | 116         | 127         |
| Arm, lower, not including elbow or wrist | 84          | 109         | 121         |
| Leg, lower                               | 117         | 132         | 113         |
| Foot and toes                            | 71          | 85          | 87          |
| Head                                     | 69          | 82          | 78          |
| Ear                                      | 60          | 74          | 76          |
| Chest                                    | 40          | 82          | 76          |
| Eye                                      | 75          | 70          | 73          |
| Multiple body parts, upper body          | 52          | 61          | 73          |
| Elbow                                    | 51          | 47          | 72          |
| Wrist                                    | 48          | 74          | 56          |
| Other body parts injured                 | 500         | 342         | 303         |
| <b>Total</b>                             | <b>3809</b> | <b>4097</b> | <b>4090</b> |

Because TCFP migrated to a new data management system in 2017, the data collected in years 2018-2019 was categorized differently than it had been in the past. This is why Table 9 only goes through 2017, and we now have new tables (10 & 11) for 2018-2019 data.

**Table 10: Injuries by Body Part Type, 2018 & 2019**

| Injured Body Part | 2018        | 2019        |
|-------------------|-------------|-------------|
| Upper Extremities | 864         | 795         |
| Lower Extremities | 810         | 684         |
| Back              | 490         | 466         |
| Head              | 300         | 327         |
| Multiple Parts    | 318         | 255         |
| Internal          | 105         | 125         |
| Chest             | 104         | 108         |
| Neck              | 64          | 56          |
| Hip               | 23          | 33          |
| <b>Total</b>      | <b>3078</b> | <b>2849</b> |

**Table 11: Injuries by Body Part Sub-Type, 2018 & 2019**

| Body Part by Sub-Type | 2018 | 2019 |
|-----------------------|------|------|
| Back: Back            | 198  | 194  |
| Back: Buttocks        | 1    | 3    |
| Back: Lower Back      | 282  | 258  |
| Back: Neck            | 4    | 4    |
| Back: Spine           | 5    | 7    |
| Chest: Abdomen        | 5    | 4    |
| Chest: Abdominal Area | 10   | 4    |
| Chest: Chest          | 89   | 100  |
| Head: Cheek           | 5    | 7    |
| Head: Chin            | 7    | 1    |
| Head: Ear             | 77   | 117  |
| Head: Eye             | 64   | 60   |
| Head: Face            | 111  | 112  |
| Head: Jaw             | 1    | 6    |
| Head: Mouth           | 15   | 16   |
| Head: Nose            | 20   | 8    |
| Hip: Groin            | 9    | 14   |
| Hip: Hip              | 13   | 18   |

|                              |             |             |
|------------------------------|-------------|-------------|
| Hip: Pelvis                  | 1           | 1           |
| Internal: Genito-urinary     | 4           | 11          |
| Internal: Heart              | 5           | 7           |
| Internal: Internal           | 66          | 71          |
| Internal: Intestinal tract   | 5           | 4           |
| Internal: Lungs              | 9           | 11          |
| Internal: Stomach            | 15          | 20          |
| Internal: Trachea            | 1           | 1           |
| Lower Extremities: Ankle     | 206         | 163         |
| Lower Extremities: Foot      | 93          | 88          |
| Lower Extremities: Knee      | 347         | 273         |
| Lower Extremities: Lower leg | 111         | 97          |
| Lower Extremities: Toes      | 15          | 22          |
| Lower Extremities: Upper Leg | 38          | 41          |
| Multiple Parts: Lower Body   | 26          | 19          |
| Multiple Parts: Unknown      | 26          | 11          |
| Multiple Parts: Upper Body   | 74          | 76          |
| Multiple Parts: Whole Body   | 192         | 149         |
| Neck: Neck                   | 59          | 49          |
| Neck: Throat                 | 5           | 7           |
| Upper Extremities: Elbow     | 68          | 44          |
| Upper Extremities: Hands     | 361         | 326         |
| Upper Extremities: Lower Arm | 10          | 59          |
| Upper Extremities: Shoulder  | 234         | 235         |
| Upper Extremities: Upper Arm | 112         | 72          |
| Upper Extremities: Wrist     | 79          | 59          |
| <b>Total</b>                 | <b>3078</b> | <b>2849</b> |

