

STATE FIRE MARSHAL'S OFFICE

Firefighter Fatality Investigations



ANNUAL REPORT FY 2011

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Executive Summary

During the State of Texas Fiscal Year 2011 (September 1, 2010 – August 31, 2011), the State Fire Marshal's Office (SFMO) conducted seven firefighter fatality incident investigations, involving seven fatalities.

The following table provides information on the firefighter fatalities.

Firefighter Name	Date of Death	Incident Description
Francis Arthur Ladue, Jr.	January 9, 2011	Fire ground operations injury – Slip and fall from apparatus
Elias Jaquez	April 20, 2011	Wildland firefighting operations – Burn injuries
Gregory Mack Simmons	April 15, 2011	Wildland firefighting operations injury – Vehicle/pedestrian accident
Chris Pham	June 22, 2011	Medical – Cardiovascular incident while on duty
Caleb Nathanael Hamm	July 7, 2011	Medical – Hyperthermia while fighting a wildland fire
Larry Gale Nelson	August 12, 2011	Medical – Fall from ladder while working at station house
Lt. Todd Krodle	August 14, 2011	Fire ground operations injury – Fall through roof, thermal injuries

Texas Firefighter Fatality Investigation Authority

In FY 2011, the 82nd Legislature enacted SB 396, requiring the SFMO to investigate firefighter fatalities occurring “in the line of duty or in connection with an on-duty incident.” This bill expands the investigative jurisdiction of the SFMO, which had previously investigated only those fatalities occurring in connection with a firefighting incident. This change took effect May 12, 2011.

The statute requires the SFMO to investigate the circumstances surrounding the death of the firefighter, including factors that may have contributed to the death of the firefighter.

The State Fire Marshal is required to coordinate the investigative efforts of local government officials and may enlist established fire service organizations and private entities to assist in the investigation. Additionally, the State Fire Marshal may appoint an Advisory Committee to provide Firefighter Fatality Investigation Program policy guidance. The following entities serve on the Firefighter Fatality Advisory Committee:

- State Firemen's & Fire Marshals' Association of Texas;
- Texas State Association of Fire Fighters;
- Texas Fire Marshal's Association;
- Texas Fire Chiefs Association;
- Texas Commission on Fire Protection;
- Texas Forest Service;
- Texas Engineering Extension Service, Emergency Services Training Institute, Texas A&M University System; and
- Texas metropolitan fire departments (including Austin, Dallas, El Paso, Fort Worth, Houston, and San Antonio).

The Texas Commission on Fire Protection is charged with developing and establishing criteria to receive and analyze injury information pertaining to Texas firefighters, and to transmit its report to the State Fire Marshal for inclusion in this annual report, through §419.048 of Senate Bill 1011, passed during the 81st Legislature. Its first report is included as an appendix to this report.

Fiscal Year 2011 Investigation Summary

Francis Arthur Ladue, Jr., Santa Rosa Volunteer Fire Department (FY 11-01) Fire grounds operations injury – Slip and fall from apparatus

On January 9, 2011, Santa Rosa Volunteer Firefighter Francis Arthur Ladue, Jr., age 63, died as a result of a head injury from a slip and fall while performing re-supply operations on the scene of a wildland fire on November 8, 2010. Francis Arthur Ladue, Jr., served with the Santa Rosa VFD since 2008.

At 2:30 PM, on November 8, 2010, Firefighter Ladue was operating the Santa Rosa VFD Engine 9 during re-supply operations of a brush truck at a grass/brush fire near South Rabb Road in Cameron County. Engine 9 features an open passenger cab with the pump controls located mid midway between the cab and tank. Firefighter Ladue slipped while stepping down from the pump controls to the passenger side and hit the back of his head. Firefighter Ladue indicated he was not injured and refused treatment at the scene. After the fire was secured he returned to the station and then home, after refusing medical attention. Complaining of a headache to his wife, he went into a bedroom to rest. He was later found by his wife unconscious and unresponsive.

Emergency Medical Services transported him to Valley Baptist Medical Center in Harlingen, Texas where exams revealed an intracranial hemorrhage.

Firefighter Ladue remained on life support until passing away on January 9, 2011.

