

TEXAS STATE FIRE MARSHAL'S OFFICE

Firefighter Fatality Investigation



Investigation Number FY 12-03

Firefighter Mark Anthony Shepard

Rosehill Volunteer Fire Department
April 20, 2012

*Texas Department of Insurance
Austin, Texas*

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Executive Summary

On April 18, 2012, 49-year-old Firefighter Mark Anthony Shepard, Sr., an active member of the Rosehill Volunteer Fire Department, complained of feeling ill while at the fire station. Firefighter Shepard told Rosehill Emergency Medical Services Assistant Chief Edward Brent that he had not felt well since performing maintenance at the fire station during his shift on April 17, 2012. While speaking with Assistant Chief Brent, Firefighter Shepard became very pale and stated that he was having chest pains. Firefighter Shepard was escorted to the ambulance for a cardiac workup and transported to St. Luke's Hospital. Firefighter Shepard remained in the hospital for tests and on April 20, 2012, he collapsed and all resuscitative efforts failed. Firefighter Mark Anthony Shepard, Sr., passed away at approximately 5:25 p.m.

Firefighter Shepard joined the department in 1987.

This report is intended to honor Mark Anthony Shepard by providing information of lessons learned through the examination of this fatality to prevent future injuries or deaths.



Mark Anthony Shepard

Introduction

On April 28, 2012, the Texas State Fire Marshal's Office (SFMO) was notified of the death of Rosehill Volunteer Fire Department Firefighter Mark Anthony Shepard.

The State Fire Marshal's Office (SFMO) commenced the firefighter fatality investigation under the authority of Texas Government Code Section 417.0075.

- (g) In this section, the term "firefighter" includes an individual who performs fire suppression duties for a governmental entity or volunteer fire department.*
- (b) If a firefighter dies in the line of duty or if the firefighter's death occurs in connection with an on-duty incident in this state, the state fire marshal shall investigate the circumstances surrounding the death of the firefighter, including any factors that may have contributed to the death of the firefighter.*
- (c) In conducting an investigation under this section, the state fire marshal has the same powers as those granted to the state fire marshal under Section 417.007. The state fire marshal will coordinate the investigative efforts of local government officials and may enlist established fire service organizations and private entities to assist in the investigation.*
- (d) The state fire marshal will release a report concerning an investigation conducted under this section on completion of the investigation.*
- (e) Not later than October 31 of each year, the state fire marshal will deliver to the commissioner a detailed report about the findings of each investigation conducted under this section in the preceding year.*
- (f) Information gathered in an investigation conducted under this section is subject to Section 552.108.*
- (g) The authority granted to the state fire marshal under this section will not limit in any way the authority of the county or municipal fire marshal to conduct the county or municipal fire marshal's own investigation into the death of a firefighter within the county or municipal fire marshal's jurisdiction.*

The State Fire Marshal assigned Investigator Dean Shirley to investigate the circumstances of the death.

Firefighter Fatality Investigation

On April 17, 2012, Rosehill Volunteer Fire Department Firefighter Mark Shepard was performing station maintenance outside that included mowing and using a weed eater during his regular eight-hour shift. Firefighter Shepard went home after his shift, returned the next morning, and met with the EMS assistant chief, complaining of feeling dizzy, and experiencing chest pains. The assistant chief noticed that Shepard looked pale. Shepard told the assistant chief that he had become ill while working outside the previous day. Believing that he was over-heated, Firefighter Shepard stated that he came inside the station to cool down and drank several glasses of water. He stated that he went home without notifying anyone that he did not feel well. Firefighter Shepard told the assistant chief that he had continued to drink water at home and did not feel well enough to eat anything. He stated that he felt dizzy and that he was experiencing chest pain. The assistant chief walked Shepard to the ambulance for a cardiac evaluation. The evaluation and treatment included aspirin, nitroglycerin spray, oxygen via nose canula (NC), a saline IV, and electrocardiogram monitoring (ECG). The paramedics reported that Shepard was pale and had clammy skin, so some ECG leads would not stick. Firefighter Shepard complained of having chest discomfort and chest pain 20 minutes earlier. Blood pressure (BP) measured 150/90 with a strong, regular pulse of 88 and normal respiration rate of 20. The ECG showed normal sinus rhythm. After 15 minutes his appearance improved, and the BP and heart respirations remained stable.

Firefighter Shepard was transported to St. Luke's Hospital. On April 20, 2012, Firefighter Shepard collapsed in the hospital room and passed away. The death certificate lists the cause of death as cardiac ischemia with an underlying cause of severe endothelial dysfunction.

TIMELINE

April 17, 2012

Shepard cut and trimmed Station 1 grass

5:00 p.m. Shepard went home, as normal, without notifying anyone of feeling ill.

April 18, 2012

10:03 a.m. Shepard met with EMS Assistant Chief.