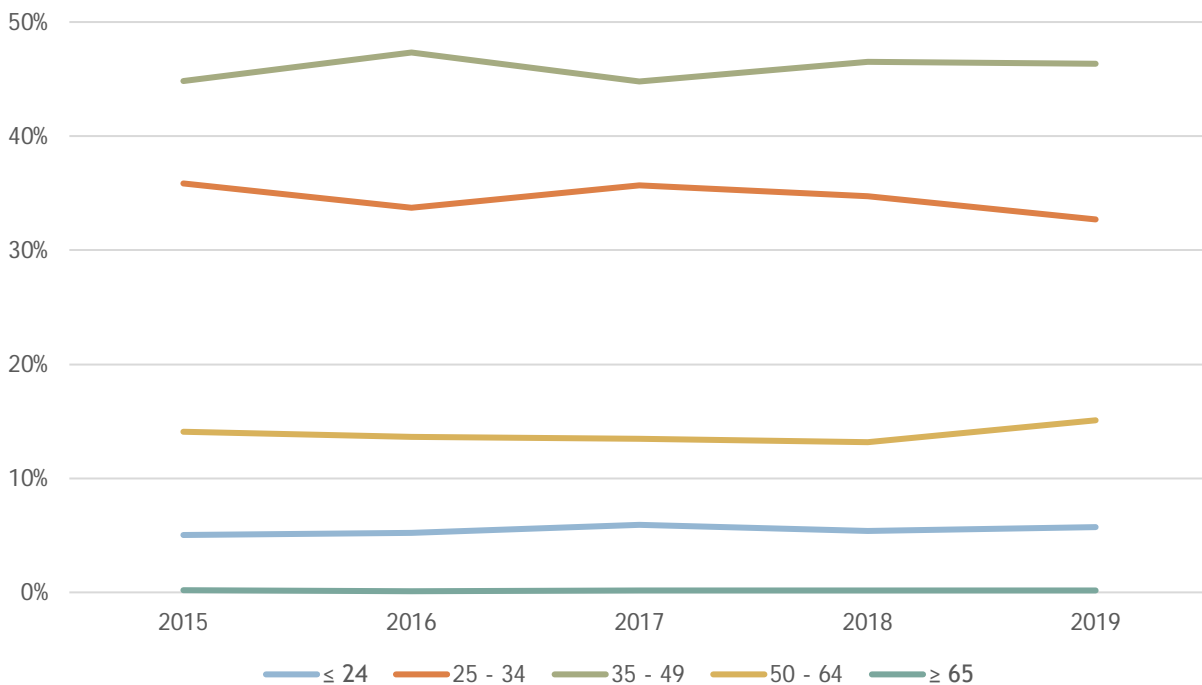
## Individuals by Age Group

*Table 12: Individuals by Age Group\*, 2015 - 2019*

| Age Group | 2015  |         | 2016  |         | 2017  |         | 2018  |         | 2019  |         |
|-----------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|
|           | Count | Percent | Count | Percent | Count | Percent | Count | Percent | Count | Percent |
| ≤ 24      | 187   | 5.03%   | 213   | 5.20%   | 242   | 5.92%   | 210   | 5.41%   | 210   | 5.65%   |
| 25 - 34   | 1334  | 35.85%  | 1382  | 33.73%  | 1460  | 35.70%  | 1348  | 34.73%  | 1220  | 32.82%  |
| 35 - 49   | 1669  | 44.85%  | 1939  | 47.33%  | 1832  | 44.79%  | 1806  | 46.53%  | 1716  | 46.17%  |
| 50 - 64   | 524   | 14.08%  | 559   | 13.64%  | 550   | 13.45%  | 511   | 13.17%  | 566   | 15.23%  |
| ≥ 65      | 7     | 0.19%   | 4     | 0.10%   | 6     | 0.15%   | 6     | 0.15%   | 5     | 0.13%   |
| Totals    | 3721  | 100.00% | 4097  | 100.00% | 4090  | 100.00% | 3881  | 100.00% | 3717  | 100.00% |

\*Includes injured individuals and individuals with exposures.

*Figure 5: Individuals by Age Group, percentages, 2014 - 2019*



## Injury Activities Resulting in Lost Time

*Table 13: Activities Individuals Were Doing that Resulted in Lost Time, 2019, Totals*

| Activity                | Count      | Days Missed |              |
|-------------------------|------------|-------------|--------------|
|                         |            | Average     | Sum          |
| Fire Suppression        | 82         | 44          | 3619         |
| EMS                     | 75         | 41          | 3086         |
| Wellness/Fitness        | 59         | 45          | 2679         |
| Skills Training         | 70         | 37          | 2617         |
| Station Duties          | 79         | 30          | 2446         |
| Responding to Incident  | 9          | 21          | 189          |
| Fire Prevention         | 8          | 21          | 173          |
| Rescue - Non-Fire       | 10         | 17          | 171          |
| Returning from Incident | 10         | 15          | 154          |
| Rescue - Fire Related   | 2          | 12          | 25           |
| Hazmat                  | 1          | 10          | 10           |
| <b>Total</b>            | <b>323</b> | <b>25</b>   | <b>11550</b> |

