U.S. Fire Administration

Critical Health and Safety Issues in the Volunteer Fire Service

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FEMA

Mission Statement

We provide national leadership to foster a solid foundation for our fire and emergency services stakeholders in prevention, preparedness, and response.

U.S. Fire Administration

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Disclaimer

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Candice McDonald
International Association of Women in Fire and Emergency Services

Dan Gorham
Fire Protection Research Foundation

Chief Keith Padgett
Columbia Southern University

Chief Kenn Fontenot
NVFC, Health, Safety and Training Committee

Chief Kevin D. Quinn
NVFC, Chairman and Standards and Codes Committee

Kimberly Quiros
NVFC, Chief of Communications

Lori Shirley
NVFC, Project Manager

Matt E. Bowyer
National Institute for Occupational Safety and Health

Dr. Nattinee Jitnarin
Center for Fire, Rescue and EMS Health Research

Battalion Chief Quentin A. Cash
Shelby Fire-Rescue Department, North Carolina

Dr. Rita Fahy
National Fire Protection Association

Battalion Chief Ron Roy
NVFC, Wildland Committee

Dr. Sara A. Jahnke
Center for Fire, Rescue and EMS Health Research

Sarah Lee
NVFC, Deputy Chief Executive

Steve Austin
Cumberland Valley Volunteer Firemen's Association, Emergency Responder Safety Institute

Wesley M. Keller
Pennsylvania Bureau of Forestry

Dr. William F. Jenaway
Volunteer Firemen's Insurance Services

William J. Troup
USFA, Project Officer

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Introduction

Volunteer firefighters represent 69 percent of the U.S. fire service (Haynes & Stein, 2016). As a nation, we rely on them every day to save lives and protect property in times of danger and disaster. In order to do so, they must first be healthy, safe and able to respond. Firefighters are hurt and/or die from a number of health and occupational safety issues, such as heart attack, cancer and vehicle crashes. A fundamental change is needed to overturn these issues and revolutionize the volunteer fire and emergency services to create healthier and safer work environments for volunteer responders.

The causes of firefighter injuries and fatalities have been tracked for years by the U.S. Fire Administration (USFA) and other leading fire service organizations in an effort to increase awareness and understanding of such causes, with the ultimate goal to reduce the number of responder injuries and deaths (USFA, 2015). With this goal in mind, USFA and the National Volunteer Fire Council (NVFC) created a project team to review data and identify health and safety trends specific to the volunteer emergency services. The resulting document, "Emerging Health and Safety Issues in the Volunteer Fire Service," was first released in 2008. This document included a formula to address the identified emerging health and safety issues and how to manage them going forward. It can be graphically represented as follows:

Figure 1. Formula to Address and Manage Emerging Health and Safety Issues

Source: USFA and NVFC, 2008.

While these steps do significantly improve individual health and safety outcomes, more recent research shows that issues and trends that ultimately impact firefighter health and safety are more deeply rooted in the culture of the fire service. Additionally, the identified health and safety issues are no longer recognized as "emerging" because their long-standing nature has remained constant over the years and continues to concern the fire service, regardless of the focus placed upon these issues at any given time.

An updated edition, "Critical Health and Safety Issues in the Volunteer Fire Service," was published in 2010 by NVFC and USFA to further report on these issues. This version encompassed a larger population of research respondents and expanded upon behavioral health, which was originally identified simply as stress management. It also benchmarked

first responders' perceptions of their own health and the health of other firefighters compared to other professions. This new information brought to light an existing gap between understanding that health and safety are important and actually taking action to create a culture of health and safety in the fire and emergency services.

USFA and NVFC have partnered once again to re-evaluate known issues, discover new or emerging concerns, and provide the tools and resources necessary to overcome health and safety concerns plaguing the volunteer fire service. Six overall critical issues affecting the volunteer emergency services were identified. Existing research and trend analysis, coupled with feedback from the industry's leading professionals, provided an in-depth analysis into the foundation of these issues and placed them in context with current health and safety practices to encourage a true change.

The six identified critical issues are:

1. **The Culture.** Changing the mindset of firefighters needs to be a priority, beginning with leadership, in order to change the culture to effectively improve the health and safety of emergency responders.
2. **Recruitment and Retention.** Competent, qualified, healthy personnel are critical to performing public safety jobs. If we can't recruit and retain personnel, the job won't be done safely and successfully.
3. **Funding.** Funding is critical to any operational success. If there is insufficient money allocated to equipment, personnel, resources, and training, it can place the overall operation at greater risk.
4. **Expanded Roles of Firefighters.** The additional responsibilities of all-hazard prevention, response, and mitigation, including Emergency Medical Services (EMS), require greater training, operational preparations, and healthy personnel to fulfill expectations.
5. **Personal Health.** Increasing research on emergency responder health implications has placed greater obligations on firefighters to focus on their health and be fully prepared for the job, both mentally and physically.
6. **Safety Protocols.** Fire science is being researched like never before, and each new scientific verification or finding impacts firefighting safety. New protocols and standards must be adopted and enforced by the department in order to ensure safe operations.

The relationship between overall emergency service critical issues and firefighter/EMS health and safety are further detailed in the body of this document. It is important to note that some of the research cited in this document was conducted on the fire and emergency services as a whole, due to the fact that specific studies of the volunteer sector alone are limited; however, all research noted in this report is applicable to volunteer fire and emergency service departments.

This report identifies resources, provides references, suggests tools, illustrates best practices, and establishes goals and objectives for each issue to help departments improve firefighter safety, well-being and survival. Also, look for "Tools for your Toolbox" throughout the document with ideas on how to implement practices relevant to a particular subject. Visit www.nvfc.org/criticalissues for supplemental resources to help address the volunteer fire service critical issues identified in this report.

Critical Issues

The Culture

The fire and emergency services are constantly evolving. Advancing technology, industry research, and easy access to information are all impacting the way volunteer departments do business and the way firefighters do their jobs. Positive progressions to initiate cultural change are creating safer environments and better workplace settings, which are vital to the health and safety of our firefighters and emergency responders.

However, longstanding traditions influence the way firefighters think and act. Changing the mindset of responders to move toward risk reduction (e.g., training senior leadership, developing and enforcing department standard operating procedures (SOPs), or formulating mentoring programs) is critical but not easy.

Linda Willing, a firefighter and adjunct instructor for the National Fire Academy (NFA), uses the shift in mindset regarding cigarettes as an example to describe three factors that influence change in fire service culture.

- Change is mandated and supported from the top down. Department leaders must set clear expectations and lead through policy, outcomes and example. The desired change needs to be explicitly communicated, and those in positions of authority at all levels, especially Company Officers (COs), need to be held accountable. Willing wrote:

> In my department, eliminating smoking was an incremental process. First, smoking was forbidden in all living spaces in the station, but allowed in the apparatus bay. Then it was eliminated from the station entirely. Finally, smoking was not allowed anywhere on fire station property, inside or outside. (2012, para. 12)

- The change has to make sense for people to embrace it. Even those addicted to cigarettes can understand the value of having a smoke-free workplace for health, safety and personal comfort. The sense of this change is also reinforced by society's changing attitudes about smoking.
- When making cultural change, there has to be a constancy of purpose over the long haul. Eliminating smoking from the fire stations did not happen overnight. There was backsliding and some pockets of resistance. People needed support to change old habits. (Willing, 2012)

USFA, in partnership with the International Association of Fire Chiefs (IAFC), launched the National Safety Culture Change Initiative (NSCCI) in 2015 to identify fire and emergency service cultural aspects that contribute to occupational illnesses, injuries and fatalities. This effort identified the need to understand the fire and emergency service culture with the goal to further reduce line-of-duty deaths (LODDs) and serious injuries by clearly identifying the individual behaviors and the organizational factors that adversely impact firefighter safety and health, as well as the strategies to mitigate these effects. The NSCCI advocates for the need for culture change for health and safety within the fire service through training, which includes web-based educational modules that use operational incident scenarios; resources, such as assessment tools with checklists, to evaluate status and progress; a repository of publications and additional information on the topic of cultural change; and a formal report — "National Safety Culture Change Initiative."

This report was developed to specifically study behavioral motivation on reduction of risk-taking behaviors in the fire and emergency services. It provides a basic understanding of the fire and emergency service culture, identifies individual and organizational behaviors that positively and negatively impact health and safety, and highlights focus areas for change by raising awareness about unsafe practices. Focus areas include:

- Environmental factors.
- Health and wellness.
- Individual responsibility.
- Leadership.
- Recruiting.
- Seat belt usage.
- Situational awareness.
- Training.
- Vehicle operations.

The report emphasizes that organizational leadership and personal responsibility are critical in creating the culture change needed in the fire service to promote firefighter safety (USFA & IAFC, 2015).

The NSCCI supports the National Fallen Firefighters Foundation (NFFF) Firefighter Life Safety Initiative (FLSI) 1. The NFFF established the 16 FLSIs to influence the critical safety culture in the U.S. fire service and provide a foundation for thousands of fire departments and EMS organizations who have a desire to ensure that their firefighters and medics return home safely after every shift. FLSI 1 states: "Define and advocate the need for a cultural change within the fire service relating to safety; incorporating leadership, management, supervision, accountability, and personal responsibility" (n.d., para. 1).

FLSI 1 is an overarching initiative, acknowledging that the organizational culture of the fire service must undergo a change in order for the other 15 recommendations to be accepted. It is likely that changes called for in the other 15 initiatives cannot be successfully implemented or sustained within a department's culture without leadership from the executive level and supervision at the street level (USFA, 2015).

Changes in the fire service culture are needed for a variety of reasons including, but not limited to:

- Reducing firefighter injuries and deaths.
- Improving public perception and support.
- Recruiting, hiring, and retaining a diverse workforce.
- Reducing incidents of negative member behavior to have a positive impact on volunteer retention. (Paull & Omari, 2015)

Looking further at the fourth reason, the Cumberland Valley Volunteer Firemen's Association's (CVVFA) Fire Service Reputation Management White Paper highlights reputation management issues occurring in the fire service. CVVFA actively tracks and records instances of firefighters being arrested and making headlines for integrity breaches. They noted that:

> Issues described in this White Paper are generally omnipresent on the fire service national stage; they are not isolated or limited to just the career or volunteer service or the urban, suburban, or rural fire service. Instead, these issues have been found to be present in the fire service nationwide, in all types of communities and within all types of fire departments. (CVVFA, 2010, p. 6.)

The reputation management issues are:

- Cheating on examinations and department policies.
- Firefighter arson.
- Theft and misappropriation of department funds.
- Misuse of department equipment and personal information technology.
- Misuse of departmental facilities.
- Alcohol and other substance abuse.
- Harassment and discrimination. (CVVFA, 2010, p. 5)

All of these listed behaviors work against the previously listed aims of improving public perception and support, maintaining a good reflection on the profession, and, of course, improving safety. Take firefighter arson, for example. Firefighter arson is a long-standing problem that negatively impacts fire departments and communities across the nation. A number of media reports suggest that there are likely over 100 arrests per year (NVFC, 2011). This behavior is risky and poses dangerous and potentially deadly outcomes that affect the individual, department, and community. Furthermore, 2008 research from Hinds-Aldrich showed that the majority (95 percent) of U.S. firefighters arrested for arson over the last two centuries were volunteers; more disturbingly, nearly 10 percent of the firefighters, volunteer and paid, were ranking officers (NVFC, 2011). With 63 percent of Americans reporting leaders as being untrustworthy, and 83 percent indicating leaders' actions were not based on public benefit, but rather on self-serving agendas (Peus, Wesche, Streicher, Braun, & Frey, 2012), it is important that the fire service implement strategies to retain stakeholder trust. In order to change damaging behavior, departments need to implement thorough background checks and screening processes, set and enforce

zero tolerance SOPs, and provide rules and training upfront to set expectations. Such administrative actions can be applied to all personnel behaviors, which will ultimately influence a cultural shift toward a safer working environment.

Like many issues noted throughout this document, there are tools and resources available to help volunteer departments prevent or mitigate instances of poor member behavior and firefighter arson, including:

- NVFC (with support from USFA, the NVFC Foundation, and guidance from a work group comprised of arson investigators and fire service professionals) examined the issue and developed tools and resources to help departments address and prevent cases of firefighter arson. These include the "Report on the Firefighter Arson Problem," the "Firefighter Arson Prevention and Recovery Toolkit," a video, and an awareness poster, all of which can be found on the NVFC website.
- To expand beyond the Reputation Management White Paper, CVVFA, with past support from the NVFC Foundation, offers free training for fire departments on strategies to address reputation management issues. Strategies include social media policies, implementing the firefighter code of ethics, strong leadership skills, safeguards against theft, and creating an environment to support diversity and eliminate sexual harassment. Contact the CVVFA to schedule training.

Tools for Your Toolbox

National Volunteer Fire Council Health and Safety B.E.S.T. Practices

To help departments incorporate safe and healthy practices into their culture, NVFC created the "B.E.S.T. Priorities for Firefighter Health and Safety" that focus on protecting volunteer responders. The priorities are divided into a series of practices that cover four main focus areas: behavior, equipment, standards and codes, and training. Departments can learn more about these priorities through an online training offered in the NVFC Virtual Classroom. A poster is also available that can be hung at the station to serve as a constant reminder of the practices the department should be following to keep members safe. Keep these priorities in mind while reading through each section of this guide. Below is the list of B.E.S.T. Practices:

Behavior:

- Support the physical, emotional and mental well-being of all personnel.
- Operate all emergency apparatus and privately owned vehicles to conform to the highest road safety standards, and enforce the use of seat belts.
- Develop, practice and enforce recommended health and safety standards for all personnel.
- Monitor and ensure that all active emergency scenes maintain the utmost level of safety and fireground accountability.