Elias Jaquez, Cactus Fire Department (FY 11-02) Wildland firefighting operations – Burn injuries

On April 20, 2011, Cactus Volunteer Fire Department Firefighter Elias Jaquez, 49, died as a result of burn injuries he received while responding to a wildland fire on April 9, 2011.

On April 9, 2011, Cactus VFD Firefighter Jaquez was severely injured along with three other firefighters after the fire truck he was riding in became stuck in rough terrain. Jaquez and the other Firefighters attempted to walk out of the fire area. As the fast-moving fire came closer, visibility was near zero and the Firefighters became separated. After the fire moved past them Jaquez was missing and a search was initiated. Elias Jaquez was found severely injured with third-degree burns to 60 percent of his body. He was flown to University Medical Center in

Lubbock, Texas, where he remained until his death on April 20, 2011. Jaquez joined the department just two years earlier.

Gregory Mack Simmons, Eastland Fire Department (FY 11-03)
Wildland firefighting operations injury – Vehicle/pedestrian accident

On April 15, 2011, Eastland Fire Department Firefighter Gregory Mack Simmons was fatally injured and four firefighters from area departments received injuries during firefighting operations at a fast-moving wildland fire. Gregory M. Simmons, 50 years old, was a 10-year veteran of the Eastland Fire Department.

At 12:11 PM, Eastland County Dispatch Center received a report of a grass fire located on FM 2563, south of the city limits of Eastland, Texas. Firefighter Simmons responded to the fire scene from the Eastland Fire Station driving Brush Unit 621. Firefighter Simmons was attempting to escape the fast-moving fire on foot and was struck by a vehicle. Firefighter Simmons was pronounced dead at the scene. Autopsy results indicated massive blunt force trauma consistent with auto-pedestrian impact injuries.

Chris Pham, Dallas Fire Department (FY 11-04)
Medical – Cardiovascular incident while on duty

On June 22, 2011, Dallas Firefighter Chris Pham, 35, died as a result of a cardiovascular incident while on duty at Dallas Fire Department Station 49.

Firefighter Pham was assigned to the Mobile Intensive Care Unit (MICU) Rescue 49 and was scheduled to be relieved at 7:00 AM on June 23, 2011. At approximately 7:40 AM, Firefighter Pham was found unresponsive in the bunkroom at Station 49. Advanced Life Support was administered for approximately 10 minutes at the station before being transported to Methodist Charleton Medical Center. Firefighter Pham was pronounced dead at 8:47 AM. An autopsy revealed that Firefighter Pham died as a result of a cardiac arrest. Pham worked with Dallas Fire Rescue since 2006.

Caleb Nathanael Hamm, Bureau of Land Management Bonneville Interagency Hotshot Crewmember (FY 11-05)
Medical – Hyperthermia while fighting a wildland fire

On July 7, 2011 Federal Firefighter Caleb Hamm, 23, of Boise, Idaho, collapsed while fighting the CR 337 wildland fire in the rural area of Palo Pinto County, Texas. Firefighter Hamm was a member of the Bureau of Land Management

Bonneville Interagency Hotshot Crew based in Salt Lake City, Utah, here assisting Texas in the struggle to extinguish several wild fires plaguing North and West Texas during a period of extreme drought conditions.

Firefighter Hamm was assigned to a hotshot crew performing cold trailing, an act of cutting firelines, and extinguishing hot spots, in a remote area of Palo Pinto County, approximately 25 miles northwest of Mineral Wells, Texas.

At approximately 3:55 PM, during an afternoon of 105° F temperatures, Firefighter Hamm, without showing noticeable signs of distress, suddenly lost consciousness and stopped breathing. Emergency Medical Services were activated and Firefighter Hamm was transported to Palo Pinto General Hospital in Mineral Wells, Texas. Firefighter Hamm died shortly afterward. Autopsy results indicated that Firefighter Hamm died from hyperthermia, the uncontrolled overheating of the body.

Larry Gale Nelson, Val Verde County Rural Volunteer Fire Department (FY 11-06)

Medical – Fall from ladder while working at station house

On August 12, 2011, Val Verde County Rural VFD Firefighter Larry Gale Nelson, age 61, died as a result of a fall while working at the Val Verde County Rural VFD Station 3 in the area of Rough Canyon north of the city of Del Rio, Texas.