*Table 14: Activities Individuals Were Doing that Resulted in Lost Time, 2019, Between 1 and 30 days*

| Activity                | Count      | Days Missed |             |
|-------------------------|------------|-------------|-------------|
|                         |            | Average     | Sum         |
| Station Duties          | 57         | 11          | 633         |
| Skills Training         | 48         | 11          | 532         |
| Fire Suppression        | 49         | 10          | 500         |
| EMS                     | 42         | 11          | 487         |
| Wellness/Fitness        | 40         | 10          | 405         |
| Returning from Incident | 9          | 13          | 122         |
| Rescue - Non-Fire       | 8          | 10          | 86          |
| Responding to Incident  | 6          | 9           | 54          |
| Fire Prevention         | 6          | 4           | 28          |
| Rescue - Fire Related   | 2          | 12          | 25          |
| Hazmat                  | 1          | 10          | 10          |
| <b>Total</b>            | <b>163</b> | <b>10</b>   | <b>1717</b> |



*Table 15: Activities Individuals Were Doing that Resulted in Lost Time, 2019, between 31 and 90 days*

| Activity                | Count     | Days Missed |             |
|-------------------------|-----------|-------------|-------------|
|                         |           | Average     | Sum         |
| EMS                     | 23        | 49          | 1148        |
| Fire Suppression        | 19        | 49          | 943         |
| Skills Training         | 16        | 58          | 928         |
| Station Duties          | 16        | 44          | 712         |
| Wellness/Fitness        | 7         | 44          | 312         |
| Responding to Incident  | 3         | 45          | 135         |
| Rescue - Non-Fire       | 2         | 42          | 85          |
| Fire Prevention         | 1         | 40          | 40          |
| Returning from Incident | 1         | 32          | 32          |
| <b>Total</b>            | <b>88</b> | <b>45</b>   | <b>4335</b> |

*Table 16: Activities Individuals Were Doing that Resulted in Lost Time, 2019, 91+ days*

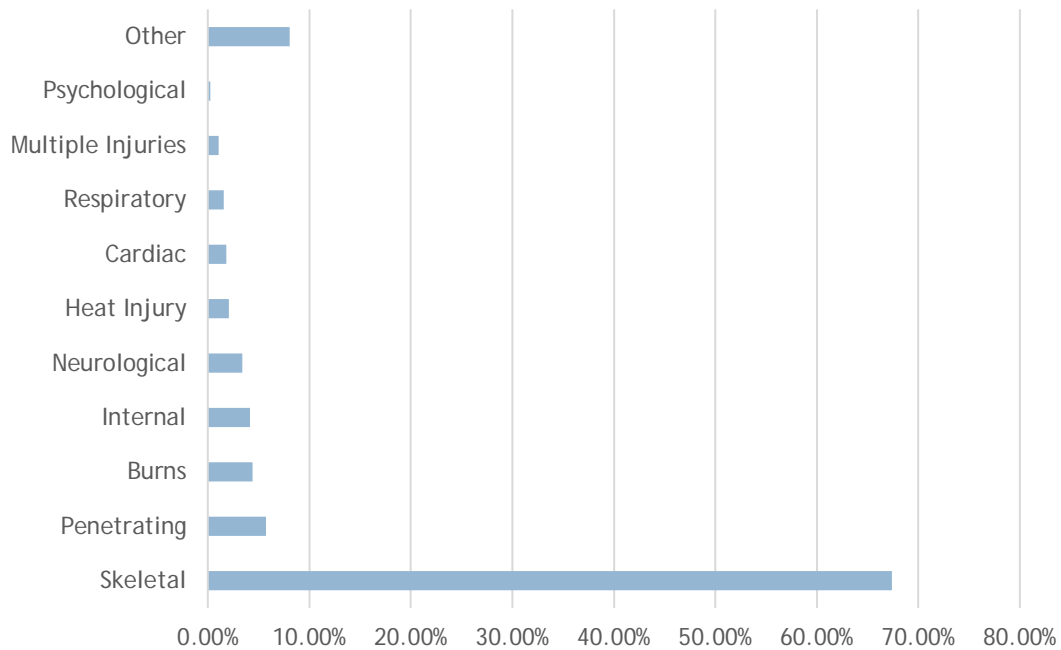
| Activity         | Count     | Days Missed |             |
|------------------|-----------|-------------|-------------|
|                  |           | Average     | Sum         |
| Fire Suppression | 14        | 155         | 2176        |
| Wellness/Fitness | 12        | 163         | 1962        |
| EMS              | 10        | 145         | 1451        |
| Skills Training  | 6         | 192         | 1157        |
| Station Duties   | 6         | 183         | 1101        |
| Fire Prevention  | 1         | 105         | 105         |
| <b>Total</b>     | <b>49</b> | <b>144</b>  | <b>1206</b> |

