NIOSH Investigations;
What happens after the fact?

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Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used that language, ideas, expressions, or writings of another.

Signed___________________________________
**ABSTRACT**

NIOSH (National Institute of Safety and Health) provides a report to all fire departments that have suffered through the tragedy of a Line of Duty Death (LODD) of a firefighter complete with recommendations for that fire department as to how to correct any problems that were found with their operations, training, or administration. After a report is published, and the recommendations are made public, no follow up reports are ever given to provide evidence that these recommendations have made a difference for the good or the bad.

I will look the NIOSH LODD investigations within my home state of Kentucky to get a feel of what administrators and employees alike obtained from these investigations. I will try to determine if the any of the changes made to a departments operation has had a positive effect to this day.
# TABLE OF CONTENTS

Abstract .................................................................................................................................................. 2

Table of Contents .....................................................................................................................................3

Introduction ........................................................................................................................................... 4

Procedures ............................................................................................................................................ 4

Questions .............................................................................................................................................. 6

Case Results ......................................................................................................................................... 8

Conclusion ...........................................................................................................................................16

References ...........................................................................................................................................17
Introduction

When tragedy strikes your department and a member suffers a debilitating injury or worse a family loses a loved one while performing his/her job, it can be a rather emotional and eye opening experience at the same time. While everyone on the outside looking in may quickly learn from the mistakes made during incident, in my opinion some parties involved may be reluctant to accept the “constructive criticism” about the operations of their organization that they take so much pride in.

The purpose behind this research project was to determine how many of the departments in Kentucky that have suffered a LODD have followed the recommendations made and changed their operations to better prevent future LODDs.

Procedures

Utilizing the NIOSH report database on the CDCs web site, all published investigations that pertained to LODDs in the State of Kentucky were found. After doing so, a little more research will have to be done to find out as to which Kentucky fire departments had suffered the loss. When NIOSH publishes an investigative report they provide a description of the incident under investigation, a short bio of the fire department involved, and recommendations to that fire department that will help them and other fire departments prevent future misfortunes. Utilizing web resources and NIOSH reports the pieces were put together to identify the departments involved. It was found that since NIOSH has been completing the LODD reports, the State of Kentucky has had 14 LODDs involving 12 separate departments. My department, the Lexington
Division of Fire and Emergency Services, has endured through two LODDs on two separate incidents. The LDFES has learned and changed a lot after these incidents, which will be discussed further along in the text.

After compiling the necessary information to contact the current Chiefs of the listed departments, contact was made via email and the response was phenomenal with 100% of the Chiefs stating that they would love to participate in my research. All Chiefs were sent questionnaires to help me better understand how the NIOSH reports affected the morale and operations of their respected departments. When it came time to start receiving the questionnaires, cooperation was less than expected. Only 4 departments covering 5 of the LODDs were returned for review. A couple chiefs repeatedly advised me to find what I needed on the NIOSH web site despite knowing the information that I was seeking was not included in the available text. Many of the chiefs that had originally stated that I had their full cooperation wouldn’t reply to various email and phone contact attempts. The replies that were received were very beneficial and seemed to follow the same path, member cooperation and beneficial outcomes. Unsure about the other departments I had to continue with the information available.

Below you will find the list of questions that were presented to the departments;

1. Where the results of the investigation and the recommendations made readily accepted by members of your department or were they met with resistance? Why?
2. Did your department implement many of the recommendations if any at all? Which Ones?

3. Did the members of your department welcome the changes to your operations?

4. Have you found that the implemented recommendations have produced any benefits for your department? How So?

5. Was there a large financial impact to your department during the implementation of the recommendations?

6. Has your department been able to maintain the changes and new policies from these recommendations? If not, why did they fail to remain policy?

7. Please add any comments you may have about the investigation.
Case Results

Fire Fighter Investigation Report F2001-01

In November of 2000, Tanker 63 of the Gott Fire Department, Bowling Green, Kentucky, drove by a 19 year old male volunteer lost control while returning to the station after participating in a water shuttle drill. The victim had dropped off of the edge of the roadway and in an attempt to bring the truck back to the roadway, over corrected, and ended up rolling the cab while the tank separated from the body. The victim was trapped in the cab and was removed and transported to a local hospital where he was pronounced dead.

NIOSH Recommendations to Gott Fire Department;

- All drivers of the fire department vehicles are responsible for the safe and prudent operation of the vehicles under all conditions.
- Enforce standard operating procedures on the use of seatbelts in all emergency vehicles.
- Fire Departments and apparatus constructors should ensure that second unit body mounting systems are of substantial design and construction.

