

Session: F3.0

Title: Fire Fighters

Moderator: Linda Frederick

F3.1

Title: A Profile of Thermal Imaging Camera Ownership in the United States Fire Service

Authors: Proudfoot SL, Fahy RF

Background

While structure fires have steadily decreased over 20 years, the rate of firefighter fatalities inside burning buildings has increased from 1.8 to 3 deaths per 100,000 fires. Most of these deaths occurred when firefighters became disoriented, were caught in a collapse, or were overtaken by rapid fire spread. Thermal imaging cameras (TICs) allow firefighters to "see" in obscured-vision conditions. TICs detect heat energy rather than light, translating heat signatures into recognizable images. Fire service-related applications include search-and-rescue, and locating hidden fire behind walls and ceilings.

Methods

The National Fire Protection Association (NFPA) added a question to its Annual Fire Service Survey (FSS) in 2001 to get a nationwide count of TICs. Preliminary data from the survey were analyzed to determine characteristics of departments based on TIC ownership. Data from the United States Fire Administration's (USFA) Needs Assessment were also incorporated.

Results

With two-thirds of the FSS cycle completed, 23.9% of departments have answered the TIC question; of those, 35.5% have at least one TIC. Career fire departments own 49.9% of the TICs, while volunteers own 50.1%. Career departments comprise 11.5% of all departments, while volunteers make up 88.5%.

The USFA reports that while 24.4% of the nation's fire departments now own TICs, 43.9% have no plans to purchase a TIC. The remaining 31.7% plan to obtain TICs within five years.

Conclusions

The data show an even distribution of TICs between career and volunteer departments; however, with the total number of career departments being a fraction of the number of volunteer departments, a much higher proportion of career departments own TICs. Career departments generally protect larger populations and respond to more structure fires. Additional applied research is needed regarding TIC utilization in the fire service, together with specification standards and standard operating procedures.

F3.2

Title: U.S. Firefighter Fatalities at Structure Fires

Author: Fahy RF

Since 1977, the number of U.S. firefighter deaths annually at structure fires has dropped 59 percent, a finding often credited to improvements in protective clothing and equipment, fire ground procedures and training. Over the same period, however, the number of structure fires has declined by 54 percent. It is important to determine to what degree the decrease in deaths may have been driven by the drop in the number of fires.

A comparison of the decline in both measures shows that the trends track fairly closely, indicating that the drop in deaths may have been, to a great degree, a result of the reduction in the number of fires. So, then, are firefighters just as likely to die today as they were 25 years ago?

A review of the data shows that the rate of heart attack deaths at structure fires (inside and outside) has been dropping since the early 1980s, as has the rate of non-heart-attack deaths outside at structure fires. One area showing marked increases over the period is the rate of traumatic injury deaths while operating inside structures. In the late 1970s, traumatic deaths inside structures occurred at a rate of 1.8 deaths per 100,000 structure fires and by the late 1990s had risen to almost 3 deaths per 100,000 structure fires. Almost all non-heart-attack deaths inside at structure fires were the result of smoke inhalation, burns and crushing or internal trauma. The major causes of these injuries were lost inside, structural collapse and fire progress (including backdraft and flashover). Although individually there were no consistent trends when looking at cause of injury, together there was a clear upward trend.

In order to reduce the number of firefighter deaths inside structure fires, it is crucially important to understand how they are happening and why they are increasing.

F3.3

Title: Firefighter Fatalities 1998-2001: Overview with an Emphasis on Structure-Related Traumatic Fatalities

Authors: Hodous TK, Castillo DN, Braddee R, Pizatella, TJ

This presentation reviews the causes of all firefighter line-of-duty-deaths from 1998 through 2001, and presents National Institute for Occupational Safety and Health (NIOSH) recommendations and discussion specifically regarding the subgroup of fire fighter fatalities related to structural fires. There were 410 line-of-duty deaths among US firefighters during 1998-2001, plus an additional 343 who died at the World Trade Center disaster on September 11, 2001. The 410 fatalities included 191 medical (non-traumatic) deaths (47%), 75 motor vehicle-related

NOIRS 2003 ABSTRACTS

Although the abstracts in this publication were proofread to eliminate obvious errors in spelling, punctuation, and grammar, they were neither edited nor officially cleared by the National Institute for Occupational Safety and Health (NIOSH). Therefore, NIOSH is not responsible for the content, internal consistency, or editorial quality of the abstracts. That responsibility lies solely with the individual authors. Any use of company names and products throughout this publication does not imply endorsement by NIOSH, the Centers for Disease Control and Prevention, the Public Health Service, or the Department of Health and Human Services.