## Types of Injuries with Lost Time

Table 17: Types of Injuries Resulting in Lost Time, 2019

| Type of Injury    | Count      |
|-------------------|------------|
| Skeletal          | 258        |
| Penetrating       | 22         |
| Burns             | 17         |
| Internal          | 16         |
| Neurological      | 13         |
| Heat Injury       | 8          |
| Cardiac           | 7          |
| Respiratory       | 6          |
| Multiple Injuries | 4          |
| Psychological     | 1          |
| Other             | 31         |
| <b>Totals</b>     | <b>383</b> |

Figure 6: Types of Injuries Resulting in Lost Time, 2019



## Burn Injuries

*Table 18: All Burns, 2015 - 2019*

| All Burns - Types   | 2015      | 2016       | 2017       | 2018       | 2019      |
|---------------------|-----------|------------|------------|------------|-----------|
| Thermal (Heat/Fire) | 85        | 92         | 96         | 108        | 72        |
| Scald or Steam      | 10        | 9          | 13         | 12         | 10        |
| Chemical            | 0         | 3          | 4          | 6          | 6         |
| Electrical          | 0         | 2          | 0          | 1          | 2         |
| <b>Totals</b>       | <b>95</b> | <b>106</b> | <b>113</b> | <b>127</b> | <b>90</b> |

*Table 19: Burns by Body Part Sub-Type, 2019*

| Body Part Sub-Type       | Count |
|--------------------------|-------|
| Back: Back               | 0     |
| Back: Buttocks           | 0     |
| Back: Lower Back         | 0     |
| Back: Neck               | 0     |
| Back: Spine              | 0     |
| Chest: Abdomen           | 2     |
| Chest: Abdominal Area    | 0     |
| Chest: Chest             | 0     |
| Head: Cheek              | 1     |
| Head: Chin               | 1     |
| Head: Ear                | 17    |
| Head: Eye                | 5     |
| Head: Face               | 7     |
| Head: Jaw                | 0     |
| Head: Mouth              | 1     |
| Head: Nose               | 0     |
| Hip: Groin               | 0     |
| Hip: Hip                 | 0     |
| Hip: Pelvis              | 0     |
| Internal: Genito-urinary | 0     |

|                               |           |
|-------------------------------|-----------|
| Internal: Heart               | 0         |
| Internal: Internal            | 0         |
| Internal: Intestinal tract    | 0         |
| Internal: Lungs               | 0         |
| Internal: Stomach             | 0         |
| Internal: Trachea             | 0         |
| Lower Extremities: Ankle      | 0         |
| Lower Extremities: Foot       | 3         |
| Lower Extremities: Knee       | 1         |
| Lower Extremities: Lower leg  | 3         |
| Lower Extremities: Toes       | 1         |
| Lower Extremities: Upper Leg  | 0         |
| Multiple Parts: Lower Body    | 0         |
| Multiple Parts: Unknown       | 0         |
| Multiple Parts: Upper Body    | 6         |
| Multiple Parts: Whole Body    | 4         |
| Neck: Neck                    | 2         |
| Neck: Throat                  | 0         |
| Upper Extremities: Elbow      | 0         |
| Upper Extremities: Hands      | 16        |
| Upper Extremities: Lower Back | 5         |
| Upper Extremities: Shoulder   | 1         |
| Upper Extremities: Upper Arm  | 3         |
| Upper Extremities: Wrist      | 11        |
| <b>Total</b>                  | <b>90</b> |

*Table 20: Burns by Body Part, 2015 - 2017, Historical Data*

| Body Part                       | 2015 | 2016 | 2017 | 2018* | 2019* |
|---------------------------------|------|------|------|-------|-------|
| Ear                             | 22   | 14   | 16   | 17    | 17    |
| Hand and fingers                | 14   | 27   | 22   | 30    | 16    |
| Face                            | 12   | 16   | 9    | 14    | 10    |
| Wrist                           | 4    | 9    | 7    | 8     | 11    |
| Multiple body parts, upper body | 5    | 8    | 4    | 10    | 6     |
| Eye                             | 0    | 0    | 0    | 4     | 5     |