Equipment:

- Provide and require the proper use of full personal protective equipment (PPE).
- Maintain all equipment based on established safety recommendations.

Standards and Codes:

- Encourage the use of all smoke, fire detection and fire suppression devices, including fire sprinkler systems, in all structures.
- Vigorously enforce all fire safety codes and ordinances.
- Obtain apparatus and equipment that meet national safety standards.

Training:

- Use fire training programs that conform to the highest professional standards.
- Operate a safe fire training ground at all times.
- Establish, maintain and deliver fire safety programs for all age groups. (NVFC, n.d.-a)

Cultural change applies to many aspects of the volunteer fire and emergency services and will be emphasized as other critical issues are discussed throughout this document.

Goal: Promote cultural change in the department to influence positive behaviors and risk-reduction practices.

Objectives:

- Provide leadership and management training regarding positive behaviors and risk-reduction practices.
- Provide recruit-level training regarding positive behaviors and risk-reduction practices to set the standard for entry-level volunteers.
- Clearly define and enforce company SOPs to help promote a healthy and safe environment.

Section Summary — The Culture: Understanding and implementing risk-reduction behaviors in local, volunteer fire/EMS departments will drive a cultural change, which will in turn create a safer work environment for department personnel. Behaviors must be clearly identified and enforced through SOPs, implemented from the top down, and taken into consideration for personal accountability.

Recruitment and Retention

The importance of both recruitment and retention cannot be overstated. Although volunteers make up 69 percent of the fire service, the number of volunteer firefighters in the U.S. has decreased by nearly 12 percent in the last three decades. Meanwhile, call volume to fire departments has tripled since 1980 (NVFC, 2015).

These factors pose a huge risk in relation to the health and safety of volunteer fire and emergency personnel. Adequate staffing levels are essential to ensure responders are not short-handed, compromising operating efficiency and firefighter safety.

The age of many volunteers is also a concern. The National Fire Protection Association (NFPA) reports that over 50 percent of volunteer firefighters protecting communities of less than 2,500 residents are 40 years old and above (Haynes & Stein, 2016). This is compared with 36.8 percent in 1987 (NVFC, 2016). As firefighters age and ultimately leave the service, there are fewer younger members to fill in the ranks (NVFC, 2016). Health may also be an issue. According to the National Council on Aging (NCOA), 90 percent of Americans ages 55 or older are at risk for hypertension, or high blood pressure (NCOA, n.d.). As highlighted later in this report under personal health, firefighters are at an even higher risk for various chronic and life-threatening diseases due to the nature of the job.

As volunteers continue to age and their ranks dwindle, we must realize that customary models of recruitment and retention may be neither sustainable nor practical given the current state of the volunteer fire service. Volunteer emergency service agencies must challenge traditional methods of recruitment and retention, and become more strategic and informed in their approach. Recruiting and retaining fit and able bodies will prove advantageous for department operations.

Recruitment

Expecting people to volunteer simply because it is the right thing to do is not going to bring people to the door. Departments must take several variables into account when seeking to increase their ranks, including the demographics of the community, creating a culture where existing personnel welcome and accept new recruits, and perhaps most importantly, whether the community is even aware that the department is in need of volunteers.

A national survey conducted by NVFC in 2014 indicated that 80 percent of respondents did not know if their local department was seeking volunteers. There is also a significant discrepancy in the perceived and actual prevalence of volunteers. While volunteers make up 69 percent of the fire service, only 29 percent of respondents believed that their local fire department used volunteers; 41 percent did not know whether their department used volunteers (NVFC, 2015). The first step in a successful recruitment campaign is to make sure the community knows that the department is in need of volunteers.

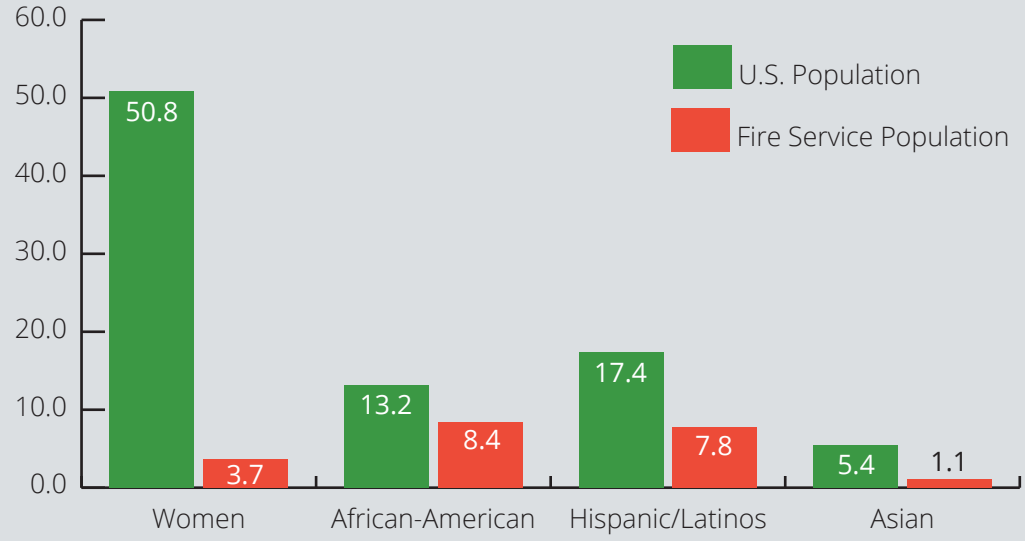
It is also important to consider what types of volunteers to recruit. If a department roster is comprised of mainly older volunteers, then the focus should be on recruiting younger individuals to fill the gaps as the older generation looks toward retirement. Also think about the physical, cognitive or managerial abilities needed for the positions being recruited. Having the right people in the right roles is critical to health and safety.

Another factor to incorporate into a recruitment plan is the demographics of the community. In an ideal world, the department would closely mirror the demographics of

the community. For example, if a community has a large population of college students, the department personnel should reflect a similar percentage of college students. If a community is made up largely of women and/or minority groups, these demographics should be similarly reflected in the department's ranks.

Reaching a broader audience is an area where many departments need to improve. According to Bureau of Labor Statistics, the fire service is one of the least diverse professions. While women make up more than half of the U.S. population (50.8 percent), they reflect just 7.3 percent of the overall fire service and 8.9 percent of the volunteer fire service (Haynes & Stein, 2016). The numbers for minority groups are only available for the career fire service, but there is a similarly disproportionate trend, as evidenced in Figure 2.

Figure 2. Diversity within Career Departments



Source: Adapted from Bureau of Labor Statistics, 2015; U.S. Census Bureau, V2014.

While women and minorities are vastly underrepresented in the fire service, it is not due to disinterest. In general, women are more likely to volunteer than men by a ratio of 3-to-1 (Waters & Bortree, 2012). However, these statistics do not hold true for the volunteer fire service. In the recruitment and retention research conducted by NVFC, women were equally interested in volunteering as a firefighter or first responder as their male counterparts. Similarly, minority respondents exhibited as much interest, if not more, in operational volunteer opportunities as Caucasian/White respondents. The study also found that interest in volunteering was very high among those 18 to 34 years of age, with 44 percent showing interest in operational volunteer opportunities (NVFC, 2015).

The results of the study suggest that the problem with recruitment is not lack of interest, but rather with awareness and recruitment methodologies. To be effective at recruitment, it is vital to identify the demographics of the community and how to best appeal to the target audiences in terms of messaging, imagery and avenue of outreach. What resonates for one demographic may not have the same appeal to another. When it comes to a field as challenging as firefighting, it is important that potential volunteers can visualize themselves in that role; otherwise, self-doubt may prevent them from taking that next step.

Research shows one recruitment barrier for females is tied to physical agility. According to one study, females had an 85 percent failure rate (versus nine percent of males) in passing the Candidate Physical Ability Test — a standard entry test for entering the fire service (Sinden et al., 2013). Another reported recruitment barrier for females entering the fire service is negative attitudes of male firefighters toward the female recruits (Sinden et al., 2013). Female firefighters experience difficulty gaining a positive work environment and report lower job satisfaction due to negative attitudes from male counterparts (Sinden et al., 2013). Departments should implement strategies to address physical agility challenges and better prepare recruits to meet the requirements. Additionally, departments should create an environment that supports diversity. Knowing the department is there to support them and help them succeed will go a long way in encouraging a potential recruit to take that step to become a volunteer.

To attract prospective volunteers, first understand what drives them to volunteer and to continue to volunteer once recruited. NVFC's study of recruitment and retention assessed several behavioral determinants of doer and non-doer attitudes toward volunteer firefighting:

- Norms — What people think is expected of them.
  Doers and non-doers cite strong support from family, friends and employers as a driving factor in joining and remaining a volunteer.

- Self-standards — What people expect of themselves.
  When considering non-doer perceptions of who volunteers **are** and perceptions of what they **do,** non-doers cited that they are similar to volunteers because of the following:
  - They appreciate friendships and camaraderie.
  - They want to help people.
  - They care about their community.
  - They want to learn new skills.
  - They like excitement.

- Efficacy — An individual's confidence that he or she can pull off an action.
  In general, interested non-doers have not applied because they perceive the following:
  - They do not have the physical attributes of a volunteer.
  - They cannot be fully committed to the job.
  - They do not have the right skill set.
  - They do not have enough information about the job expectations and the application process.

- Environment — Surrounding influences affecting actions.
  - Having friends within the department and flexibility in scheduling were key things cited by doers that make it easier to sustain commitment to the fire department.
  - Isolation, unmet expectations, frustration with leadership, and lack of support from family or employers were cited as reasons by doers for what makes it harder to sustain commitment to the fire department.

- Rewards, Risks and Penalties — Positive results of acting; actual and perceived negative results of acting or not acting.
  - Doers cited the ability to give back to the community and save lives as significant rewards of serving.
  - Doers cited the risk of dying or injury to self and lost time with loved ones as significant risks and penalties.

- Feelings — Emotional benefits or barriers to action.
  Emotional hooks for volunteer firefighting center around a feeling of accomplishment: overcoming fear of inadequacy and being overwhelmed, and a focus on camaraderie, accomplishment and pride.

- Control — Ability to manage actions.
  The non-doer perception is that you can only join or not join, when in reality the level of commitment is often flexible. There is little understanding of the nature of the volunteer opportunity and the factors at play.

- Investment — All the costs, financial and otherwise, of acting.
  There is an unclear perception of the amount of time it takes to train and serve as a volunteer. Inaccurate perceptions could lead individuals to not volunteer.

Effective recruitment also hinges on an ability to understand **why** people take the step to join a fire or emergency service department. A key outcome of this study is the understanding that most volunteer firefighters first started volunteering because they were personally invited to do so. This suggests that more traditional recruitment methods, such as marquees in front of the station, newspaper advertisements, or billboards, may not be as effective as a personal invitation.

In addition, current volunteers indicated that they were more likely to join after being given a taste of what it's like to volunteer (NVFC, 2015). Much like grocery stores often offer samples of food and drink to influence their customers and persuade them to buy, volunteer departments can influence prospective volunteers by allowing them to sample what it's like to be a volunteer. This allows the person to picture themselves as part of a team while tackling fears about their skills or abilities.

It is also critical that the department is ready for new recruits as they join, or they are unlikely to continue. As potential members are brought into the department, make

sure current members are ready to welcome them. This ties back to the culture within the department. Train members in diversity and inclusion, and when new or younger members have ideas or input, let their voices be heard.

Many states and regions across the U.S. have implemented successful programs to help departments sustain or gain personnel, such as the Allegheny Mountain Firefighters Initiative (Pennsylvania), Recruit New York, and the Volunteer Workforce Solutions Everyday Hero Program (Virginia).

NVFC developed the Make Me A Firefighter recruitment and retention campaign to put research-based, ready-to-use tools and resources in the hands of local departments. The goal is to make the process of recruiting new volunteers as easy as possible for local departments. A free department portal allows departments to post volunteer opportunities, customize recruitment tools, track recruits, and more. Prospective volunteers can find local volunteer opportunities and learn more about the fire service. NVFC also offers an online recruitment webinar in its Virtual Classroom that discusses the challenges of recruiting volunteers, presents valuable research collected as part of the Make Me A Firefighter campaign, and offers ideas to help overcome recruiting challenges. All of these resources and additional information can be found on the NVFC website.

Goal: Increase effectiveness of recruitment efforts.

Objectives:

- Increase awareness of volunteer opportunities and types of opportunities.
- Increase the reach and frequency of personal invitations.
- Increase frequency of innovative ways for interested individuals to experience what it's like to be a volunteer.
- Improve tracking of conversion rates of the interested individuals who join.
- Increase the number of flexible and innovative training options for volunteers, and engineer the training process for retention, making the necessary training attainable and achievable for interested volunteers.

Retention

Recruitment is just part of the challenge facing the nation's fire and emergency services. With the average cost to train and equip a new firefighter estimated at $27,095, it makes good fiscal sense to retain these volunteers (NVFC, 2016). Outside of the financial aspect of training and recruiting, there is also invaluable benefit to the department by retaining the knowledge and experience of these volunteers over the long-term and using them to help train, support and mentor new recruits.

There are several factors affecting retention. Frequently cited reasons volunteers leave a department include poor leadership, time constraints, and rigorous training demands. NVFC's recruitment and retention study supports this data with respondents indicating that factors leading to drop-out included:

- Amount of time to volunteer.
- Senior leadership's treatment of firefighters.