At approximately 12:14 PM the Val Verde County center dispatch received a report of an injured man at the Val Verde County Rural VFD Station 3. Emergency Medical Services and Val Verde County Sheriff's deputies responded. Witnesses found Firefighter Nelson on the asphalt apron in front of the fire station. Mr. Nelson was using the stepladder and lost his balance, falling head first to the asphalt. EMS arrived and contacted the Val Verde County Precinct 2 Justice of the Peace. Judge Gonzales responded and Firefighter Nelson was pronounced dead at the scene. Autopsy results indicated blunt force trauma injury to the head.

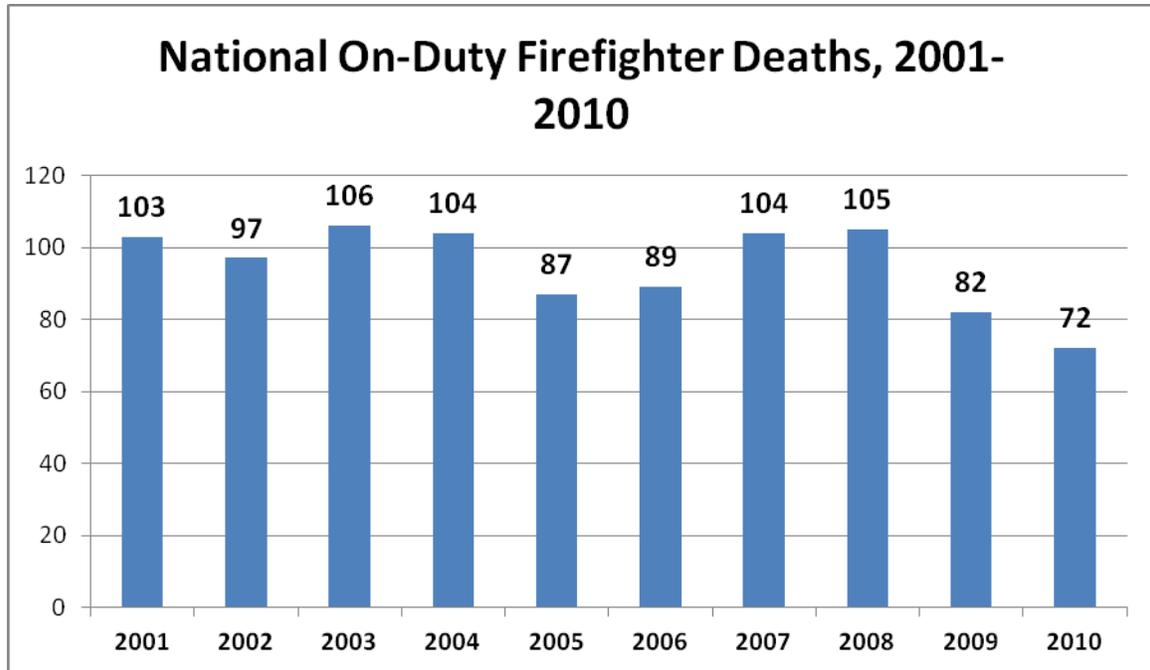
Lt. Todd Krodle, Dallas Fire Department (FY 11-07)