10:12 a.m. Shepard was taken to the ambulance for a cardiac workup.

10:14 a.m. Dispatch was notified.

10:30 a.m. Shepard transported to St. Luke's Hospital.

10:48 a.m. Shepard arrived at Emergency Room and was admitted for further testing.

April 19, 2012

At St. Luke's Hospital, tests were performed, including heart catheter and angioplasty.

April 20, 2012

Shepard remained in hospital.

5:25 pm. Firefighter Shepard collapsed and died.

Medical Background of Firefighter

Mark Anthony Shepard, 49 years old, joined the Rosehill Volunteer Fire Department in 1987. He was an engineer operator until 2012. Firefighter Shepard was then assigned to an eight-hour shift on light duty status because of a previous medical incident, during which he had become disoriented and diaphoretic with slurred speech, while operating equipment. He was not cleared to return to full-duty status, as medical testing had not been completed.

Firefighter Shepard had a history of hypertension and diabetes.

Rosehill Volunteer Fire Department does not require annual medical evaluations and has not adopted a wellness and fitness program.

The death certificate indicates the cause of death as cardiac ischemia with acute endothelial dysfunction.

Department Description

The Rosehill Volunteer Fire Department is located in Harris County, in the city of Rosehill, Texas, a few miles southwest of Tomball. The department is within the Emergency Services District 21 of Harris County. The department responds to a 48 square mile area and serves 18,000 to 20,000 residents. Department equipment includes three engines, two tankers, two boosters, and three ambulances. EMS makes over 60 percent of the calls, averaging 21 calls per day.

Findings and Recommendations

Fire department personnel should know and understand nationally recognized consensus standards, and all fire departments should create and maintain SOGs and SOPs to ensure effective, efficient, and safe firefighting operations.

Rosehill Volunteer Fire Department has no established annual physical and stress-test screening program for members.

Although there is no indication that the following recommendations could have prevented the death of Firefighter Shepard, the State Fire Marshal's Office offers these recommendations to reduce the risk of heart attacks and sudden cardiac arrest among firefighters.

All fire departments should be aware of the content of the following standards and may choose to develop programs based on them to increase the level of safety for fire department personnel.

*All Texas firefighters must complete a "Courage to be Safe" course as adopted by the Texas Commission on Fire Protection and the State Firemen's and Fire Marshals' Association of Texas. The National Fallen Firefighters Foundation has developed a course that details "**16 Firefighter Life Safety Initiatives**" so Everyone Goes Home® (<http://www.lifesafetyinitiatives.com>).*

*Consider mandatory pre-placement and annual medical evaluations to all firefighters consistent with **NFPA 1582, Standard on Comprehensive Occupational Medical Program for Fire Departments**, to determine their medical ability to perform duties without presenting a significant risk to the safety and health of themselves or others.*

Consider an annual physical performance evaluation to ensure firefighters are physically capable of performing the essential job tasks of structural fire fighting.

*Ensure that firefighters are cleared for duty by a physician knowledgeable about the physical demands of fire fighting, the personal protective equipment used by firefighters, and the various components of **NFPA 1582, Standard on Comprehensive Occupational Medicine Program for Fire Departments**.*

*Fire departments should establish physical performance requirements for firefighters and develop physical fitness programs. **NFPA 1583, Standard on Health-Related Fitness Programs for Fire Fighters** is an excellent resource.*

Additional Information

Fire departments should make every reasonable effort to screen firefighters for heart disease in an effort to reduce the number of heart attack deaths.

Fire departments must encourage applicants to be forthright in disclosing medical conditions that may endanger their lives or the lives of other firefighters or civilians. If an applicant indicates a medical condition that poses a significant risk of injury or death, the department may choose to assign the applicant to non-emergency duties that would not subject the applicant to undue stress or physical exertion. Medical screening may be required to make a final decision allowing applicants to undergo firefighting training and assignment as active firefighters.

Active firefighters and applicants who will operate fire apparatus should undergo periodic medical screening to detect conditions that could cause them to become incapacitated and lose control of the vehicle. *(See NFPA 1582, Standard on Comprehensive Occupational Medical Program for Fire Departments)*

Nationally, a majority of firefighter deaths are attributed to heart attack or stroke. Ventricular fibrillation (VF), in which the heart becomes engaged in a dangerous abnormal contraction rhythm, is a common cause of cardiac death. Studies from the American Heart Association consistently show that immediate bystander CPR plus defibrillation within 3-5 minutes of collapse can dramatically increase survival from sudden cardiac arrest.

Fire departments are encouraged to acquire portable automated external defibrillators (AEDs), make them readily available, and ensure that all firefighters are properly trained to use them.

The Federal Emergency Management Agency (FEMA) offers grant funding to fire departments for wellness/fitness programs. This funding, a component of the Assistance to Firefighters Grant Program, emphasizes periodic health screenings, entry physical examinations, and an immunization program. Grants may be used for the procurement of medical services to ensure that the firefighting personnel are physically able to carry out their duties.