- Poor communication between officers and members.
- Frustration with best efforts resulting in loss.

Similarly, there are several reasons why people remain volunteers, including enjoyment of the department and people, officers and senior firefighters have encouraged them to stay, and dedication to the department and the community (NVFC, 2015).

It is important that new recruits feel welcomed and included in the department, and that the expectations and duties before them are communicated clearly and regularly. Understanding that volunteering and the related training is time-consuming, consider ways the department can be more cognizant of time constraints. For instance, offering training that is online or offered at a variety of times allows volunteers to fit training into their already busy schedules. Similarly, offering duty shifts and department activities that are flexible and reasonable, or allowing volunteers to respond to emergencies from home, work, or other off-site locations other than the station, allows volunteers to incorporate their duties more easily into their schedules and communicates that their time is important.

The objectives listed in this section provide specific methods and activities to improve department retention. As with recruitment, NVFC offers a retention webinar through its Virtual Classroom that discusses retention challenges and offers possible solutions.

Goal: Increase retention rates.

Objectives:

- Provide flexibility and innovation in training methods, such as through online training or creative training schedules.
- Build camaraderie through training and other department activities.
- Create and practice a culture of inclusion within the department to ensure that all department members are treated fairly and respectfully.
- Build strong leaders and have a succession plan in place to provide room for growth and learning for younger recruits.
- Enable volunteers to have a voice. Survey members to identify ongoing improvements.
- Offer reasonable and flexible time requirements for activities and calls.

Section Summary — Recruitment and Retention: Good recruitment and retention practices are necessary to secure the future of the volunteer fire and emergency services. Increasing the number of volunteer firefighters and emergency personnel allows department duties to be shared among many rather than a few, which enhances safety, aids in camaraderie, and avoids burnout, disinterest, and over-exhaustion. Only with effective recruitment and retention practices are fire departments able to maintain adequate staffing levels to respond safely and effectively to calls, thereby protecting individual first responders, as well as the community.

Funding

Although the economy has been improving across the U.S., many volunteer fire departments continue to struggle. NFPA's national fire service needs assessment surveys consistently show that smaller, volunteer departments have the smallest budgets and the biggest financial challenges (Shea, 2015). Furthermore, firefighting is expensive. In the past 30 years, the costs for key pieces of equipment have jumped more than fivefold (Shafroth, 2014).

For example, a volunteer fire department in Pennsylvania that had been operating since 1950 had to close its doors in 2015 due to a lack of funding. The chief stated they had exhausted their reserves and savings in order to keep up with general expenses, such as maintaining the building and vehicles, as well as keeping rescue equipment up to state code (Klaric, 2015). In another instance, leaders of seven volunteer fire departments, also in Pennsylvania, reported that community donations are dwindling, and they are having a hard time keeping up with training and equipment costs necessary to keep the departments running (Shea, 2015).

Many organizations simply do not have the geographic service area or population necessary to adequately fund operations. In some communities, multiple departments compete for the same fundraising dollars. In other areas, demographic shifts with aging populations have left less people willing and able to volunteer, as well as transitioning to fixed or low incomes that reduce the total tax revenue. All of these factors are significant and pose an increasing challenge, especially for all- or mostly-volunteer departments serving populations of 2,500 or less, where an average of 65 percent of their yearly revenue is acquired through taxes and 17 percent via fundraising (NFPA, 2011).

Expenses to maintain operations, recruit new members, train volunteers, provide equipment, and fulfill increased expectations of firefighter roles, such as providing EMS, pose real problems for many volunteer fire departments. Additionally, volunteer departments are expected or required to work within higher standards than they have in the past (e.g., Occupational Safety and Health Administration (OSHA) requirements, NFPA standards, and accreditation).

If volunteer departments do not have adequate funding to conform to current standards, responder health and safety can be compromised. This fact is evidenced in the "Third Needs Assessment of the U.S. Fire Service" which reports that 70 percent of departments serving populations of fewer than 2,500 are not able to outfit every member on shift with a self-contained breathing apparatus (SCBA), and 69 percent have some personal protective clothing that is at least 10 years old. Most communities with populations of 2,500 or less are protected by volunteer fire departments (NFPA, 2011). Not only are first responders put at greater risk, but other important initiatives that may require time and money, such as behavioral health or physical fitness programs, take a back seat over immediate needs like equipment and gear.

Transitioning to a Combination Department, Consolidations and Mergers

Decreases in volunteer staffing, challenges with funding, and the need to maintain services have led some departments to transition to a combination department, consolidate with a neighboring department/agency, or reconsider their funding streams altogether.

Transitioning to a combination department can prove advantageous, as it can provide increased staffing levels beyond what may be available or affordable in an all-career or all-volunteer service, not just at peak times, but all the time (Stern, 1997). Volunteers benefit by being relieved of some of the time-consuming tasks in the day-to-day

operations of the department. A lighter workload can decrease stress levels, allow more time for training, and positively influence morale. For these reasons, transitioning to a combination department improves the overall health and safety of volunteer first responders; however, it is more expensive to bring on paid staffing, intensifying the need for funding even more.

There may also be situations where conflicts arise between volunteer and paid personnel. These conflicts act against the teamwork necessary to perform duties in a safe and effective manner. It can frustrate individuals on both sides of the fence, causing departments and the fire service to lose outstanding individuals who become burned out from the often petty fighting that goes on between the paid and volunteer sides (Stern, 1997). Chiefs and officers should nurture the organizational development by providing visionary leadership, defining and enforcing expectations, and fostering constructive communication, which can result in a functional, cohesive, and collaborative mixed group of career and volunteer firefighters who are perfectly aligned with the organization's mission (Piper, 2014).

Chief Jeff Cash from the Cherryville (North Carolina) Fire Department said it best when referring to the importance of firefighter equality and how that affects their safety on the fireground:

> The most important asset you have as a Fire Chief is your people. Notice there was no differentiation when I said people. It doesn't matter whether the members are career, part-time, or volunteer in your combination department, you have to depend on them all… If a star baseball player goes down with an injury, the game must go on. Your back-ups have to be trained, look, and act the same when put in that injured player's position. Your firefighters should be treated the same because they could be put in that starting role at any moment's notice. (2015, para. 13)

Tools for Your Toolbox

EQUALITY: Tips to Help Leaders Run a Combination Department (condensed)

Expectations: The fire chief has to set high expectations for all members of the department, and the expectations have to be the same whether it is a career or volunteer member.

Qualifications: Set equal qualifications in your department for all members. When individuals hold the same credentials and have been through the same training, mutual respect is developed.

Uniform: Uniform your personnel the same. If you buy Class A/duty uniforms for career, do it for volunteer also. Don't pass down old PPE from paid or part-time staff to volunteers.

Authority: Give your officers the authority to act. Whether career or volunteer, individuals in leadership roles should be able to make and communicate decisions to all applicable personnel.

Lead evenly: Chiefs should lead evenly — discipline/reward career and volunteer members the same. A policy or safety violation and respective discipline should be no different for any member.

Input: Gain valuable input from all employees. If possible, committees should comprise of an equal number of career to volunteer members; it will help the entire department with "buy in" when both sides are included in big decisions.

Time: Make time for your volunteers. They may not be able to train or meet at the same time as your career staffing. Remember, they are in your department because they want to be, not because of a paycheck. So go out of your way to make time when they are available.

Yearly evaluations: All members need a yearly performance evaluation to see how well they performed throughout the year, and also to set future goals and objectives. Volunteer members may eventually become career staff; a yearly performance evaluation can help lay the ground work for their future. (Cash, 2015)

Mergers and consolidations can have the same advantages and disadvantages. For example, two Tennessee departments merged in 2015 in order to improve services by:

- Reducing overall operating costs associated with the management of two separate organizations.
- Using specialized rescue equipment and resources.
- Consolidating fire, medical and rescue services.
- Maintaining and improving the fire insurance rating.
- Improving training and response plans to create safer operations. (Pleasant View, 2015)

In 2014, a struggling Virginia volunteer fire department — plagued with problems including poor leadership, membership, misuse of emergency equipment, and violations of health care privacy laws and state and local policies — merged into their county's fire and rescue department to avoid being dissolved (Inside NOVA, 2014). Volunteers supported the merger in order to mitigate their issues. The move didn't impact the fire and rescue budget because of existing equipment and staffing, and the volunteer department was able to improve standards, safety and operational efficiency.

In 2016, two Pennsylvania fire departments merged in order to continue to meet their community's needs. One department was struggling with not having enough volunteers, while the other had young personnel that lacked experience. The merger allowed the departments to capitalize on their combined workforce and improve operations. They were even able to sell one of their apparatus because of the increased efficiency (Malongowski, 2016).

Resources

There are a variety of sources for funding volunteer fire departments — from traditional fundraising, to taxation, to grants. Keep in mind that grants can be risky as an ongoing source to fund a department and should be considered more for major purchases, training, special programs, or initiatives. NVFC offers resources on its website to help volunteer departments find grants and prepare grant applications.

Some departments have been innovative in their approach to maintaining adequate funding streams. One county in New York developed a unique and promising means of increasing cash revenues for its 42 fire departments (39 volunteer, two combination, one career). They raised over $6.5 million from the sale of delinquent tax certificates that had been issued on properties that owed back taxes (USFA, 2012).

When approaching the community or local government for assistance, it is helpful to have figures which support the request. NVFC has Cost Savings Calculators which will allow a department to determine approximately how much they save their community monetarily each year and, in turn, will serve as a means to justify an increase in support.

Additionally, in 2012, USFA published "Funding Alternatives for Emergency Medical and Fire Services" to identify grants and innovative funding methods for fire and EMS departments. The report offers discussions of the pros and cons of particular funding sources, along with examples of best practices. The report is available on the USFA website.

Whatever the method, an organization's leaders must understand the importance of developing an ongoing, positive relationship with the community and elected officials to find the best solution that will ensure the safety of its responders and those they serve.

Fidelity

Another factor to consider is financial fidelity. The words "justification" and "accountability" will continue to loom large as departments struggle to keep up with operational costs. Organizational leaders will continue to face questions from elected officials and members of the public about the cost of doing business. Leaders need to be accountable and be able to clearly articulate the need for basic operating funding and capital equipment. They also need to make sure there is a proper financial management system in place to avoid potential fidelity issues.

Dr. William Jenaway, Vice President of the Volunteer Firemen's Insurance Services (VFIS), had this to say regarding fidelity in the fire service:

> Fidelity is defined as the strict observance of promises, duties, etc. or adherence to fact or detail. Unfortunately, some officers and managers are not always honest and may be tempted to divert money and other financial assets from the emergency services organization for personal gain. This would be known as a fidelity claim. Directors, managers, chief officers, treasurers, financial secretaries, and special event managers all could become a financial drain on any organization if they do not perform with fidelity. The real problem for an organization is that when these losses occur, they generally occur over relatively long periods of time. This may result in the losses being staggeringly high. The loss of funds can jeopardize high-quality response, equipment, and services to the community. (2015, para. 15)

The damage to the department's reputation or future funding streams may also be high and, in some cases, unrepairable. There are several strategies and procedures departments can use to prevent and manage fidelity issues. Leaders should be well versed on what these are and be stringent in ensuring these procedures are followed.

Tools for Your Toolbox

Tips to Decrease Fidelity Claims in Departments

For people with purchasing, fund management, and check writing responsibilities:

- Checks should always require two signatures, signed only after they have been written in full. Never sign blank checks or allow the use of signature stamps — even for convenience.
- Have your organization's bank require signature cards to be kept on file. Your organization should keep these up-to-date.
- Bank statements should be received and reconciled by someone who does not have check-writing authority.
- Have an independent third party audit your books annually.
- Whenever possible, do not permit people with close personal ties (husband/wife; brother/sister; business partners) to have control over organizational check writing or reconciliation.
- Require purchase orders and invoices for all purchases of property or service. Have these compared to the written checks.
- Separate financial functions as much as practical.
- Conduct background checks on all new officers and members.
- Have all financial policies in writing.
- Review your organization's insurance policies to assure proper fidelity coverages are in place.

For people who handle fundraising or special events cash:

- Conduct background checks on all new officers and members.
- Do not permit people with close personal ties (husband/wife; brother/sister; business partners) to handle cash without a third party present.
- For large amounts of cash or for events occurring over a long period of time, have frequent pick-up and accounting of cash. Collected money should be bank deposited to limit the amount of on-hand cash.
- Have at least two people responsible for reconciliation and deposit of cash.
- Whenever possible, have some form of paper trail (ticket stubs, bill of sale, sign-in sheet) so that a close estimate of the anticipated cash can be obtained and confirmed.
- Have all financial policies in writing. (Hess, 2012)

Training in the development of an annual report, financial management, and effective communications will allow leaders to be proactive when dealing with decreases in funding and also when searching for different funding sources or methods to increase or maintain operations. Overall, the goal is to establish a financially sound institution to uphold a safe and effective work environment.

Goal: Establish a financially sound fire department to uphold a safe and effective work environment.

Objectives:

- Identify a variety of funding sources and alternative funding methods. Look into diversifying funding streams, and do not put all your "eggs in one basket."
- Use grant-writing resources.
- Research and review funding best practices and lessons learned — both in nearby community successes and out-of-state departments.
- Provide administrative financial training.
- Implement procedures to decrease possibility of fidelity claims.

Section Summary — Funding: If a department does not have adequate funding to sustain operations, then the health and safety of volunteer responders can be compromised. Departments must consistently assess the cost of doing business, continuously search for appropriate funding streams, and evolve to meet demands. Leadership is pivotal in this area, both to provide the means to function and also to uphold the ethical standards for how business is conducted.