Fire ground operations injury – Fall through roof, thermal injuries

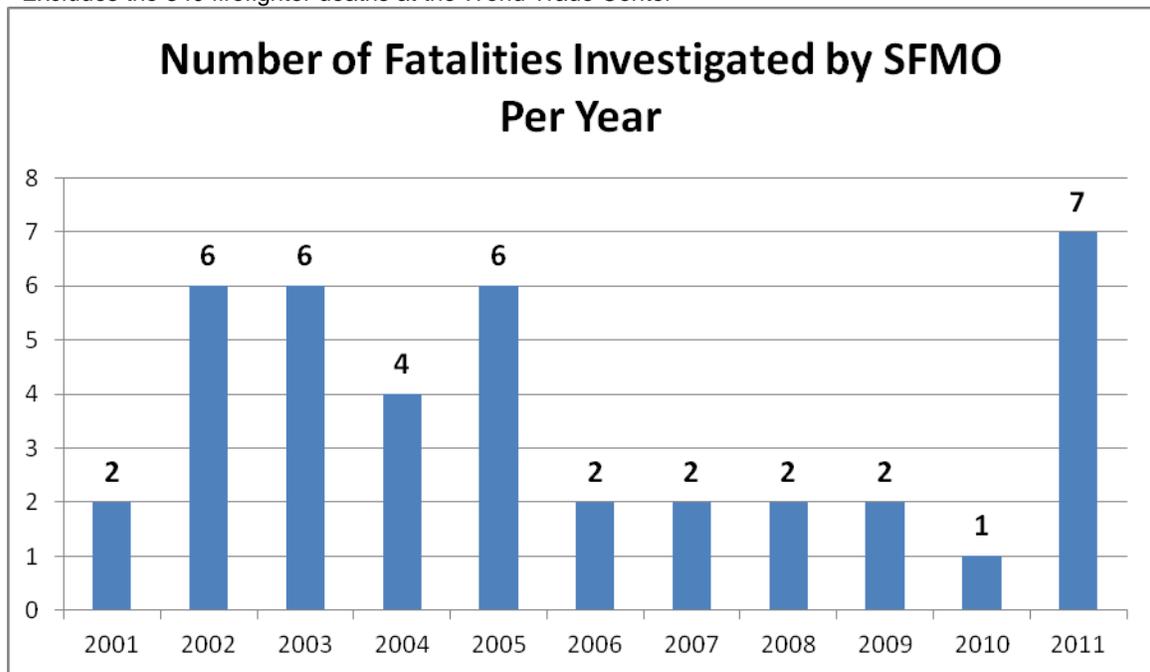
On August 14, 2011, Dallas Fire Department Lt. Todd Krodle, age 41, a 17-year veteran of the department, was fatally injured during firefighting operations at the scene of a structure fire at the Ridgecrest Terrace Apartment complex. The apartments are located at 5056 Plum Grove in east Dallas, Texas.

On August 14 at 4:19 PM, the Dallas Fire and Rescue Dispatch received a call from a resident for a fire at the apartment complex, a well known and often visited site for the Dallas Fire Department and Emergency Medical Services. Engine 26 and Ladder 26 were dispatched along with two Battalion Chiefs and Engines 52 and 16. Lt. Krodle laddered the two-story structure along with another firefighter. Lt. Krodle walked to the peak of the roof and suddenly fell through the fire-weakened roof structure into the involved attic space. Lt. Krodle was extricated and transported to Parkland Memorial Hospital where he died from the injuries sustained in the fire.

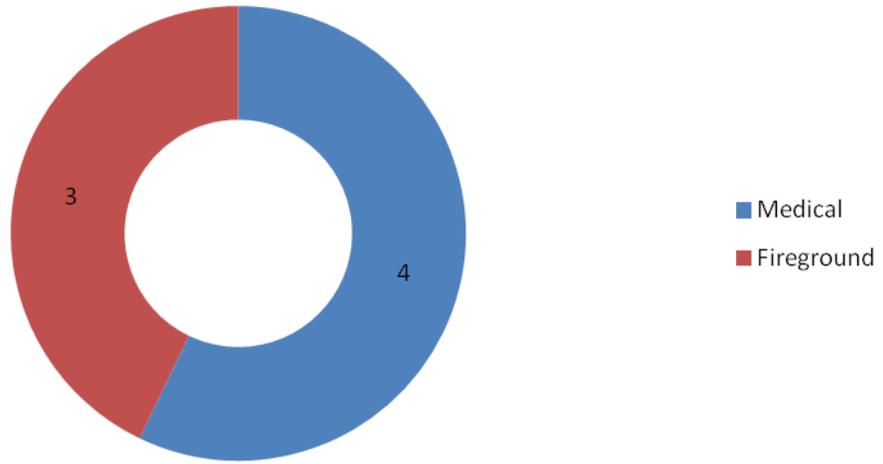
Statistics and Comparisons of Firefighter Fatalities, FY 2011