Further information regarding the Assistance to Firefighters Grant Program can be found on at <http://www.fema.gov/welcome-assistance-firefighters-grant-program>

APPENDIX

State Fire Marshal Alert: Heart Attacks Leading Cause of On-Duty Texas Firefighter Deaths

(State Fire Marshal's Office website: <http://www.tdi.texas.gov/fire/fmloddiinvesti.html>)

The State Fire Marshal's Office has investigated more than 30 on-duty fatalities of firefighters in Texas since September 2001. These investigations have revealed some vital facts every Texas fire official needs to know.

Heart attacks or related cardiac problems have caused 12 of the 33 deaths investigated through the end of fiscal year 2011.

Since 1995, heart attacks have been the leading cause of on-duty deaths of Texas firefighters.

Every fire department (paid and volunteer), fire chief, and firefighter must take the initiative in reducing the number of on-duty heart attack deaths.

When it comes to physical fitness and overall health, every little bit of effort counts.

Extensive research has shown that you can improve your overall health, thus preventing disease and premature death, by making small adjustments and improvements in your daily activities, including physical activity, nutrition, and behavior.

Five chronic diseases associated with obesity:

- heart disease
- cancer
- stroke
- chronic obstructive pulmonary disease (e.g., bronchitis, emphysema, asthma)
- diabetes

They account for more than two-thirds of all deaths in the United States. They claim more than 1.7 million American lives each year and hinder daily living for more than one of every 10 Americans. More than 100 million Americans live with chronic disease, and millions of new cases are diagnosed each year.

These chronic diseases are among the most prevalent and deadly health problems facing our nation, but some of them are very preventable. Firefighters and their families can take simple, affordable steps to work physical activity, good nutrition, and behavior changes into their daily routine. You don't have to become a marathon runner or buy a health club membership to improve personal fitness. Your health will improve with modest but regular physical activity and better eating habits.

There are four keys for a healthier America:

- Be Physically Active Every Day.

- Eat a Nutritious Diet.
- Get Preventive Screenings.
- Make Healthy Choices.

The State Fire Marshal's Office also recommends that fire departments and firefighters adopt physical exercise regimens that will best prepare firefighters for the strenuous, often prolonged physical effort involved in fighting fires.

Here are some excellent resources:

Volunteer Fire Service Fitness and Wellness Program: The U. S. Fire Administration (USFA) and the National Volunteer Fire Council have created the Volunteer Fire Service Fitness and Wellness Project, a partnership initiative to reduce loss of life among volunteer firefighters from heart attack and stress. USFA is a part of the Federal Emergency Management Agency. You can find out more at http://www.usfa.dhs.gov/downloads/pdf/publications/fa_321.pdf.

The National Fallen Firefighters Foundation and Pennell Corporation have established a website, www.everyonegoeshome.com, for the nationwide Firefighter Life Safety Initiatives program.

An alert issued by the State Fire Marshal's Office in 2003 remains relevant today, as cardiovascular disease continues to plague the Texas fire service as a leading cause of death.

ALERT

HEART ATTACKS: LEADING CAUSE OF ON-DUTY TEXAS FIREFIGHTER DEATHS

Heart Attacks One Of The Leading Causes Of On-Duty Deaths Among Texas Fire Service Personnel.

- Of the **line-of-duty deaths** not caused by heart attacks, autopsies revealed two of these three firefighters had early stages of heart disease.
- Four firefighters that died of heart attacks had a history of some form of heart disease.
- Four out of the five heart attack deaths occurred during the performance of emergency duties.
- All five firefighters that died of heart attacks were less than 52 years old.

Every firefighter (paid and volunteer) and every fire officer must take the initiative in reducing the number of on-duty heart attack deaths. The State Fire Marshal recommends the following:

- Fire departments should make every reasonable effort to screen firefighters and fire officers for heart disease in an effort to reduce the number of heart attack deaths.
- Departments must encourage applicants to be forthright in disclosing medical conditions that may endanger their lives or the lives of other firefighters or civilians.
- Periodic medical examinations of firefighters should be conducted as outlined in NFPA 1582, Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians.
- Fire departments should establish physical performance requirements for firefighters and fire officers and develop physical fitness programs. NFPA 1583, Standard on Health-Related Fitness Programs for Fire Fighters is an excellent resource.
- Fire departments should implement SOPs to address these fitness issues.

The Annual Line-of-Duty Death Report and individual investigation reports may be viewed at the State Fire Marshal website: <http://www.tdi.texas.gov/fire>

First Responders at Risk

Analysis of recent firefighter line-of-duty deaths revealed that three-fourths of deaths occurred responding to, or within ten minutes of arrival on the scene.