The members of Gott Fire Department really found strength in light of such tragedy.

“Each firefighter now is very active in safety and always providing the “buddy system” in each situation that we encounter. This has also pushed over to fire
ground and training areas as well as the new recruits being instructed on why we are providing this high level of safety.” Fire Chief Craig Peay

Chief Peay also made note that following the recommendations did have a considerable impact on their finances. Now only using qualified builders that follow NFPA standards has increased cost of apparatus.

Fire Chief Peay ended in saying, “we believe that with the NIOSH report and the use of a personal situation we have also been able to help in making recommendations to the other nine volunteer fire departments and the 250 firefighters in this County.”

**Fire Fighter Investigation Report F2001-34**

August of 2000 was a sad time for the Hazard Fire Department when a 51 year old Deputy Chief collapsed and succumbed to an apparent heart attack after arising from his bunk. The Deputy Chief had a few risk factors of CAD (Coronary Artery Disease) such as advancing age (older than 45 years old), smoking, and obesity. The victim had some recent episodes of substernal chest pains which had been ruled gastrointestinal in origin by his family physician.
NIOSH Recommendations to the Hazard Fire Department

- Provide mandatory annual medical evaluations to **ALL** fire fighters to determine their medical ability to perform duties without presenting a significant risk to the safety and health of themselves and others.
- Fire fighters should be cleared for duty by a physician knowledgeable about the physical demands of firefighting and the various of NFPA 1582.
- Provide firefighters with medical evaluations and clearance to wear SCBA.
- Incorporate exercise stress test into the fire department’s medical evaluation program.
- Provide exercise equipment in all fire stations.
- Phase in a mandatory wellness/fitness program for firefighters to reduce risk factors for cardiovascular disease and improve cardiovascular capacity.
- Perform an autopsy on all firefighters who were fatally injured on duty.
- Provide AEDs (automated external defibrillators) on fire apparatus.
- Provide adequate fire fighter staffing to ensure safe operating conditions.

Since the investigation, the Hazard Fire Department has seen some improvement in the equipment made available for them to use while on duty as well as the department continuing to offer a membership to the local gym facilities for off duty use. Although most accepted the recommendations as a welcome change, few met it with resistance. “Most firefighters enjoy eating a lot more than exercising,” Chief Sam Stacey exclaimed.
Chief Stacey also noted that despite the importance of the medical evaluations, they have been reluctant in adding them into the budget so that every member has the mandated annual evaluation. There is also still some resistance with some members to actively participate and take advantage of the resources that are now at their disposal.

**Firefighter Investigation Report F2004-30**

In March of 2004, the Alexandria Fire Department (Campbell County Fire District #5) lost a 45 year old volunteer firefighter that had collapsed upon exiting the apparatus after being cancelled responding to a vehicle fire. His cause of death was ruled an arrhythmia due to hypertensive and atherosclerotic cardiovascular disease. NIOSH investigators stated that the stress of responding to the alarm, donning his gear and underlying CAD (coronary artery disease) all contributed to his sudden cardiac arrest.

**NIOSH Recommendations for the Alexandria Fire Department**

- *Provide pre-placement and periodic medical evaluations to ALL firefighters.*

- *Ensure the firefighters are cleared for duty by a physician knowledgeable about the physical demands of firefighting and the various components of NFPA 1852*

- *Consider conducting exercise stress test for male firefighters over the age of 45 years with two or more risk factors for CAD.*

- *Phase in a mandatory wellness/fitness program for firefighters to reduce risk factors for cardiovascular disease and improve cardiovascular capacity.*

- *Perform an annual physical performance evaluation to ensure firefighters are physically capable of performing the essential job tasks of structural firefighting.*
- Use a secondary test to confirm appropriate placement of the endotracheal tube during intubations. (Addresses a procedural safety issue)

“We can do better as we owe it to ourselves and our customers.” A priceless point from Fire Chief Jeff Pohlman. Chief Pohlman also added that he is committing to firefighter fitness this upcoming year. He has asked the Kentucky State Fire Commission to perform CPAT testing for all members, a requirement that will not take effect in the state until 2013 at best. It seems that Chief Pohlman and the entire Alexandria Fire District has taken this tragedy very seriously. Doing so they have been able identify some health problems for some members before they were out of control. Chief Pohlman also noted that the district has had multiple pieces of fitness equipment donated to them from the state fire commission to help progress forward with their plan.

“It is always a shock to lose a firefighter. We tend to not eat right and fail to take care of our bodies. With the physical demands of firefighting, we owe it to ourselves and our families to stay healthy and perform our jobs to the best of our abilities.”