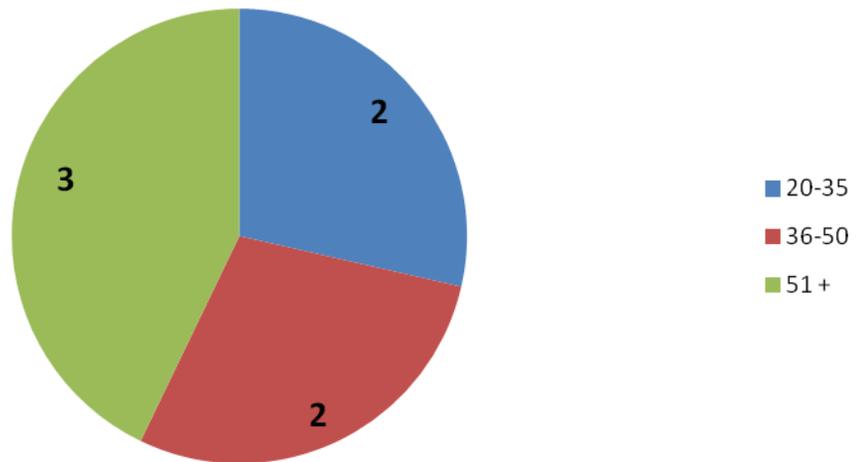
Source: National Fire Protection Association. *Firefighter Fatalities in the United States – 2010*.
 * Excludes the 340 firefighter deaths at the World Trade Center

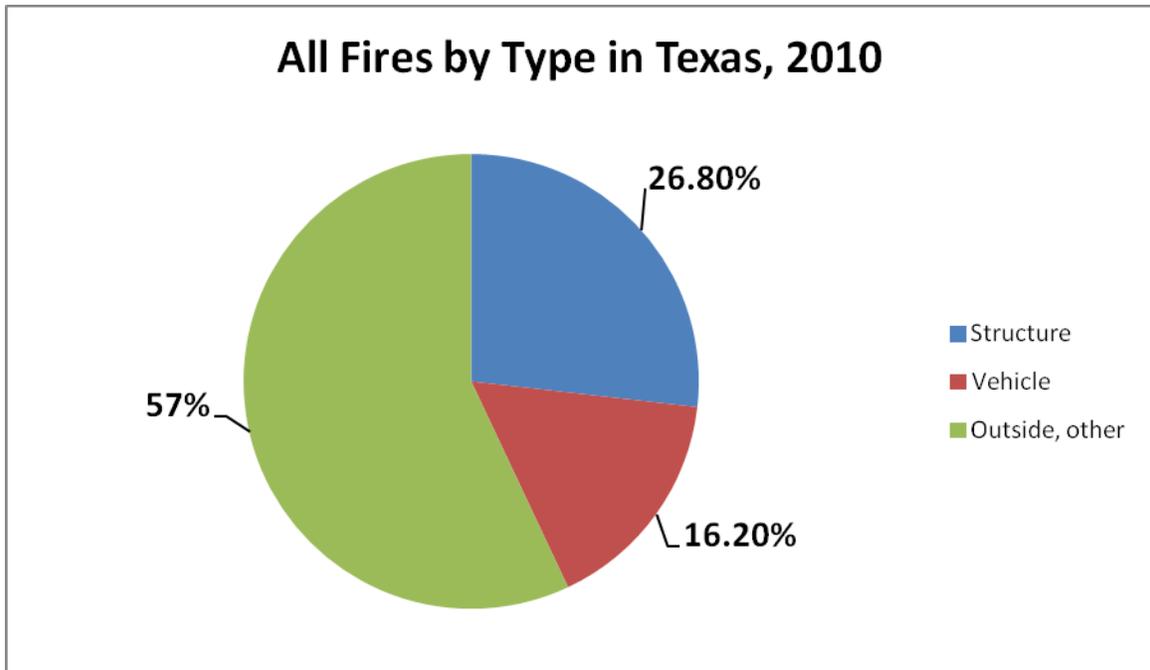
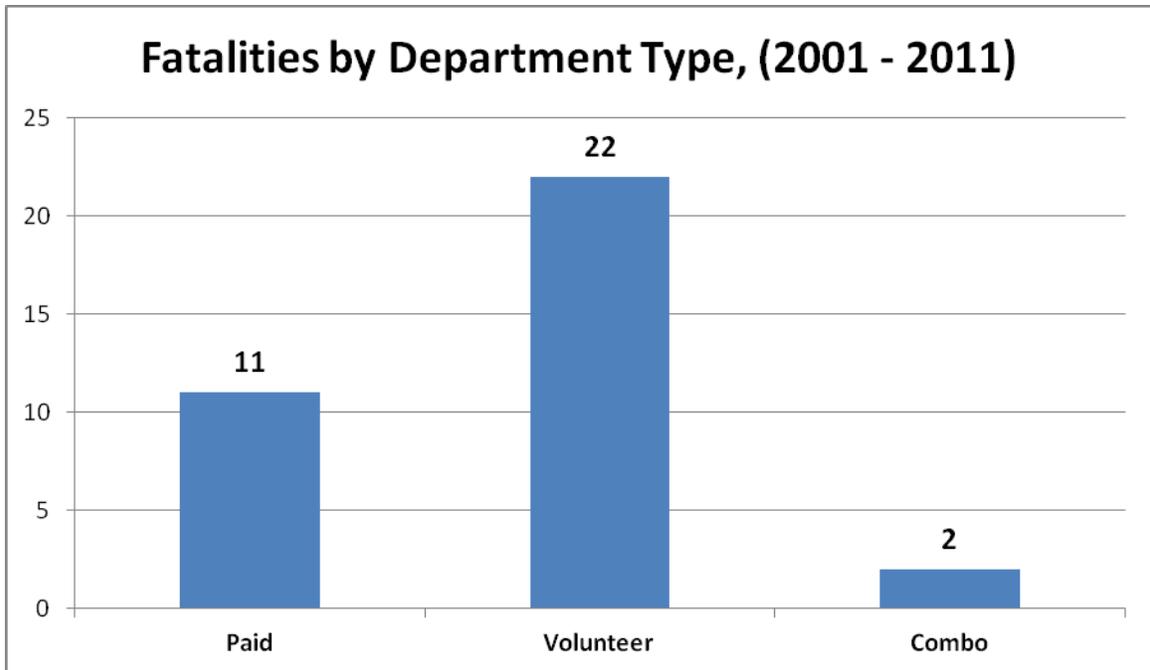