|   |           |            |            |            |           |
|---|-----------|------------|------------|------------|-----------|
| Hip, lower back, or buttocks                | 0         | 1          | 0          | 0          | 5         |
| Foot and toes                               | 1         | 3          | 1          | 6          | 4         |
| Multiple parts                              | 8         | 4          | 12         | 5          | 4         |
| Arm, upper, not including elbow or shoulder | 2         | 1          | 2          | 11         | 3         |
| Lower extremities                           | 1         | 2          | 0          | 8          | 3         |
| Chest                                       | 0         | 1          | 1          | 2          | 2         |
| Neck  | 6         | 4          | 7          | 2          | 2         |
| Knee  | 0         | 1          | 2          | 0          | 1         |
| Shoulder                                    | 5         | 3          | 6          | 9          | 1         |
| Back, except spine                          | 0         | 0          | 2          | 1          | 0         |
| Elbow                                       | 0         | 0          | 1          | 0          | 0         |
| Pelvis or groin                             | 0         | 0          | 2          | 0          | 0         |
| Throat                                      | 0         | 0          | 0          | 0          | 0         |
| Arm, lower, not including elbow or wrist    | 3         | 2          | 12         | n/a        | n/a       |
| Head  | 4         | 2          | 1          | n/a        | n/a       |
| Leg, lower                                  | 6         | 3          | 3          | n/a        | n/a       |
| Upper extremities                           | 2         | 2          | 0          | n/a        | n/a       |
| Neck and shoulders                          | 0         | 0          | 1          | n/a        | n/a       |
| Undetermined                                | 0         | 3          | 2          | n/a        | n/a       |
| <b>Total</b>                                | <b>95</b> | <b>106</b> | <b>113</b> | <b>127</b> | <b>90</b> |

\*The 2018 & 2019 columns were pieced together from the data in Table 19: Burns by Body Part Sub-Type, from the 2018 and 2019 injury report data. This was done in order to view trends and patterns.

## Exposures

*Table 21: Exposure by Sub-Type, 2018 - 2019*

| <b>Exposure + Sub-Type</b>           | <b>2018</b> | <b>2019</b> |
|--------------------------------------|-------------|-------------|
| Chemical: Ammonia                    | 1           | 3           |
| Chemical: Battery Acid*              | n/a         | 4           |
| Chemical: Benzene                    | 2           | 15          |
| Chemical: Bleach                     | 1           | 11          |
| Chemical: Not listed                 | 151         | 160         |
| Chemical: Unidentified               | 73          | 55          |
| Physical: Animal venom               | 6           | 17          |
| Physical: Meningitis                 | 38          | 40          |
| Physical: Not listed                 | 138         | 201         |
| Physical: Plant toxin                | 27          | 14          |
| Physical: Radiation*                 | n/a         | 4           |
| Physical: Unidentified               | 87          | 66          |
| Physical: UV Light*                  | n/a         | 2           |
| Respiratory: Blood                   | 69          | 73          |
| Respiratory: COVID 19*               | n/a         | 1           |
| Respiratory: Influenza               | 4           | 19          |
| Respiratory: Not listed              | 108         | 118         |
| Respiratory: Saliva                  | 24          | 22          |
| Respiratory: Tuberculosis            | 98          | 76          |
| Respiratory: Unidentified            | 50          | 37          |
| Respiratory: Vomit                   | 7           | 8           |
| Other: Asbestos*                     | n/a         | 3           |
| Other: Carbon Monoxide*              | n/a         | 1           |
| Other: Carcinogenic Substances*      | n/a         | 1           |
| Other: Contaminated Water/Sewage*    | n/a         | 4           |
| Other: Smoke/Products of Combustion* | n/a         | 5           |
| Other: Virus                         | n/a         | 3           |
| <b>Total</b>                         | <b>884</b>  | <b>963</b>  |

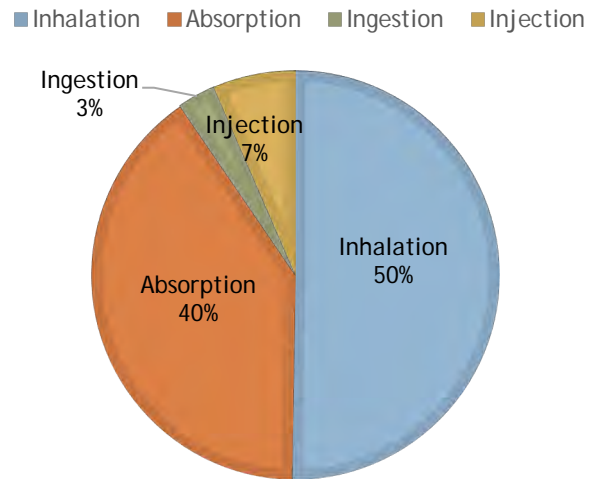
*Due to the change in our information management system, the exposure data collected in calendar years 2018 and 2019 is less specific than the exposure data collected in previous years. This is why we currently have "historical data" in separate charts and figures than that for 2018 and 2019.*

\*These exposure types were added to the injury reporting application in 2019, which is why they have n/a in the numbers column for 2018.