Fire Chief Jeff Pohlman, Alexandria Fire District, Kentucky
Fire Fighter Investigation F97-04

In February of 1997 the Lexington Fire Department received a call for a residential structure fire. Engine 11 arrived on scene first to find a working fire in a single family dwelling. After attempting to make entry into the building but being held back by pump problems an additional crew from Engine 6 was ordered to attack the fire with their apparatus. Making entry was the victim, 29 and a second firefighter, 31. The two firefighters entered the front door and immediately fell through the floor into the basement. Approx 8 minutes went by before crews were ordered by District Major 204 to back off, it was then determined that two firefighters were lost. At this time personnel began to look for the missing, one was found at the mouth of the hole and pulled out right away. 53 minutes had passed before the victim was discovered, he was pronounced dead at the hospital.

NIOSH recommendations for Lexington Fire Department

- Fire departments should ensure that fire command always maintains close accountability for all personnel at the fire scene.
- Fire departments should ensure at least four firefighters be on scene before initiating interior fire fighting operations at a working structure fire.
- Fire departments should ensure that fire fighters who enter hazardous areas, e.g., burning or suspected unsafe structures, be equipped with two-way communications with incident command.

The Lexington Fire Department has made many substantial changes to the operations at structure fires since this incident. Upon arrival of responding Emergency
Care units at a working structure fire, the Paramedic Officer is usually assigned the task of accountability and reports directly to the incident commander. Performing accountability checks every 5 minutes as long as there are personnel within a hazardous area. Crews arriving on scene do not enter a structure in a working fire situation prior to 4 personnel being present on scene unless there is a known rescue or a significant possibility. Along with the previous two changes, all apparatus have been equipped with 4 hand held 2 way radios and are equipped with lapel mics for ease of use while in turnouts. Although costly, the addition of the adequate amount of radios makes all of the difference on the world. Since the incident, the inception of the Rapid Intervention Team in place at every structure fire has made the biggest difference of all. These crews are reasonable for their own 360 degree survey upon arrival, as well as being proactive in removing items or materials that may impede with egress routes. All personnel adhere to these policies for the most part. With a department the size of Lexington's, reluctance to adhere to policy change is a given, but through training and strict oversight, things finally fall into place.

**Fire Fighter Investigation F2004-11**

In February of 2004, a career Lieutenant, 40 was gunned down while trying to rescue a female from the front yard of a farm house in rural Fayette County, Lexington Kentucky. Crews responded to a subject down with a possible gun shot. The crew had staged the apparatus away from the scene and began to walk up to the location of the female with their medical equipment. While they were performing an initial assessment
of the patient, shots rang out hitting both crew members. The victim died at the local trauma center.

**NIOSH Recommendations for the Lexington Fire Department**

- *Develop standard operating procedures for responding to potentially violent situations.*
- *Develop integrated emergency communication systems that include the ability to direct relay real time information between caller, dispatch, and the responding units.*
- *Provide body armor or bullet resistant personal protective equipment; train on, and consistently enforce its use when responding to potentially violent situations.*
- *Ensure all personnel have the capability for continuous radio contact and consider equipment with hands free capabilities.*
- *Consider requiring dispatch centers to incorporate the ability to archive location, or individual, historical data and provide pertinent information to responding personnel.*
- *Develop coordinated response guidelines for violent situations and hold joint training sessions with law enforcement, mutual aid and emergency response departments.*

This was definitely a severe tragedy for the Lexington Fire Department, not only for the loss of a member, but also the fact that that member was not able to be helped right away as the gunman held his position inside the house. Since this incident occurred a lot of new policies and guidelines have surfaced and are being adhered to. No personnel enter potentially violent situations without being accompanied by police and in most
cases only enter after being advised by the police that the scene is secure. Despite the adherence to policies regarding violent scenes and domestic situations, the department has not added bullet proof armor to the equipment list. In relation to the communications recommendations, the fire and police dispatches are still located at separate facilities as well as each agency operating completely different radio systems. The Fire/EMS operates an 800 MHz system while Lexington Police are utilizing a 400 MHz system. All communications must be done between each agencies dispatcher via telephone, not really beneficial to anyone.

**Conclusion**

It is clear that there are many things that we can all do a little different to better our chances at going home at the end of shift. From wearing our seatbelts all the time, to ensuring we properly wear our PPE. While some departments took their opportunities to completely change the way the approach certain issues and other met some resistance to the change, we should all look at these situations and think to ourselves, are we doing everything possible to ensure the safety of our people and what can we do differently?
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