FY 2011 Fatalities Investigated By Type



FY 2011 Fatalities Investigated By Age





Strategies for Preventing Future Fatalities

Ongoing efforts to reduce firefighter fatalities include the following:

- Communicating “lessons learned” from firefighter fatality investigations through the publication of investigation reports, dissemination of information to the Firefighter Fatality Investigation Program Advisory Committee, and presentations at fire service conferences.
 - Upon release, firefighter fatality investigation reports are sent to the affected fire departments and placed on the agency’s website for access by the fire service, media, and the public.
- Participating in the Firefighter Safety Stand Down, sponsored by the International Association of Fire Chiefs and the International Association of Fire Fighters.
- Participating in the “Courage to be Safe” (CTBS) program which emphasizes the message “Everyone Goes Home.” Information on the CTBS program is available online at <http://www.everyonegoeshome.com>.
- Implementing or expanding existing fire prevention programs to assist in reducing fires.
- Participating in the National Fire Service Seat Belt Pledge, 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.
- Providing information to the fire service and the public on the effectiveness of residential sprinklers on reducing civilian and firefighter fatalities as well as property loss due to fire.
- Conducting pre-fire incident planning in high risk occupancies by suppression personnel in their response area. The 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, as a top priority.
- 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 (<http://www.greenbuildingfiresafety.org/>), and how these new technologies impact firefighter safety and fire ground operations.

APPENDIX A – Texas Commission on Fire Protection Firefighter Injuries

In §419.048 of Senate Bill 1011 passed during the 81st Legislature, the Texas Commission on Fire Protection was charged with developing and establishing criteria to receive and analyze injury information pertaining to Texas firefighters. The Commission was to review this information and develop recommendations to reduce fire protection personnel injuries. The Commission was to provide this information to the State Fire Marshal's Office by September 1 of each year to be published in its annual Firefighter Fatality Investigations Report.

The Commission has enacted rules pertaining to the reporting of injuries in Texas Administrative Code (TAC) Title 37, Chapter 435, and established the criteria and policies required for reporting and analyzing the information. In May 2010 the Commission had completed development and implementation of the data systems programming necessary to accomplish the gathering of this information. The entire process is accomplished online through the Commission's website. Every fire department regulated by the Commission has been notified of the requirements to report. They have been provided instructions as to how to open accounts and report the information online. The accounts have been established, and the injury data is being submitted.