*Table 22: Exposure by Route, 2019*

| Route              | Count      |
|--------------------|------------|
| Absorption         | 386        |
| Ingestion          | 31         |
| Inhalation         | 478        |
| Injection/Puncture | 68         |
| <b>Total</b>       | <b>963</b> |

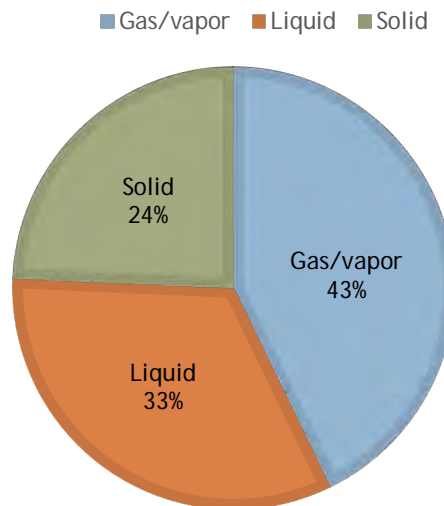
*Figure 7: Exposure by Route, 2019, percentages*



*Table 23: Exposure by Substance, 2019*

| Substance    | Count      |
|--------------|------------|
| Gas/vapor    | 412        |
| Liquid       | 317        |
| Solid        | 234        |
| <b>Total</b> | <b>963</b> |

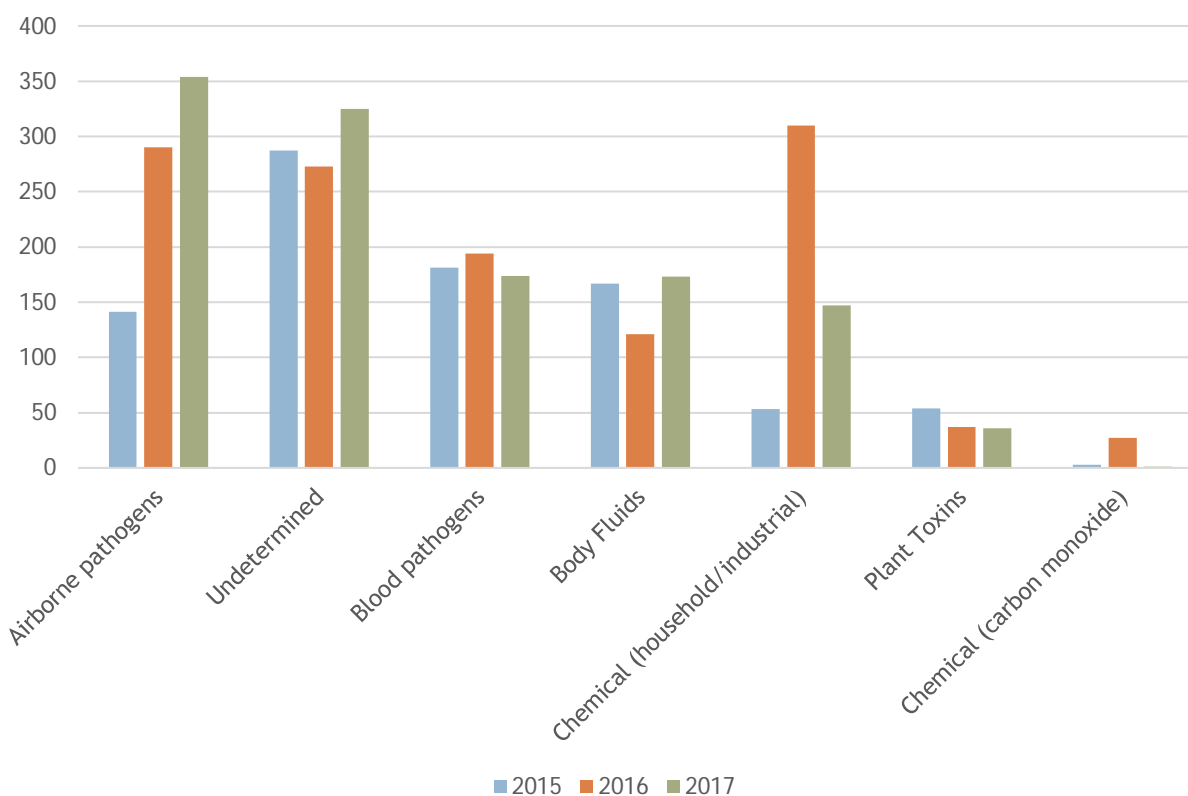
*Figure 8: Exposure by Substance, 2019, Percentages*