Expanded Role of Firefighters

Today's fire service is expected to handle a greater variety of threats and emergencies than in the past. Departments are often called upon for medical emergencies, terrorist threats, lost individuals, chemical explosions, and other incidents. The additional responsibilities of all-hazard prevention, response and mitigation require greater training demands, operational preparations, and healthy personnel in order to reduce line-of-duty injuries and deaths. Volunteers must determine which responsibilities they can handle safely and effectively, and keep up with the standards necessary for these additional operations.

Emergency Medical Services

There were over 33.6 million fire department calls in 2015. Of these, 1.3 million were fire-based, while nearly 21.5 million were medical (Fire Department Calls, 2015). In fact, 61 percent of all fire departments provide EMS (Haynes & Stein, 2016). Many volunteer fire departments in the U.S. are the primary — and sometimes only — provider of EMS in their community.

Departments have adapted over the years as standards have changed and complexities increased. So what does providing EMS mean for many volunteer departments?

Some departments expand into providing emergency ambulance service because they believe that the revenue generated by ambulance billing can help pay for fire department operations. In many cases, this is true, and in many cases, it is not (Maruca, 2015). One example comes from Chief Joe Maruca from the West Barnstable (Massachusetts) Fire Department:

> Our total ambulance revenue for FY 2014 was $181,998. This is a lot of money and many firefighters and chiefs would love to get this kind of revenue stream. It probably represents three or four times the fire department operational budget of many similar sized communities. The problem is that it costs our department $900,000 to provide the service at the level of quality demanded by our citizens. This is where public policy, public safety, and public service collide with the financial aspects of providing ambulance service. (2015, para. 10)

It was mentioned in the previous section that the health and safety of firefighters and emergency personnel can be compromised if the department does not have adequate funding. Similarly, health and safety programs may become secondary or be completely eliminated if department personnel are overwhelmed with other priorities, such as providing additional services like EMS. Using volunteer fire staff to expand EMS services may also cause added wear and tear on volunteers. Even departments that have a few full-time staff will still rely heavily upon their volunteer force to respond to EMS calls and to cover for overlapping emergency calls (Maruca, 2015). This can be both mentally and physically exhausting on individuals, and may even cause burnout.

The provision of EMS is changing in many ways, and volunteer fire departments must be aware of current and future challenges. The Affordable Care Act and changes in traditional methods of reimbursement may affect this potential source of revenue. Additionally, as the population continues to age, call volumes will rise, and the need for additional ambulances will be essential.

Public awareness and injury prevention programs may be helpful to reduce call volume, or at least make the public aware of the issues the department faces when providing EMS.

Departments should have an ongoing method to assess needs and predict changes. A proactive approach is always better than reacting to a situation. Departments may need to increase the number of volunteer personnel to meet demands for EMS. Effective recruitment and retention is critical for system survival, or other measures may need to be adopted, such as consolidations, mergers, or the addition of paid staffing.

The decision of whether or not to expand services in a community starts with three questions:

1. Is there a market for the services? Can the agency offer something that either addresses an unmet need or that improves on how the need is being met presently? Is there competition from private/for-profit companies?
2. Will government, insurance and private payers compensate the agency for providing those services? As an example, hospitals may find that paying an outside agency for discharge, follow-up home visits for high-risk patient groups costs less than the financial penalties incurred by excessive patient readmission rates.
3. Can agency staff and infrastructure absorb the additional workload and the increased cost of required training? (Mund, 2015)

It is important to remember that factors which serve as an advantage for one agency could just as easily be a disadvantage for another. The expanded services model works well for a large, for-profit agency with paid staff. However, for smaller agencies, and especially volunteer agencies, expanding services can quickly overwhelm responders' available time and the capacity of the agency's infrastructure (Mund, 2015). As mentioned before, this can lead to overtired personnel and a financially drained department, compromising both health and safety of responders.

Department leaders should use the listed objectives to consider whether providing EMS is right for their agency and in the best interests of their personnel. NVFC has an EMS/Rescue Section to provide volunteers in an EMS or rescue delivery system with information, education, services and representation to enhance their professionalism.

Goal: Evaluate and meet demands for EMS.

Objectives:

- Review community demographics, and collect call volume data.
- Assess system performance in regard to response time and volunteer participation.
- Establish a strategic planning team who can be used to identify future trends.
- Establish partnerships with local health care organizations, including hospitals, clinics, short- and long-term care homes, and home health agencies.
- Effectively communicate system issues with community and elected leaders.
- Implement recruitment and retention efforts in addition to strategies that prevent overexertion of existing personnel.
- Implement community campaigns targeting injury prevention and awareness.

Wildland Firefighting

Volunteer firefighters that live in the wildland urban interface (WUI) — defined as the line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels — have an added expectation to protect their community from wildfires. Wildfires are a natural occurrence; however, as more communities are built in the WUI, more firefighters will be called upon to protect those homes when a wildfire strikes.

In 2015, over 68,000 fires scorched a record-breaking 10.1 million acres — making it one of only four years since 1960 to see more than 9 million acres burn (National Interagency Fire Center, 2015). According to the National Interagency Coordination Center (NICC), a total of 4,636 structures were destroyed by wildfire in 2015, which is 69 percent above the annual average of 2,750 (2015). More than 72,000 U.S. communities are now at risk from wildfire (Wildfires, n.d.).

In 2015, NFPA published results from a pilot study, "Wildland/Urban Interface: Fire Department Wildfire Preparedness and Readiness Capabilities." This report, based on 46 fire chief and senior line officer interviews, describes how some fire departments are addressing the wildfire peril and making the transition to becoming better prepared and ready to control and mitigate a wildfire incident in their communities. It includes information about equipment, training, communicating with the public, community risk reduction, relationship building and cooperation, and more. The results of this study will be beneficial to departments in the WUI for insight into best management practices (Haynes, Garcia, & Madsen, 2015).

Suppression

Wildfires create a significant safety threat for firefighters. From 2005 to 2014, 175 firefighters were killed during activities involving brush, grass or wildland firefighting. This total includes part-time and seasonal wildland firefighters, full-time wildland firefighters, and municipal or volunteer firefighters whose deaths are related to a wildland fire (USFA, 2015).

The Wildland Fire Lessons Learned Center (WFLLC) publishes wildland firefighter incident reports that are used for increased awareness and system improvements. The report does not distinguish between volunteer and paid firefighters. The 2015 Incident Review Summary noted that 16 of the 93 reported incidents by activity were driving related, followed by chainsaw operations at 15 incidents, and physical training at 13 incidents. Those three activities made up nearly half of all the incidents reported, and therefore offer an idea of where attention and training should be focused.

The report also detailed incidents by outcome. Over one-third of incidents resulted in burns or medical emergencies, followed by vehicle accidents as 13 outcomes, and hit by tree as 8 outcomes. While water tenders were only involved in one incident in 2015, rollover data shows that they pose a risk. The report urges anyone involved with their operation to consider the terrain in each case and determine whether their use is worth the risk (WFLLC, 2015).

Additionally, smoke exposure is another risk factor affecting wildland responders. The National Wildfire Coordinating Group (NWCG) provides national leadership to develop, maintain and communicate wildfire standards, guidelines, qualifications, training and other capabilities that enable interoperable operations among both federal and nonfederal entities (NWCG, n.d.). The NWCG has various committees and subcommittees that focus on particular initiatives in the wildland arena. The NWCG's Smoke Committee's Training Subcommittee and the University of Idaho (Idaho) College of Natural Resources produced the "Wildland Fire Personnel Smoke Exposure Guidebook" to help wildland fire personnel identify smoke constituents and symptoms, recognize what positions are frequently at risk from wildland fire smoke exposure, and put into practice mitigation efforts to minimize risks. The guidebook notes that "smoke is just one of the potential risks faced by wildland firefighters; when instituting these recommendations, it is important to evaluate and balance all the risks associated with the operational objective" (NWCG & Idaho, 2016, p.10).

There are several actions that can be taken to minimize smoke exposure, thereby minimizing health impacts. Three general ways this can be accomplished are through the following:

- Elimination — moving to an area outside of the smoke or rotating crews in and out of the smoke.
- Engineering — setting up a tent or mobile unit with clean air for breaks or planning periods.
- Administration — cutting back on mop-up activity whenever possible or choosing to use a location that is not inundated by smoke. (NWCG et al., 2016)

Data indicates that mop-up and holding positions receive the highest exposure levels, so those are areas necessitating attention. Another factor to consider is use of equipment which generates exhaust, such as saws, bulldozers and pumps, which may increase carbon monoxide exposure to the operators (NWCG et al., 2016).

Tools for Your Toolbox

Recommended Practices for Wildland Firefighters (condensed)

- Maintain situational awareness.
- Know the Fire Orders and Watch Out Situations.
- Stay healthy.
- Take breaks.
- Drive safely.
- Wear appropriate PPE.
- Report injuries, illnesses and hazards.
- Be aware of increased risks of heat-related illness and rhabdomyolysis. (National Institute for Occupational Safety and Health (NIOSH), 2013)

In regards to wildland suppression operations and safety, existing and critical issues correspond with standard volunteer fire and emergency services. Statistics show a need for improved training in areas of apparatus, chainsaw operations, and situational awareness. The "Wildfire Preparedness and Readiness Capabilities" report mentioned earlier noted several problems regarding wildland/WUI fire training. These are:

- The need to transition from traditional training practices which emphasized structural as opposed to wildland/WUI fire training.
- Wildland/WUI fire training may be adopted inconsistently, with local and regional variations in the level and adequacy of training.
- Fitness levels may not always be adequate to the rigors of wildland/WUI fire events. (Haynes et al., 2015)

Strategies to improve these problems included participating in interagency simulations and drills, many that include other wildland fire and incident command positions; adding wildland/WUI training to refresher training programs or continuing education programs; conducting training needs assessments; encouraging personnel to participate in external complex wildland/WUI fire assignments; creating wildfire divisions and programs within their departments; and getting all firefighters on par with NWCG recommended wildland fire training and fitness guidelines (Haynes et al., 2015). The universal issue of annual medical evaluations and the need for regular fitness routines are also applicable to wildland firefighters to ensure they are fit and ready to perform in physically demanding environments.

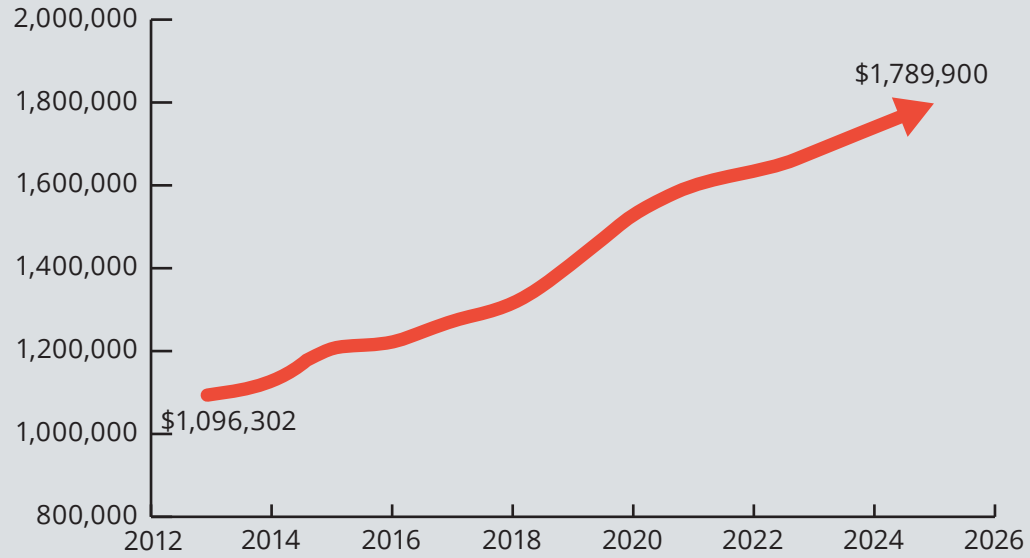
The emphasis on creating a culture of safety from the top down is equally important in the wildland arena. Leaders and officers, including heavy equipment supervisors, task force leaders, division supervisors, and Incident Commanders (ICs), should influence behaviors and enforce SOPs that will positively impact their teams in order to minimize prevalent risks and reduce wildland injuries and fatalities.

The NWCG Risk Management Committee (RMC) develops, promotes and facilitates universal risk management principles that help firefighters and fire managers mitigate or eliminate conditions that lead to accidents, illnesses, injuries and deaths of incident personnel. The RMC created a unique training and safety tool called 6 Minutes for Safety. The concept is managed by the 6 Minutes for Safety Subcommittee. The tool was created with the purpose of troubleshooting known high risk situations encountered on the fire line. It includes an

online calendar with a specific safety topic assigned for each day. Supervisors or firefighters can access training resources that can be used for a daily safety briefing (NWCG, n.d.).

As stated earlier, fire departments must be financially sound in order to create a healthy and safe environment for personnel. It's no secret that wildfire seasons are becoming more severe, and subsequently, fighting wildfires is becoming more expensive (Gorte, 2013). Costs to purchase and maintain apparatus, as well as properly train and equip wildland firefighters with the necessary tools and resources, are on the rise. Financial management and planning is essential to continue to improve and sustain wildfire suppression efforts at the local, state and federal levels. Federal wildfire suppression cost projections are expected to substantially increase over the next decade, as shown in Figure 3.

Figure 3. The Rising Cost of Wildfire Operations



Source: U.S. Department of Agriculture, 2015.