APPENDIX B – Statistics and Trends in Firefighter Injuries, 2010

The Texas Commission on Fire Protection (TCFP) reviewed the data collected on the injuries for the time period of March 15, 2010, to December 31, 2010, and based on that review presents the following recommendations.

1) Increase training on inspection of equipment and how to don and use PPE, including SCBAs.

This training would consist of “getting back to the basics,” designed to correct habits that have been developed over the years and return to the fundamentals learned in the individual’s fire academy training.

This recommendation is based on trends recorded in the number of burns associated with the wearing of hoods as well as the interface between the hood and the SCBA mask. Burns in this location can be attributed to improper wearing of the hood, and the failure of individuals checking each other to see that proper coverage exists.

Table 1. Commission vs. NFPA Injuries by Type of Duty

	Responding to or Returning from Incident	Fire Ground Operations	Non-Fire Emergency Operations	Training/Skills Training	Other Duties	Total
Commission regulated	141 (5.86%)	540 (22.45%)	851 (35.38%)	192 (7.98%)	681 (28.32%)	2,405
NFPA reporting	4,965 (6.25%)	32,205 (41.21%)	15,445 (19.76%)	7,935 (10.15%)	17,590 (22.51%)	78,150

Another factor that comes into play in this area is the type of hood and other PPE components worn. The very nature and design of today’s PPE allows the firefighter to gain access to environments that, by nature, push the limits of the intended design of a PPE ensemble. This places the firefighter in hotter conditions and further into the structure, thus increasing the exposure time. Working in such environments allows burns to occur. The burns are typically not the fault of the PPE, but simply of over exposure.

These types of situations are a basic training scenario. The firefighters need to be aware of the limits of the PPE design, especially when the entire ensemble is being considered, and remember the weakest link in the ensemble is the one on which their limit is based, and not the “strongest” component. This comment is a reflection of the burns associated with hoods and gloves which are typically the

areas of least protection or the greatest exposure. Of the injuries involving burns associated with fire suppression activities investigated or where data was collected, 54% were found to be in the body locations protected by hoods and gloves. The remaining 46% were in body locations protected by the coats, pants, or boots.

Included in this recommendation is a reminder that the Commission has mandated all TCFP certified personnel complete the “Everyone Goes Home – Courage to be Safe” program from the National Fallen Firefighters Foundation. Under the 16 initiatives listed in this program, the completion and implementation of the first five would address many of the issues associated with this recommendation. The first five initiatives are:

- Define and advocate the need for a cultural change within the fire service relating to safety; incorporating leadership, management, supervision, accountability and personal responsibility.
- Enhance the personal and organizational accountability for health and safety throughout the fire service.
- Focus greater attention on the integration of risk management with incident management at all levels, including strategic, tactical, and planning responsibilities.
- All firefighters must be empowered to stop unsafe practices.
- 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.

2) Ensure compliance with NFPA recommendations related to the use of PPE and combine the tactics with these recommendations.

This recommendation is based on the burns recorded and the type/location of those burns. The recommendation comes more from the investigation of the injuries associated with burns than from the collection of pure data on the PPE and its use.

In the process of performing an investigation into an injury report, the Compliance Officer performing the investigation documented the existence and utilization of mandated Standard Operating Procedures (SOPs) through visual review of said documents and statements provided by the department of personnel involved in the event. The issue documented in the information provided to the Compliance Officer by the department indicated that while the SOPs mandated were in place and the standards followed, the tactics used in the event appear to have contributed to the injury. For example, the department’s SOPs may clearly state that SCBA will be used in an IDLH environment, and in any issue associated with the use of these units that leads to a malfunction or

possible problem associated with its wearing or performance, the firefighter (and members functioning with the individual as a team) shall be immediately removed from the IDLH environment. This may have been delayed or not have happened, based on documents provided by the department and reviewed by the Compliance Officer.