*Table 24: Routes of Exposure, 2015 - 2017, Historical Data (ordered by 2017, descending)*

| Exposure Routes                 | 2015       | 2016        | 2017        |
|---------------------------------|------------|-------------|-------------|
| Airborne pathogens              | 141        | 290         | 354         |
| Undetermined                    | 287        | 273         | 325         |
| Blood pathogens                 | 181        | 194         | 174         |
| Body Fluids                     | 167        | 121         | 173         |
| Chemical (household/industrial) | 53         | 310         | 147         |
| Plant Toxins                    | 54         | 37          | 36          |
| Chemical (carbon monoxide)      | 3          | 27          | 1           |
| <b>Total</b>                    | <b>886</b> | <b>1252</b> | <b>1210</b> |

*Figure 9: Routes of Exposure, 2015 - 2017, Historical data*





*Table 25: Exposure description, 2015 - 2017, Historical Data (ordered by 2017, descending)*

| <b>Exposure description</b>    | <b>2015</b> | <b>2016</b> | <b>2017</b> |
|--------------------------------|-------------|-------------|-------------|
| Unknown                        | 256         | 148         | 290         |
| Blood                          | 167         | 161         | 153         |
| Chemicals/household/industrial | 36          | 310         | 122         |
| Asbestos                       | 51          | 51          | 112         |
| Tuberculosis                   | 73          | 128         | 109         |
| Body fluids                    | 92          | 91          | 101         |
| Meningitis                     | 91          | 62          | 104         |
| Animals or wildlife            | 75          | 90          | 58          |
| Sickness, other                | 21          | 24          | 49          |
| Poison plants                  | 61          | 37          | 37          |
| Vomit                          | 19          | 14          | 17          |
| Chlorine                       | 4           | 1           | 14          |
| Mold                           | 4           | 26          | 10          |
| Airborne, other                | 7           | 40          | 7           |
| Staph                          | 3           | 0           | 7           |
| Carbon monoxide                | 8           | 26          | 5           |
| HIV                            | 11          | 4           | 4           |
| Scabies                        | 4           | 21          | 4           |
| Hepatitis C                    | 10          | 14          | 3           |
| MRSA                           | 0           | 14          | 3           |
| Bacterial pneumonia            | 1           | 0           | 1           |
| Explosive residue              | 0           | 0           | 0           |
| Influenza                      | 0           | 0           | 0           |
| Lice                           | 0           | 0           | 0           |
| Strep                          | 0           | 1           | 0           |
| <b>Total</b>                   | <b>994</b>  | <b>1263</b> | <b>1210</b> |

# Cancer

In June of 2019, the Governor of Texas signed Senate Bill 2551 (SB 2551) which expanded the scope of the law in which firefighters and EMTs who suffer from cancer are presumed to have developed the condition during the course and scope of their employment. The types of cancer this law addresses include:

- cancers that originate at the stomach, colon, rectum, skin, prostate, testis or brain
- non-Hodgkin's lymphoma
- multiple myeloma
- malignant melanoma
- renal cell carcinoma

The commission received **19** reports of cancer diagnoses from fire departments in 2019:

Skin/Melanoma/Basal Cell Carcinoma - 6  
(Males, 36, 48, 51, 55, 56, 61)

Testicular - 1  
(Males, 37)

Prostate - 3  
(Males, 50, 57, 60)

Colorectal - 1  
(Male, 33)

Colon - 2  
(Female, 47; Male, 51)

Anal - 1  
(Male, 55)

Kidney - 1  
(Male, 54)

## A Reminder for Fire Departments

Any injuries to fire protection personnel that are reported to the Texas Worker's Compensation Commission must be reported to the Texas Commission on Fire Protection. This includes cancer diagnoses.

Throat - 1  
(Male, 54)

Unidentified - 3  
(Female, 32; Males, 46, 53)

The commission strongly encourages fire departments to report cancer diagnoses; the commission recognizes that the number of job-related cancers reported during this time-period represents only a small fraction of the cases that Texas fire departments are currently managing. There is a growing awareness of the impact that cancer is having on fire protection personnel nationwide, and the commission urges departments to use this reporting tool to help contribute to the education and awareness of the issue in Texas.

## SOP Issues

In 2019 there were 33 injuries attributed to failures of fire protection personnel to follow their departments' standard operating procedures (SOPs). All but a few were instances where the individuals were not wearing their provided PPE/SCBA gear in an environment or situation in which they should have been.

In its compliance inspections, the Texas Commission on Fire Protection verifies that fire departments have written SOPs that cover the appropriate subject matter.