The more money needed to suppress wildfire means less money for nonfire work, such as mitigation programs; after-fire recovery; watershed protection; and more, which affects everyone in the wildfire arena — from local fire departments to state forestry and the communities they are serving. It is essential for local departments to be part of the wildfire planning process — create or collaborate with stakeholder groups that consist of government agencies at the city, county, state and federal levels to pool resources; potentially build regional cost sharing opportunities; and capitalize on existing programs or services.

Mitigation

The other part of the wildfire safety equation is mitigation. Bloms (n.d.) describes mitigation in this way: "Managing risk is the primary means by which agencies achieve safety. Risk management is a process for assessing risk and developing strategies to mitigate it. This enables leaders to make improved organizational and operational decisions." Wildfire agencies encourage homeowners to manage their risks by creating defensible space — the area around a home or other structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire.

Wildfire mitigation efforts can mean improved survivability chances for homes in the WUI and also reduce risk and improve safety for the firefighters and emergency personnel who must respond to these fires. Fuels reduction and landscape vegetation, along with building design, materials improvements, and maintenance, increase a property's safety in wildfire-prone areas (Quarles et al., 2012). However, residents in the WUI tend to rate the risk of wildfire lower than professionals or experts. While fire departments can't keep the WUI from expanding, they can help change this perception. In a 2013 two-county survey in Colorado, it was found that one of the most important sources of information for WUI residents that spurred action was guidance from local fire departments and county wildfire specialists (Miller, Champ, & Brenkert-Smith, 2013).

NVFC studied resource gaps in the area of wildfire preparedness for volunteer fire departments. The challenges facing volunteers in WUI communities are similar to other volunteer firefighters, and include increased time commitment and lack of personnel as the top factors that hinder mitigation efforts. Volunteers are in need of free resources to distribute to homeowners, training for department members to be able to conduct property assessments in order to make mitigation recommendations, and willingness of homeowners to comply with said recommendations.

One free resource is NVFC's Wildland Fire Assessment Program (WFAP) — a joint effort between the U.S. Forest Service (USFS) and NVFC to provide volunteer fire departments with free training and resources to properly conduct assessments for homes located in the WUI. This is the first program targeted to volunteers that specifically prepares them to evaluate a home and provide residents with recommendations to protect their property and increase the chances of survivability from wildfires in order to become a more fire-adapted community (FAC).

FACs also provide resources for communities in wildfire prone areas. FACs incorporate people, buildings, businesses, infrastructure, cultural resources and natural areas to prepare for the effects of wildfire. USFA and NVFC are both members of the FAC Coalition, a group of partners committed to helping people and communities in the WUI adapt to living with wildfire and reduce their risk for damage, without compromising firefighter or civilian safety. The coalition provides information and expertise on the development of this website and other activities related to FACs.

In 2015, more than 2,638 residences were destroyed by wildfire (NICC, 2015). The FAC (n.d., para. 2) warns, "Neighbors are linked by their wildfire risk. If one home is inadequately prepared, the risk level to the entire neighborhood increases and everyone's safety is impacted." This coincides with the idea of a communitywide approach to combat wildfire risks. Similar to funding suppression costs, fire departments need to be part of the wildfire planning process in regards to mitigation — work with government and corporate stakeholder groups, get community members involved, and capitalize on existing programs or services. For example, 18 member organizations of the Tahoe Fire and Fuels Team recently collaborated with the public to develop an updated Community Wildfire Protection Plan (CWPP) for the Lake Tahoe Basin. Their plan is tied to the National Cohesive Wildland Fire Management Strategy, which has a goal to create FACs where agencies, organizations, groups and individuals join together to prepare for wildfire (Schafer, 2015). More information about CWPPs, the National Strategy and best practices can all be found on the FAC website.

Goal: Improve safety of firefighters that respond to properties located in the WUI.

Objectives:

- Conduct training and awareness programs that can be used to increase safety.
- Partner with current wildland firefighting organizations to monitor best practices.
- Provide annual physicals and wellness programs.
- Provide leadership training to encourage a culture of safety.
- Provide financial management training.

Goal: Increase mitigation efforts in the WUI.

Objectives:

- Improve recruitment and retention efforts to provide personnel for wildfire mitigation efforts.
- Use free and low-cost resources that focus on wildfire mitigation.
- Enhance wildfire awareness programs that encourage action and engagement from community members.
- Cooperate with local and state agencies on a communitywide approach to mitigate wildfire risks.

Violence Against First Responders

Fire departments respond to a number of emergency calls; unfortunately, they don't always know what they will be walking into. In 2012, in New York, two firefighters were shot and killed, and two others were injured by an ex-convict who intentionally set his house on fire to lure in the responders. In 2013, five firefighters in Georgia were taken hostage after responding to a phony medical call. The captor specifically targeted firefighters because he knew they would be unarmed. In 2015, a firefighter was deliberately struck and killed by an agitated driver during a fundraising event in Michigan. In 2016, two firefighters in Maryland were checking on a man's well-being when they were shot; one died. Trenton, New Jersey, firefighters began wearing ballistic vests in 2016 to protect themselves on the job when they respond to medical incidents. On average, one firefighter per year dies as a result of a violent act (FLSI 12, n.d., para. 2).

In 2006, fire chief and martial arts instructor Howard Munding compiled a report for the NFA that showed more than 50 percent of firefighters admit to having been assaulted on the job (Holdsworth, 2013). He does not specify whether these are volunteer or career. Munding said that all responders need to have a sense of awareness — how to approach a scene, house or vehicle. Firefighters should also be trained to look for nonverbal cues, such as facial expressions and body language, and taught physical skills, like deflecting a punch or disarming someone, in order to get out of violent situations (Holdsworth, 2013).

The NFFF's FLSI 12 specifically addresses violent incident response to "help reduce the likelihood of fire service members being injured or killed during a response to a violent incident" (n.d. para. 4).

Tools for Your Toolbox

Firefighter Life Safety Initiative 12 — Strategies

- Improve understanding and application of Dynamic Risk Management.
- Initiate or improve communication with the local law enforcement.
- Define and expand role of dispatchers in reducing risk.
- Prohibit single (person) resource response to violent incidents.
- Require use of an Incident Management System for law enforcement.
- Communicate directly with law enforcement component prior to operating at an incident of violence.
- De-commit personnel and equipment, and leave if violence commences or reoccurs during fire department operations.
- Obtain stakeholder understanding and buy-in of response and deployment policies, including nonresponse and nonengagement at incidents of violence.
- Ensure department duty uniforms are not similar to, or could be mistaken for, those of law enforcement personnel. (FLSI 12, 2013)

With reports of increasing violence directed toward first responders, it is important for fire departments to prepare personnel for the possibility of an attack or assault while on duty. In support of Initiative 12, USFA is partnering with the International Association of Fire Fighters (IAFF) and Drexel University to research best practices in preventing and mitigating violence against first responders. This study will be published in early 2017 and will: (a) examine the circumstances surrounding these acts and their effects on personnel, (b) look at technological and operational ways to prevent violent workplace/on-duty incidents, (c) determine ways to mitigate violent workplace/on-duty incidents when they occur, and (d) provide examples of current best practices.

Goal: Reduce the likelihood of injury or death from responding to incidents of violence.

Objectives:

- Conduct self-defense and awareness training.
- Incorporate FLSI 12 strategies into department SOPs

Section Summary — Expanded Role of Firefighters: Volunteer firefighters are faced with ever-increasing roles and responsibilities. Departments must evolve in order to meet these demands. Training, comprehensive SOPs that cover all applicable functions, community awareness and injury prevention programs, and best practices from other organizations are essential in order to not only meet community expectations, but to safeguard volunteer departments and their responders who are expected to fulfill these roles.

Personal Health

Although health, fitness and wellness are terms that are used somewhat interchangeably in the fire and emergency services, "most people think of fitness as physical fitness (exercise), whereas health and wellness are perceived as more comprehensive terms encompassing medical, emotional, mental and even spiritual components that make up a person" (Perry, 2002). In the past, it was widely believed that firefighter health and wellness was comparable to that of the normal population. However, recent and cumulative studies demonstrate that they may actually be at a higher risk for many chronic diseases, such as heart attack and cancer, along with various behavioral health problems, such as post-traumatic stress disorder (PTSD) and depression.

As stated in the 2010 critical issues guide (USFA & NVFC, 2010), risk factors predispose individuals to certain chronic diseases and are divided into two categories: modifiable and nonmodifiable. A nonmodifiable risk factor, such as age, gender, or genetics, cannot be changed. Conversely, modifiable risk factors, such as physical activity, tobacco use, and diet, can be changed. Many modifiable risk factors contribute to the leading causes of death and disability in the U.S. Therefore, improving one's modifiable risk factors — by increasing physical activity or making healthy food choices, for example — could decrease the likelihood of several chronic diseases and improve overall health and well-being.

This section will explore various personal health issues that affect volunteer firefighters on a daily basis.

Behavioral Health

Behavioral health is just as important as physical health. "In developed countries, mental illness causes more disability than cancer and heart disease according to the World Health Organization (WHO). In fact, mental illnesses such as depression may even contribute to heart disease, cancer and other chronic illnesses" (Norris, 2011). According to the Substance Abuse and Mental Health Services Association, 42.5 million Americans experience some form of mental illness each year (2014). Firefighters, emergency medical technicians (EMTs), and rescue personnel experience a number of work-related stressors and repeated exposure to traumatic events that can put them at even greater risk of suffering from behavioral health issues, such as anxiety, depression, burnout, PTSD, addiction and suicidal thoughts. The risk of mental health issues is also higher among female firefighters than their male counterparts (Jahnke et al., 2012; Sinden et al., 2013).

There are a variety of factors that can influence firefighter behavioral health, including, but not limited to:

- Joining the emergency services at a young age.
- Competing priorities of trying to balance daily schedules, family and work life, unexpected calls, and unplanned events.
- Significant life events — these can be both positive and negative, like a birth or death in the family, or getting promoted or laid-off from work.
- Physical pain that hampers performance.
- Shift changes or sleep disturbances.
- Loss and grief, such as LODDs, experiencing a series of events back-to-back, or close calls.
- Holding a supervisory rank. (Pignataro, 2013)

Furthermore, a 2012 study done on a cohort of female volunteer firefighters noted that more than a third (38.5 percent) were within the range of concern on the Center for

Epidemiological Studies Short Depression Scale, suggesting they are at risk for depression. Job stressors for women were not dissimilar to those of their male counterparts, citing sleep disturbances as the most frequent, along with wage/benefit, safety, equipment, and job skill concerns. Women did report "experiencing significantly more occupational discrimination than their male peers," and the study noted "social pressures associated with working in a male-dominated profession may contribute to the elevated rates of concerning (risk for depression) scores" (Jahnke et al., 2012, para. 42).

If left unaddressed, behavioral health issues can have tragic consequences on a firefighter's personal and professional life. Relationships can be damaged or destroyed, dangerous habits or addictions could form, and the person may act recklessly, which also endangers their fellow responders. In some cases, behavioral health issues result in suicide. Firefighter suicide is three times more likely to occur compared to those working in other occupations (Gulliver et al., 2015). The Firefighter Behavioral Health Alliance (FBHA) reports that from 2012 to 2015, 395 firefighters committed suicide (data accessed November 2016). However, this number reflects only the suicides reported to FBHA, so the actual number is likely much higher (FBHA, n.d.). Also, the data does not specify how many of the firefighters were paid versus volunteer.

According to Ken Holland, a first responder who also serves as a senior emergency services specialist at NFPA, as well as staff liaison for NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program,* behavioral health remains a difficult topic for all emergency responders for a variety of reasons. Among these reasons is a perceived stigma surrounding firefighters and behavioral health. As Holland stated in a 2014 article, "The thinking is, 'we're called on to help everyone else — we aren't the ones who should need the help. … No one wants to admit that they have a concern or an issue'" (Wilmouth, para. 7).

Industry and department leaders need to promote a cultural shift to ensure first responders are mentally ready to perform such a dangerous and stressful job, and they are able and willing to seek help if needed. There has been an increased awareness of firefighter behavioral health over the past several years. Bringing the issues to the forefront is necessary in order to change attitudes, remove the stigma surrounding behavioral health, and prevent tragic outcomes. Behavioral health should be incorporated into a department's training and culture so that firefighters and emergency personnel know what factors influence behavioral health, how to recognize symptoms, and what resources are available to help those who may be experiencing symptoms.

Removing the stigma around behavioral health is a process, and it starts at the top. Some ideas for department heads include:

- Set an example. Acknowledge and share emotions after tough calls. Seek help when needed, and listen attentively when someone shares a struggle.
- Create a peer support team. Depending on the size of the department, select a few individuals that are widely trusted to be point people for responders and their families to go to when they need to talk. Provide the team members with training to handle certain issues and know when to seek additional help.
- Contract with a behavioral health professional. Find a person experienced with the fire service or knowledgeable about the issues that are most common for first responders.
- Make resources readily available. Display information for support groups, suicide hotlines and warning signs. (Willing, 2016)

Tools for Your Toolbox

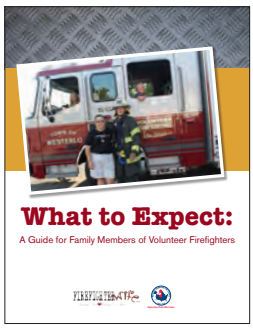
RAILS: Top Five Behavioral Health Warning Signs to Look for in Yourself or Your Colleagues

1. Reckless/Impulsive: change in actions.
2. Anger: displacement.
3. Isolation: becoming distant.
4. Loss of confidence: skills/abilities.
5. Sleep deprivation: beyond the station. (FBHA, n.d.)