These types of issues are only documented by the Compliance Officer based on information provided to him or her, and any actions necessary to correct the issue that do not deal directly with the mandates and standards are left to the department to correct. Issues dealing directly with the mandates and standards which the Compliance Officer could have discovered during a “routine” compliance inspection are addressed in the same manner as if discovered during a compliance inspection. As in the case of this example, the SCBA was removed from service by the department prior to the arrival of the Compliance Officer and scheduled for repair as necessary. The department conducted a function test on the unit prior to it being replaced in service.

In other actions discovered during the investigations, the departments provided documentation and statements that indicated the positioning of firefighters contributed to the injury. For example, firefighters reported that they were standing in doorways prior to opening the door to make entry, thus exposing themselves to direct heat and flames when opening the door. This is also evident in the “depth” to which firefighters are entering the structure and the atmospheric conditions the fire is creating, causing exposures that stress the limits of their PPE. The basics once again need to be re-enforced. Firefighters need to be reminded to stay low and to stay to the side of openings prior to opening a door or other opening.

3) Conduct objective critiques (post-incident analysis) to identify actions that could contribute to firefighter injuries and identify ways to prevent these occurrences and injuries.

As with the previously mentioned recommendations, the National Fallen Firefighters Foundation’s “Every One Goes Home – Courage to be Safe” program offers insight into this recommendation. The review of procedures and the changing of culture are key points emphasized by the program. In order to find more specific and issue-driven materials, the following information is provided:

NFPA has reference guidelines in the following standards that may assist departments:

- NFPA 1033: Professional Qualifications for Fire Investigators, 4.6: Post-incident

- NFPA 1143: Wildland, Chap. 8: Post-incident
- NFPA 1405: Land-based Fire Departments Respond to Marine Vessel Fires, 10.2.17: Post-incident debriefing, under training.
- NFPA 1500: Fire Department Occupational Safety & Health Programs, 8.11: Post-incident analysis at emergency operations.
- NFPA 1521: Fire Department Safety Officer, 5.14: Fire department health safety officer function-post incident analysis, 6.7: Fire department incident safety officer function-post incident analysis
- NFPA 1584: Standard on the Rehabilitation Process for Members during Emergency Operations and Training Exercises, Chap. 7: Post-incident rehabilitation.

In addition to the NFPA materials, the Commission's Emerson Library has researched this topic and found the following materials available on this subject:

Articles and Reports:

- [USFA Technical Report Series: The After-Action Critique-Training Through Lessons Learned](#) (April 2008)
- [Training Tips: Incident Safety Officer](#) (Oct. 2006, Fire Engineering)

EFO Papers:

- [The Honolulu Fire Department does not have a written guideline for a formal post incident analysis, but it should](#) (Aug. 2009)
- [Developing a post-incident analysis process for the South Milwaukee Fire Department](#) (Aug. 2009)
- [Is the Stockton, California, Fire Department learning from past incidents? Post incident analysis for the SFD](#) (Feb. 2009)
- [Post incident analysis for the Rochester Fire Department](#) (April 2009)

Additional such reports and papers are located online at the USFA website.

There are examples of actual analyses/reports available through the "Lessons Learned Information Sharing" (LLIS) network. The LLIS is the national network of Lessons Learned and Best Practices for emergency response providers and homeland security (www.llis.gov):

- [After action reviews: a valuable learning opportunity](#) (Feb. 2009)
- [Narrative documentation: are you clear?](#) (Oct. 2008)
- [The efficacy of applying a CQI model to post incident analysis](#) (Feb. 2004)
- [Incorporating post incident analysis into departmental standard operating guidelines](#) (Dec. 2001)

4) Review policies/procedures related to “in station” operations and identify ways to reduce and/or prevent injuries which occur in the stations.

The development of policies/procedures that relate to the normal function of the firefighter around the station would potentially reduce the number of station related injuries. As with any “living area” with which we are familiar and accustomed to, the very nature of the surroundings tend to make one become lax and thus not implement all of the safety steps or actions we would in an emergency setting. Working alongside the department’s risk management personnel and building a team to reduce, review, and re-evaluate programs specifically targeting these types of injuries should help reduce them.

NFPA has reference guidelines in the following standard that may assist departments:

- NFPA 1250: Recommended Practice in Fire and Emergency Services Organization Risk Management

In addition to the NFPA materials, the Commission’s Emerson Library has the following materials available on this subject:

- **Risk Management Needs More Than Lip Service (Fire Chief Magazine, April 2011)**