*Table 26: Injuries Attributed to SOP Issues, 2019*

| Activity               | Minor     | Serious  | Total     | 2018      | 2017      |
|------------------------|-----------|----------|-----------|-----------|-----------|
| EMS                    | 11        | 0        | 11        | 9         | 7         |
| Fire Suppression       | 6         | 4        | 10        | 19        | 9         |
| Station Duties         | 5         | 1        | 6         | 1         | 4         |
| Rescue - Non-fire      | 3         | 1        | 4         | 0         | 1         |
| Rescue - Fire-related  | 2         | 0        | 2         | 0         | 0         |
| Skills Training        | 0         | 1        | 1         | 2         | 2         |
| Wellness/fitness       | 0         | 1        | 1         | 0         | 1         |
| Responding to Incident | 0         | 0        | 0         | 1         | 3         |
| Fire Prevention        | 0         | 0        | 0         | 0         | 1         |
| <b>Totals</b>          | <b>27</b> | <b>8</b> | <b>35</b> | <b>32</b> | <b>28</b> |

*Table 27: Injuries Attributed to PPE & PASS Failures, 2019*

| Activity              | Minor    | Serious  | Total    | 2018      | 2017*      |
|-----------------------|----------|----------|----------|-----------|------------|
| Fire Suppression      | 2        | 0        | 2        | 8         | n/a        |
| Skills Training       | 1        | 1        | 2        | 2         | n/a        |
| Station Duties        | 1        | 0        | 1        | 0         | n/a        |
| Rescue - Non-fire     | 0        | 0        | 0        | 2         | n/a        |
| EMS                   | 0        | 0        | 0        | 1         | n/a        |
| Rescue - Fire-related | 0        | 0        | 0        | 1         | n/a        |
| <b>Totals</b>         | <b>4</b> | <b>1</b> | <b>5</b> | <b>14</b> | <b>n/a</b> |

\*TCFP did not start collecting information on PPE & PASS failures until 2018.

## Fatalities

The commission's 2019 injury report includes four fatalities. Fatalities listed in this report include only those reported to the Texas Commission on Fire Protection (TCFP) by the entities it regulates.

The State Fire Marshal's Office conducted three Texas fire fighter fatality incident investigations between September 1, 2018 and August 31, 2019. Comprehensive information about the investigations may be found on their website at the following web address: <https://www.tdi.texas.gov/fire/fmloddannuals.html>

# Recommendations

The commission would like to thank Texas fire departments for their ongoing participation in reporting fire protection personnel injuries. This report would not be possible without their efforts.

Based on their review of the data contained within this report, the commission offers the following recommendations:

## *Recommendations for the Texas Fire Service*

1. Continue to focus on reducing strains and sprains:
  - Stretching
  - EMS equipment review/patient moving
  - Equipment deployment/apparatus design
2. Continue to focus on reducing weightlifting injuries:
  - Clarify the purpose of weightlifting (functional fitness vs. body sculpting)
  - Review types of exercise routines
3. Focus on safety during non-emergency activities, especially:
  - station duties
  - training exercises
  - wellness/fitness activities
4. Increase cancer reporting and prevention activities:
  - Consider early detection testing
  - Review the Health and Wellness Committee's March 2019 [presentation](#)
  - Read *The Lavender Ribbon Report* (download a copy [here](#))
  - Clean everything often
5. Reduce fire ground injuries through prevention:
  - Fire risk analysis
  - Familiarity walk through
  - Pre-planning with focus on firefighter safety and injury prevention

## Commission-adopted standards

The commission has adopted several NFPA and other nationally recognized standards to help keep Texas fire protection personnel safe. This list summarizes the relationships between some of the Texas laws and national standards and is not intended to be all-inclusive:

### Texas Government Code

[§419.040, Protective Clothing](#)

[§419.041, Self-Contained Breathing Apparatus](#)

[§419.042, Personal Alert Safety Systems](#)

[§419.043, Applicable National Fire Protection Association Standard](#)

[§419.044, Incident Management System](#)

[§419.045, Personnel Accountability System](#)

[§419.046, Fire Protection Personnel Operating at Emergency Incidents](#)

[§419.047, Commission Enforcement](#)

### Texas Administrative Code

[CHAPTER 425 FIRE SERVICE INSTRUCTORS](#)

[§443.9 National Fire Protection Association Standard](#)

[CHAPTER 435 FIRE FIGHTER SAFETY](#)

[§435.21 Fire Service Joint Labor Management Wellness-Fitness Initiative](#)

[§435.23 Fire Fighter Injuries](#)

[§435.25 Courage to be Safe So Everyone Goes Home Program](#)

[§435.27 Live Fire Training Structure Evolutions](#)

[CHAPTER 451 FIRE OFFICER](#)

## CHAPTER 457 INCIDENT SAFETY OFFICER CERTIFICATION

See also the commission's web page: [NFPA Standards adopted by the commission.](#)





# **FIREFIGHTER FATALITY INVESTIGATIONS**

## **Annual Report**

FY 2020