Behavioral health affects everyone in the department. If firefighters are not equipped with the right tools to deal with stressors of the job or obtain help if needed, it can negatively impact performance and safety for all — the responders, their colleagues, and those they are trying to protect. The key is developing an environment of acceptance, both at the leadership and peer-to-peer levels, and developing programs, tools and services to help prevent and cope with behavioral health issues.

NVFC launched the Share the Load program in 2014 to help first responders and departments proactively address behavioral health and get help if needed. The program includes the Fire/EMS Helpline, which is a free, confidential number firefighters and EMTs (whether they are career or volunteer), as well as their families, can call 24/7 for assistance with a variety of behavioral health issues. Available at 1-888-731-FIRE (3473), the Helpline is provided in partnership with the American Addiction Centers and is answered by trained counselors with fire service experience. Additional resources through Share the Load include training modules, resource guides, awareness materials, and more.

To educate spouses, children, parents, siblings and significant others about the volunteer firefighter lifestyle, NVFC created "What to Expect: A Guide for Family Members of Volunteer Firefighters." Behavioral health can have a deep impact on loved ones, so this guide provides support to keep family relationships strong and contains an array of tips and resources to help first responder families understand and manage the mental and physical stressors that volunteer firefighting brings.



NFPA has revised NFPA 1500 to include chapters for behavioral health programs and occupational exposure to atypically stressful events. The standard specifies the minimum requirements for an occupational safety and health program for fire departments or organizations that provide rescue, fire suppression, EMS, hazardous materials mitigation, special operations, and other emergency services, and includes a protocol for using professional services when addressing exposure to atypical stressful events (NFPA 1500, n.d.).

Initiative 13 of the NFFF's FLSI specifically addresses behavioral health and states that firefighters and their families must have access to counseling and psychological support (FLSI 13, n.d.). The Foundation has also released a Recommended Protocol for Exposure to Occupational Stress. One of the steps includes a Trauma Screening Questionnaire that helps identify whether or not the responder should seek additional help in recovering

from a traumatic event. Assessments can be completed by the agency's Behavioral Health Assistance Program (BHAP), which may lead to referral to a specialist. NFFF offers a guide to help fire departments develop BHAPs using the NFPA 1500 Standard (NFFF, n.d.).

Goal: Increase awareness of behavioral health issues and provide resources to help those who need assistance.

Objectives:

- Implement a behavioral health program in the department.
- Require behavioral health training for all responders and department leaders.
- Incorporate mental health screenings during physicals at both the recruit and veteran levels.
- Include tools, such as the Recommended Protocol for Exposure to Occupational Stress, Trauma Screening Questionnaire, etc., in department's SOPs.
- Utilize the Share the Load program resources, including materials to promote the Fire/EMS Helpline and support tools.

Goal: Increase reporting of behavioral health issues.

Objectives:

- Use the FBHA's Confidential Firefighter Suicide Report to record responder suicides.
- Participate in firefighter national studies and research efforts.

Cardiovascular Disease

One in every four Americans dies of a heart attack each year (Centers for Disease Control and Prevention (CDC), 2015). USFA releases annual firefighter fatality reports that consistently show heart attacks as the leading cause of death. In fact, over the last decade, over half (54.5 percent) of on-duty volunteer firefighter deaths were the result of a heart attack (USFA, n.d.). NFPA, which also releases annual firefighter fatality data, reported 32 on-duty volunteer deaths in 2015; 18 of those (56 percent) were sudden cardiac deaths (Fahy, LeBlanc, & Molis, 2016). This demonstrates that firefighters and emergency personnel are at an even greater risk of cardiovascular disease (CVD) than the general population. Addressing heart disease and heart disease risk factors is key in protecting firefighters and emergency personnel from life-altering or life-threatening outcomes.

There are many factors that put firefighters and emergency personnel at increased risk for heart disease. Research has identified that responders face additional occupational hazards, including smoke exposure, noise, psychological stress, shift work, and physical workload. NFPA reported that overexertion/strain caused 27.7 percent of fireground injuries in 2015 and that heart attack or stroke specifically caused 920 (1.4 percent) of all injuries (Haynes & Molis, 2016).

Tools for Your Toolbox

Risk Factors You Bring to a Fire That May Increase Your Risk for a Heart Attack or Stroke

- High blood pressure (>140/>90).
- High cholesterol (total cholesterol >200).
- Poorly controlled blood sugar (fasting >100) or diabetes (HbA1C >7 percent).
- Age (over 45 in men and over 50 in women).
- Family history of heart attack or stroke (at ages ≤ 55 in a father, brother or son, or at ages ≤ 65 in a mother, sister or daughter).
- Poor lifestyle habits that increase your risk for a heart attack, including:
  - Poor dietary choices.
  - Lack of regular exercise.
  - Tobacco use.
  - Overweight or obesity. (Ashen, 2014)

Researchers at the Johns Hopkins Ciccarone Center for the Prevention of Heart Disease and the Johns Hopkins Center for Vascular Medicine believe that disability and death from a heart attack in firefighters is preventable. Risk factors, such as family history, obesity, elevated blood pressure, blood sugar, and cholesterol, as well as poor lifestyle habits, can lead to CVD (Ashen, 2014). Johns Hopkins studies also show that "traditional first-line checks of heart disease, such as cholesterol, blood pressure, and smoking habits, are not good enough to identify CVD in otherwise healthy, young firefighters" and that more in-depth methods — cardiovascular imaging, CT scanning, or ultrasound testing — may be necessary to find plaque buildup or thickening of the carotid artery (Williams, 2014, para. 4).

In an article about firefighter heart health, NFFF Executive Director Ronald Siarnicki noted:

> If more firefighters are aware of their potential risks for cardiovascular disease and receive guidance on how to manage their lifestyles, the fire service may continue to see fewer incident-related deaths. … There will always be incidents that are beyond our control, and there will continue to be line-of-duty deaths, but when there is something like this that can be corrected, it just makes sense to take those preventative steps. (Ashen, 2014, para. 23)

Firefighters can decrease their chances of heart disease and related complications through early detection and changing modifiable risk factors. Annual health screenings starting at an early age, diet, exercise, not smoking or abusing alcohol or other drugs, and other positive behavioral elements, such as using medication if necessary, can significantly reduce chances of developing CVD.

NVFC's Heart-Healthy Firefighter Program provides education, awareness and resources to help combat heart disease. The program promotes fitness, nutrition and health awareness for all members of the fire and emergency services, both volunteer and career.

Goal: Combat heart disease and heart disease risk factors to reduce death and injuries caused by heart attack.

Objectives:

- Administratively from the department:
  - Provide personnel with resources to know their numbers (e.g., blood pressure, cholesterol, weight). Read the next section on physicals and fitness for ideas about implementing health screenings and wellness initiatives.
  - Create a positive environment to encourage personnel to change modifiable risk factors, such as enforcing a no-smoking policy on or off department property, providing healthy snacks and meals, incorporating functional fitness regimens into training, etc.
  - Promote fitness, nutrition and health awareness specifically related to heart disease.
  - Lead by example.
- Personally from the volunteer:
  - Get in-depth screenings starting at a young age (and regularly) to stay abreast of potential risks.
  - Alter modifiable risk factors to engage in a healthy lifestyle, such as eating healthy, exercising, not smoking, etc.
  - Take personal responsibility for your health, and use resources provided by the department and other sources.

Physicals and Fitness

USFA reported 51 on-duty volunteer firefighter deaths in the U.S. during 2014. The largest share (72.5 percent) of these deaths was caused by stress/overexertion, which is up from an average of 56.4 percent from 2005 to 2013.

NIOSH conducts investigations into firefighter LODDs and creates reports to provide recommendations to increase safety and prevent future deaths and injuries. One of these reports investigated the death of a 52-year-old male volunteer chief on April 21, 2014. He was at a fire scene pulling hose when he collapsed. High blood pressure, coupled with atherosclerotic CVD, which is the narrowing of arteries because of plaque buildup, was determined by the assistant medical examiner as the cause of death. NIOSH's investigators acknowledged that the physical strain and exertion likely provoked the heart attack (NIOSH, 2015).

Included in that report were several recommendations by NIOSH:

- Provide preplacement and annual medical evaluations to all firefighters in accordance with NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments,* to identify firefighters at increased risk for coronary heart disease (CHD).
- Ensure exercise stress tests are performed on firefighters with an increased risk for CHD.
- Ensure that firefighters are cleared for duty by a physician knowledgeable about the physical demands of firefighting, the PPE used by firefighters, and the components of NFPA 1582.
- Phase in a mandatory, comprehensive wellness and fitness program for firefighters. (NIOSH, 2015)

Firefighters are subjected to rigorous physical exertions in the line of duty. Some responders are required to complete an initial examination to determine their ability to do the job; however, many volunteer departments do not require follow-up annual or biannual testing to ensure their members stay fit over the course of their tenure. In a 2014 independent study conducted by NVFC, only 18 percent of volunteer respondents said that their department required an annual health screening. NVFC has adopted a position that supports annual medical assessments. Aging volunteer populations, intense physical demands of firefighting, and firefighting health-related injuries, such as heart attack, stroke, and cancer, make periodic medical evaluations a critical component to the health and safety of personnel and to those they are serving. Departments should evaluate the current health of their team on a regular basis and have reactive measures in place to help those who need it.

In addition to periodic physicals, an ongoing fitness program is essential for members. Exercises should include functional fitness and target areas firefighters use when training and responding. The program should include strength, conditioning, and proper stretching. Many firefighters assume they are getting exercise simply because they are a firefighter. However, the exercise they get from fire service activities is often not enough. Many volunteer departments do not require their personnel to stay physically active and maintain a healthy physical condition. On-duty firefighters frequently have large amounts of sedentary time in between calls. Additionally, volunteer firefighters often have other jobs that are less physically demanding than being a firefighter (NVFC, n.d.-b).

To expand research on the health and safety issues experienced by female firefighters, the International Association of Women in Fire and Emergency Services is leading a project funded by USFA. The goal of the project is to develop initiatives, programs and strategies to enhance their health and safety aimed to reduce on-duty female firefighter fatalities. Resources created from this project to assist fire departments are projected to be available in fall of 2017.

Tools for Your Toolbox

Know Your Health: Tips for an Active Lifestyle

- Talk with your physician, and have your blood lipid profile checked to determine if you should be more active based on your disease risk factors.
- Participate in a minimum of 30 to 60 minutes of moderately intense activity five times per week.
- Fit in exercise when you can by breaking it in to multiple smaller sessions each day, instead of all at once.
- Aim for 150 minutes of cardio exercise per week. Any kind of consistent movement is beneficial.
- Resistance training can help improve your numbers, as well as range of motion, muscular strength, and endurance.
- Being flexible helps you move. Some flexibility exercises (stretching, yoga or Pilates) can also help relieve muscle soreness and/or stress.
- Try functional fitness training that involves movements associated with everyday life and your fireground activities.
- Incorporate functional fitness into firefighter training activities; for example, run multiple "reps" of a drill dragging a hose or lifting equipment to burn more calories.
- Fit in more exercise time at the station by challenging your fellow firefighters to a game of basketball or flag football.
- Make exercise a family affair; spend your valued time at home on a family walk, hike or bike ride.
- Realize that every bit counts, and the most important thing is to just get moving. (NVFC, n.d.-c)

One challenge in implementing periodic physicals and an overall health and wellness program in volunteer departments is cost. According to the NVFC study, less than 1 percent of the volunteers that do get an annual screening said that the department pays for it — the rest is either paid out-of-pocket, or it is covered under their personal health insurance. Departments can use NVFC's "Securing Sponsors for Department Health and Wellness Programs" toolkit that is available on the NVFC website to help offset costs. The toolkit walks you through the steps of soliciting sponsors and community support for your program, and includes information on getting started, reaching out, and following up with potential benefactors.

There are other numerous resources to help departments start or enhance a wellness and fitness program. USFA and NVFC developed the "Health and Wellness Guide for the Volunteer Fire and Emergency Services" to address health and fitness topics, including:

- An overview of national wellness initiatives geared toward the volunteer emergency services.
- Common issues and factors that impact first responder health and wellness.
- Example health and wellness programs from across the country.
- Information on developing and implementing a health and wellness program in a volunteer department. (2009)

The NVFC's Heart-Healthy Firefighter Program provides a variety of fitness resources, such as video demonstrations of functional fitness exercises and guides to help departments implement a health and wellness program.

NFPA 1500 specifies the minimum requirements for an occupational safety and health program for fire departments or organizations that provide rescue, fire suppression, EMS, hazardous materials mitigation, special operations, and other emergency services. Protocols cover firefighter training, apparatus, protective clothing and equipment, medical and physical requirements, and health and wellness programs (NFPA 1500, n.d.).

NFPA 1582 outlines an occupational medical program to reduce risks and provide for the health, safety and effectiveness of firefighters operating to protect civilian life and property. To help fire departments ensure that personnel are medically capable of performing their required duties, the latest NFPA 1582 edition incorporates current research and knowledge to present the latest provisions for a comprehensive occupational medical program. The standard provides separate chapters for the medical evaluation of candidates/prospective employees and for the occupational medical and fitness evaluations for fire department members. Requirements are equated against the essential job tasks based on several NFPA Professional Qualification Standards and apply to career, volunteer, private, industrial, governmental and military fire departments (NFPA 1582, n.d.). Discussions to tie behavioral health into the annual fire service physical may also be included in future NFPA 1582 revisions.

NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Department Members,* outlines a complete health-related fitness program for members of fire departments involved in emergency operations to enhance their ability to perform occupational activities and reduce the risk of injury, disease and premature death. Requirements apply to all aspects of the development, implementation and management of a program, including roles and responsibilities, health and fitness coordinators, peer fitness trainers, fitness assessments, exercise and fitness training programs, health promotion education, and data collection. It also includes a sample fitness plan and self-assessment tool (NFPA 1583, n.d.).

IAFC and IAFF also developed the Wellness-Fitness Initiative (WFI). WFI is dedicated to creating a stronger fire service, starting with well and fit firefighters. Information is collected from fire departments in the U.S. and Canada to determine best practices for committing to a wellness-fitness program (IAFF, n.d.).

IAFC also offers "A Healthcare Providers Guide to Firefighter Physicals." This free guide helps healthcare providers in the evaluation and treatment of the health and wellness of firefighters and also serves as an important new tool for firefighters to manage their own healthcare (IAFC, 2016).

Goal: Provide annual physicals and/or periodic health screenings.

Objectives:

- Require and provide initial health screenings for all recruits.
- Require and provide routine/annual health screenings for all members.
- Provide resources, training and wellness programs to help those struggling to pass periodic screenings.
- Require health trainings/seminars for all responders and department leaders to communicate health risk factors and health risk-reduction techniques.
- Work with government officials, community organizations, insurance companies, hospitals/health care providers, and other key leaders to offset costs to implement health screenings in the department at no cost to firefighters.

Goal: Implement a health and wellness program in the department.

Objectives:

- Provide health and wellness training that includes information about core and functional strength, along with demonstrations for proper form and sample exercises (these could be communicated via posters and/or handouts).
- Provide an exercise area at the station, or work with local gyms to secure discounted or free memberships for personnel.
- Work with government officials, community organizations, insurance companies, hospitals/health care providers, and other key leaders to offset costs to implement a health and wellness program in the department.

Nutrition

Proper diet is a contributing factor to firefighter health and safety. According to the NVFC study "Addressing the Epidemic of Obesity in the United States Fire Service," rates of overweight and obese individuals in the fire service are higher than those found in the general public, ranging from 73 to 88 percent of all firefighters (Haddock, Poston, & Jahnke, 2011). The nation spends an estimated $190 billion a year treating obesity-related health conditions (Cawley & Meyerhoefer, 2012). Healthy eating can improve blood pressure and cholesterol levels and decrease obesity — major factors that contribute to heart disease and other chronic illnesses in firefighters and the general population.

Firefighters must make a conscious effort to eat natural, whole foods and avoid processed carbohydrates and sugar. Eliminate sugary beverages, such as soda, sports drinks and energy drinks. Avoid high sodium-enriched foods, most of which come from fast food. The 2015 U.S. Department of Health and Human Services and U.S. Department of Agriculture (USDA) update to the dietary guidelines that form the basis of U.S. nutritional policy focuses on five guidelines in order to encourage healthy eating patterns:

1. Follow a healthy eating pattern across the lifespan.
2. Focus on variety, nutrient density, and amount.
3. Limit calories from added sugars and saturated fats, and reduce sodium.
4. Shift to healthier food and beverage choices.
5. Support healthy eating patterns for all.

Education is monumental. Courtney Fulton, a health and safety assistant in the IAFF Department of Occupational Health and Safety, writes:

> Part of staying healthy is learning what to eat and sustaining a well-balanced diet. This in turn can help strengthen the immune system, boost energy levels, enhance recovery, and fuel the body for strenuous work. It can help firefighters and emergency responders become more physically capable of withstanding the stress and demands of the job and enhance their performance and quality of life. (2010)

Pressures to purchase inexpensive foods, consume large portions, the temptations of unhealthy snacks at the firehouse, and peer pressure are all challenges firefighters face when trying to implement healthy eating habits (Haddock et al., 2011). Other studies have shown that time management and the need to have quick meals also impedes healthy choices. Researcher and Associate Professor Larry Cheskin from the Johns Hopkins Bloomberg School of Public Health noted that "it can be very difficult to alter the culture inside the station and that the change has to start from the top in order to change the environment" (Peluso, 2012, para. 27). An occasional celebration can be harmless, but regularly eating unhealthy foods only contributes to the obesity epidemic in the fire and emergency services (Haddock et al., 2011).

Cost may also be a concern. Registered dietician Sally Kuzemchak wrote, "A 2013 study from Harvard School of Public Health found that eating a healthy diet rich in fruits, vegetables, fish, and nuts costs about $1.50 more per day per person than eating an unhealthy diet full of processed foods and refined grains" (2015, para. 2). That can significantly increase an annual volunteer department's budget, especially if they are operating on minimal funds to begin with. However, an improved diet can potentially save departments money by minimizing illnesses and keeping responders on the front lines and out of doctor's offices. Departments could consider working with local grocers, businesses, or other agencies to offset some of the expenses associated with purchasing better foods. For example, the USDA National Institute of Food and Agriculture offers the Expanded Food and Nutrition Education Program (EFNEP). Land-grant universities conduct the EFNEP program in all states. EFNEP programs place emphasis on food-decision skills,

such as how to stretch food dollars and safely prepare healthy meals. EFNEP programs offer interactive lessons at no cost to participants. Lessons cover dietary quality; physical activity; food resource management (how to make healthy foods affordable); food safety; and food security (USDA, 2013). The EFNEP program was delivered in 2013 by The Ohio State University (OSU) Extension Office to members and family members of the Winona (Ohio) Volunteer Fire Department. OSU Extension Program Specialist Yvette Graham indicated noted behavior changes among participants from the department, with members reporting in 2016 that behavior changes have continued.

Department leaders and firefighters need to inspire a change at the station through positive adjustments, such as purchasing healthy snacks, meal planning, creating nutritional challenges, and rewarding positive eating behaviors. Also get firefighter families and community members involved in the department's healthy eating campaign. It's easy to revert back to an unhealthy diet when it's provided and fortified by others. Firefighters should carry their healthy eating habits back home and get the whole family involved. Consider inviting families and community members to the station for educational seminars or trainings about health and wellness so they understand the importance of an "all-hands on deck" approach to this lifestyle change.

Tools for Your Toolbox

10 Steps to Take Control of Your Nutrition (modified)

1. **Decide to get serious about nutrition.** Think carefully about what you eat, plan ahead, and stock the kitchen at the firehouse with healthy foods and snacks.
2. **Get informed.** Regularly visit reputable nutrition websites by individuals who have worked and/or are popular with firefighters and other industrial athletes.
3. **Encourage a culture of healthy eating in the department.** Publicly support a firefighter who suggests having healthier snacks at the firehouse. Ask local dietitians or fitness professionals to come speak at department meetings about healthy eating to discuss ways to overcome barriers to healthy eating, such as cost and access.
4. **Reduce the amount of processed foods (e.g., foods that come in a wrapper or box) and refined sugars in the home and the firehouse.** In particular, avoid white flour, white flour products, and white rice.
5. **Eat high-quality vegetables and fruits.** Focus on eating the highest-quality food that you can find. Food is one area where cheap is not a bargain.
6. **Focus on high-quality meats and eggs, and limit processed meats.** Select meats and eggs that are naturally and locally produced. Avoid highly processed meats, such as cold cuts.
7. **Round off your diet with nuts and seeds.** Nuts and seeds are packed with healthy nutrients and help to keep you feeling full and energetic. Try to avoid eating peanuts.
8. **Eliminate trans-fats and high-fructose corn syrup from your diet.** This is getting easier to do as more and more food manufacturers eliminate both of these problematic ingredients.
9. **Drink plenty of water and unsweetened tea.** Come to work hydrated, and stay that way throughout the day.
10. **Rethink treats and snacks.** Behavioral scientists talk about using "stimulus control" to help change a habit. Fill your environment with healthy foods, and get rid of those that will ultimately make you sick. (Haddock et. al., 2011)

Goal: Incorporate healthy nutrition and eating habits into the department's environment.

Objectives:

- Provide and require nutrition training/seminars for firefighters. Include family members and invite the public to encourage all-in participation of a healthy eating environment.
- Require department leaders to spearhead nutrition campaigns and nutrition challenges.
- Purchase nutritious foods and snacks for the station. Have healthy yet appealing meals ready-to-eat or available at the department to encourage firefighters to bypass fast food and other unhealthy options.
- Communicate the station's healthy eating campaign to the public.
- Work with local grocers and businesses to offset healthy eating costs.
- Work with local, healthy-oriented restaurants to provide discounts to fire and EMS personnel.

Cancer

More and more firefighters are being diagnosed with cancer, and recent medical studies have demonstrated that firefighters are at a significantly higher risk for many types of cancer than the general population. This is due to the high levels of carcinogens and other toxins found in burning buildings and the other hazardous environments in which firefighters routinely work.

A 2013 white paper, "Taking Action Against Cancer in the Fire Service," released by the Firefighter Cancer Support Network (FCSN) indicated that the two routes of greatest concern for entry of carcinogens into the body are through the lungs when firefighters do not wear (or prematurely remove) SCBA and through dermal absorption when toxins are absorbed through the skin. Also, the most permeable piece of PPE is the hood.

NIOSH and USFA have been working on a multiyear study since 2010 to see if firefighters are at a higher risk for cancer deaths due to job exposures. "The study was designed to address limitations of previous firefighter cancer research" (NIOSH & USFA, 2015). An intermediary 2013 report from the study provided evidence that there is a correlation between firefighting and cancer. "The new finding of excess malignant mesothelioma in this report was noteworthy, given that asbestos exposure is a known hazard of firefighting" (Daniels, Kubale, Yiin, et al., 2013, p. 1). Two years later, another report noted "lung cancer and leukemia mortality risks were modestly increasing with firefighter exposures. These findings added to evidence that there is a causal association between firefighting and cancer" (Daniels, Bertke, & Dahm, 2015, p. 1). Finally, the latest fact sheet that was released in July 2016 stated that, based on U.S. cancer rates:

- Firefighters in the study had a greater number of cancer diagnoses and cancer-related deaths — mostly digestive, oral, respiratory and urinary cancers.
- There were about twice as many firefighters with malignant mesothelioma, a rare type of cancer caused by exposure to asbestos. Exposure to asbestos while firefighting is the most likely explanation for this.

- There were more cases of certain cancers among younger firefighters. For example, firefighters in the study who were under 65 years of age had more bladder and prostate cancers than expected.

When comparing firefighters in the study to each other:

- The chance of lung cancer diagnosis or death increased with amount of time spent at fires.
- The chance of leukemia death increased with the number of fire runs.

In summary, the "study provides further evidence that fire fighters are at increased risk of certain types of cancer as a result of occupational exposure" (NIOSH, 2016, p. 1). It is important to note that the study could not determine, for the firefighters that currently have cancer, if their cancer was specifically fire service related.

FCSN used NIOSH research and other studies to identify the types of cancer that pose greater risks for firefighters. They include:

- Testicular cancer (2.02 times greater risk).
- Multiple myeloma (1.53 times greater risk).
- Non-Hodgkin's lymphoma (1.51 times greater risk).
- Skin cancer (1.39 times greater risk).
- Prostate cancer (1.28 times greater risk).
- Malignant melanoma (1.31 times greater risk).
- Brain cancer (1.31 times greater risk).
- Colon cancer (1.21 times greater risk).
- Leukemia (1.14 times greater risk).
- Breast cancer in women (preliminary study results from the San Francisco Fire Department). (FCSN, 2013)

Most of the cancer research in the U.S. has been conducted on career firefighters; however, cancer studies and research can be applied to volunteers as well since they perform the same duties. These types of studies highlight the critical need for increased awareness and implementation of certain mitigation measures. In the FCSN white paper, Chief Tim Wall stated:

> "Cancer does not discriminate between firefighters. Volunteers routinely transport bunker gear in their vehicles, wear clothing contaminated after a fire into their homes and expose their families to these carcinogens. This is a terrible problem that requires our full attention and immediate action." (2013, p. 4)

There are often delayed, long-term effects of toxic hazard exposures in emergency responders. Unfortunately, on-duty firefighter exposure to toxic hazards is not sufficiently tracked, and exposures firefighters may receive while off-duty are unknown (USFA, 2015). Additionally, cancer rates are potentially under-reported among firefighters because many firefighters do not discover they have cancer until they retire and are subsequently considered to be part of the general population comparison group. Also, volunteers may list their profession as something other than firefighter and therefore are not reported as cases of firefighter cancer.

Volunteers should be proactive in tracking personal exposures by using exposure record-keeping systems provided by the department or by establishing their own method of capturing the necessary exposure information (smartphone, computer, pen and paper, etc.). This documentation is important in allowing firefighters to better understand their risks and more effectively communicate these risks to their health care provider. In addition, in states where cancer presumption laws have been implemented, having exposure records bolsters the claim for the impacted firefighter as more cases are being challenged and presumptive legislation is coming under re-examination. Presumption laws designate cancer as an occupational hazard for firefighters, thus allowing firefighters who contract cancer to file worker's compensation claims.

The FCSN white paper described the role organizational leaders play in reducing cancer exposure:

> The company officer, as the leader of the most operational working group in the fire service, is the single most influential person concerning the team's attitude, operations and willingness to change. In this key role, the company officer must lead by example and set clear expectations concerning cancer awareness, prevention, tracking of exposure and the essential operational changes necessary to minimize exposure to carcinogens and other toxins. As a second set of eyes, the next level of supervision and the person in charge of multiunit operations, the Battalion Chief (BC) has the responsibility of overall command and situational awareness. This key position allows the BC to provide reinforcement of SOPs, SOGs and other operational practices concerning cancer exposure reduction. (2013, p.5)

Department leaders should also evaluate station conditions and administrative policies, and make sure they promote cancer risk reduction practices.

- Is there an exhaust removal system, decontamination station, and other provisions that can reduce cancer-causing carcinogens? FCSN reports that WHO, NIOSH, OSHA, NFPA, and many other national organizations regard diesel exhaust as an occupational carcinogen.
- Do personnel have more than one set of gear? Proper care and maintenance of PPE, wearing SCBA in active and post-fire environments, use of tobacco products and smoking, and other cancer-reduction methods should be covered in SOPs and fully enforced by leadership.

Early detection has been proven to increase cancer survival rates. It may also decrease overall costs for the department (i.e., loss of a qualified member, training, higher insurance). Firefighters should undergo annual health screenings and participate in cancer awareness training.

Most importantly, firefighters should be proactive and take pre-emptive measures to reduce their modifiable risks. They are responsible for their personal health, and a behavioral change is vital for each individual. Practice strategies to prevent and detect cancer — do not take pride in having dirty gear, eat healthier, maintain a reasonable weight, exercise functionally and regularly, limit alcohol consumption, do not use tobacco products, wear sunblock, and track your exposures.

Tools for Your Toolbox

11 Immediate Actions to Protect Against Cancer

1. Use SCBA from initial attack to finish of overhaul. (Not wearing SCBA in both active and post-fire environments is the most dangerous voluntary activity in the fire service today.)
2. Do gross field decontamination of PPE to remove as much soot and particulates as possible.
3. Use Wet-Nap or baby wipes to remove as much soot as possible from head, neck, jaw, throat, underarms and hands immediately and while still on the scene.
4. Change your clothes, and wash them immediately after a fire.
5. Shower thoroughly after a fire.
6. Clean your PPE, gloves, hood and helmet immediately after a fire.
7. Do not take contaminated clothes or PPE home; do not store them in your vehicle.
8. Decontaminate fire apparatus interior after fires.
9. Keep bunker gear out of living and sleeping quarters.
10. Stop using tobacco products.
11. Use sunscreen or sunblock. (FCSN, 2013)

FCSN provides assistance to all fire service members and their immediate families in the event of a cancer diagnosis. They also provide awareness/prevention education to the fire service about the importance of cancer prevention and screening.

NVFC also offers a multitude of resources to help responders and their departments take action specifically against cancer, including tools and templates, training and videos, research, and more.

Goal: Implement cancer mitigation methods and promote cancer awareness.

Objectives:

- Administratively from the department:
  - Evaluate station conditions and administrative policies to ensure they promote cancer risk-reduction practices.
  - Provide periodic health screenings.
  - Provide exposure forms, and encourage personnel to use them.
  - Provide cancer awareness training and resources.
- Personally from the volunteer:
  - Get screened regularly to stay abreast of potential risks.
  - Persistently practice the 11 immediate actions noted in the Tools for Your Toolbox section to protect against cancer.
  - Document exposures and keep exposure records, both short- and long-term.

Alcohol, Tobacco and Prescription Drug Abuse

Substance abuse and addiction are ongoing problems among first responders, both career and volunteer. For emergency response professionals, as well as for anyone who struggles with a drug or alcohol use disorder, the causes are often varied and complex.

Michael Healy, a seasoned firefighter and treatment consultant for American Addiction Centers, described the relationship between service members and substance abuse:

> For many firefighters, police officers, EMTs, and other first responders, the urge to drink or use drugs may be related to the job they do every day. Experiencing post-traumatic stress disorder (PTSD) as a result of trauma on the job is exceedingly common. The symptoms of PTSD can be significant and severe. Many prefer to attempt to escape them by drinking or getting high rather than seeking treatment, believing that the problems may go away on their own in time. (2015, para. 2)

Unfortunately, chronic drug abuse may actually serve to:

- Increase the severity of PTSD symptoms.
- Lengthen and/or increase the frequency of PTSD episodes.
- Cause the new problem of addiction.
- Make it more difficult to connect with therapy and other treatment help. (Healy, 2015)

Tools for Your Toolbox

Questions to Ask Yourself to Identify if You Have an Alcohol or Drug Problem

- Do you drink or use drugs on the job?
- Do you often drink more than you intend to? That is, do you often start out saying you'll only have one, but ultimately drink until you are drunk?
- Do you use any illegal substances or abuse a prescription given to you, a family member, or friend?
- Do you have problems with your significant other due to your behavior while under the influence?
- Do you ever drive while under the influence? (Healy, 2015)

The NVFC's Share the Load™ program offers the Fire/EMS Helpline that first responders and their families can call 24/7 to seek help for a variety of behavioral health issues, including alcohol or drug addiction and PTSD. An online chat feature is also available. Depending on individual needs, callers can speak with a trained fire service member who can refer local resources to help with specific problems, or callers can be admitted to a treatment facility, if desired, where there are licensed counselors trained in the fire service culture. If a treatment center is needed, the Fire/EMS Helpline counselors will work to make sure there is no cost to those needing service (NVFC, n.d.-d).

IAFC has adopted a position that encourages all fire and emergency service agencies/organizations to develop written policies and have procedures in place to support and enforce a drug and alcohol free environment. Their position states:

> Agencies should have drug and alcohol testing procedures, including provisions for random testing, testing for cause, and critical event testing as a result of any incident that causes measurable damage to apparatus or property or injury/death of civilians or agency/organization personnel. (2012, p. 1)

Alcohol

In several studies conducted from 2013 to 2015, it was determined that male firefighters drink alcohol more frequently than the general male population, and nearly twice as many firefighters reported recently binge drinking as compared to the general population (Jahnke, 2015). An article titled "Perceptions of Alcohol Use Among U.S. Firefighters" noted:

> Limited epidemiologic evidence is available regarding the rates and patterns of alcohol use among U.S. firefighters, although what has been published presents a compelling picture of high rates of consumption and binge drinking. For instance, in a population-based sample of firefighters from the central U.S., it was found that 85 percent of career and 70 percent of volunteers reported consuming alcohol in the previous 30 days, and 56 percent of career and 45 percent of volunteer firefighters reported binge drinking in the past 30 days. In a sample of 112 firefighters from the northeast, 58 percent reported binge drinking behavior. In comparison, the national rate of current drinking and binge drinking in the past 30 days for men is 67.6 percent and approximately 20 percent, respectively. These statistics demonstrate that binge drinking is substantially higher among firefighters than the general population. (Jahnke, Poston, & Haddock, 2014, p. 1)

The article also provided factors that contribute to alcohol consumption, citing shift schedules, camaraderie/bonding, stress, and traditions. However, on-the-job incidents involving alcohol were extremely rare. "Most fire departments have taken a strong stance against on-duty intoxication. … When asked what accounted for the low rates of negative occupational outcomes, most participants reported zero-tolerance policies at the department level that were strictly and consistently enforced" (Jahnke et al., 2014, p. 3).

The American Heart Association reports that excessive alcohol intake has been shown to raise the levels of triglycerides in the blood and lead to high blood pressure and heart failure (2015). When more than the recommended amount of alcohol (two drinks per day for men and one drink per day for women) is consumed, the risk of alcoholism, high blood pressure, obesity, stroke, breast cancer, suicide, and accidents increases.

Tobacco

Research has shown smoking rates among firefighters to be lower than the general population and similar occupation groups, such as the military (Haddock, Jitnarin, Poston, Tuley, & Jahnke, 2011; Jitnarin, Poston, Haddock, Jahnke, & Day, 2015). When studying tobacco use among a national cohort of 677 firefighters, researchers found that more volunteer firefighters smoked than career firefighters, 17.4 percent and 13.6 percent, respectively. Furthermore, career firefighters who smoked consumed an average of 10 cigarettes per day, while volunteers smoked an average of 15 cigarettes per day (Haddock, Jitnarin, et al., 2011).

It's also important to note that while smoking in the fire service may be lower than in the general population, the use of smokeless tobacco (SLT) is still very prevalent. Haddock, Jitnarin, et al., (2011) reported that 16.8 percent of volunteer firefighters were current users of smokeless tobacco compared to the CDC's national use rate of 6.7 percent among adult males (Smokeless Tobacco, n.d.). The prevalence of SLT use among all male firefighters has been estimated between 17.4 percent and 18.4 percent (Haddock, Jitnarin, et al., 2011). Thus, the prevalence of SLT use among firefighters is the highest of any occupational group reported for the U.S. civilian work force (e.g., 10.5 percent prevalence in farm workers is the next highest reported rate) (Dietz et al., 2011). Note that approximately 95 percent of firefighters are primarily male, and SLT use differs substantially by gender in the U.S. (6.7 percent males versus .3 percent females) (CDC, n.d.-a).

SLT use in the fire service is even greater than the high rates found for military personnel (15.6 percent among males in the Department of Defense) (Bray et al., 2009). SLT use among all firefighters is more than three times higher than the populations they protect and the highest of any occupational group. Being a firefighter raises the risk of SLT use even more for minority groups, creating a substantial racial/ethnic disparity for African-American, Asian and Hispanic firefighters. For example, while SLT prevalence is generally very low (one percent or less) among these minority groups, minority male firefighters are between 10 to 13 times more likely to use SLT than male minorities in the general population, depending on whether they served in minority- or white-dominated communities (Poston, Haddock, Jahnke, Jitnarin, & Day, 2014).

Tools for Your Toolbox

Quit Tips for Tobacco Users (adapted)

- Remember that you are **not** alone. About 22 percent of American adults are former smokers. Find a support group or mentor to help you through the process.
- Nibble on low calorie snacks like fruits and veggies.
- Chew gum when a craving hits.
- Remove unnecessary reminders, such as ashtrays and lighters, from your house, car and office.
- Write a list of reasons why you want to quit smoking or using smokeless tobacco, so you can remind yourself of why you are going through this process.
- Find a type of exercise that you enjoy, and steadily work it into your routine.
- Keep a log of when you most often crave tobacco so that you can plan a strategy to avoid the triggers. For example:
  - Carry a book, magazine or crossword puzzle with you to help you endure breaks, waiting for a bus, or other moments when you may be bored and would normally smoke, dip or chew.
  - After dinner, suck on a hard candy, sip your favorite beverage, or use a toothpick to substitute tobacco use.
  - Stock your car with simple snacks, such as sunflower seeds.
- Visit https://www.ucanquit2.org/HowToQuit/SavingsCalculator.aspx to see how much extra money you will have available in the coming days, months and years, just by quitting tobacco.
- Don't be discouraged if you give in. Most ex-tobacco users tried to quit several times before they succeeded. Wipe your slate clean, and try again. (NVFC, n.d.-e)

One alternative to traditional smoking has been the advancement of the e-cigarette. "The e-cigarette, also called a personal vaporizer (PV) or electronic nicotine delivery system, is a battery-powered device that simulates tobacco smoking by producing a heated vapor, which resembles smoke" (USFA, 2014, p. 1). USFA released the report "Electronic Cigarette Fires and Explosions" to look at the safety aspects of this smoking alternative and found that "the health effects of the vapor and the danger of nicotine overdose by ingestion or dermal contact with the juice are the subject of ongoing review by various agencies, according to the World Health Organization" (USFA, 2014, p. 2). In addition to the potential health concerns, the safety associated with PVs has been put into question as fires have been reported due to e-cigarettes overheating or lithium-ion batteries failing.

Numerous studies link tobacco-use directly to cancer. Because of the increased risk of cancer for firefighters, there has been a strong emphasis on addressing modifiable risk factors, including encouraging personnel to be tobacco free. Given the critical role firefighters play in the public safety net, and their status as role models to our nation's youth, firefighters should take proactive measures to quit using tobacco products or other alternatives altogether. Leaders should establish a department nontobacco (not just nonsmoking) policy to deter members from this bad habit and also to provide a healthy environment for all at the station.

FCSN offers sample policies from local departments regarding tobacco use, and specifically smokeless tobacco use. These sample policies and other resources are available on the FCSN website.

The NVFC's Heart-Healthy Program has also created a series of resources to help first responders quit smoking and remain smoke free. Families, departments and state associations can also use these resources to inform and help emergency responders take the first step toward a smoke-free life and support them as they maintain their healthier lifestyle. The website includes a sample department no-smoking policy.

Prescription Drugs

According to the CDC (n.d.-b), 78 people in the U.S. die every day from overdose of opioids, and many more become addicted. The most common drugs involved in prescription overdose deaths include:

- Hydrocodone (e.g., Vicodin).
- Oxycodone (e.g., OxyContin).
- Methadone.

People who take prescription painkillers can become addicted with just one prescription. Taking too many prescription painkillers can stop a person's breathing, leading to death.

No studies have been identified to associate this epidemic specifically to the fire and emergency service population, but fire service trends tend to mimic or closely resemble that of the general population. Furthermore, departments need to consider that firefighters are under greater stress than most people, both mentally and physically. Injury and anxiety could potentially contribute to this problem in the responder population.

Drugs, whether prescribed or illicit, are often used as self-medicating, occupational stress management despite the inherent risks associated with addiction. Departments need to be aware of this potential risk among their personnel.

Tools for Your Toolbox

Warning Signs of Drug Abuse Among Colleagues (modified)

Drug abusers often try to conceal their symptoms and downplay their problem. If you're worried that a friend or family member might be abusing drugs, look for the following warning signs.

Physical warning signs of drug abuse:

- Bloodshot eyes, pupils larger or smaller than usual.
- Changes in appetite or sleep patterns.
- Sudden weight loss or weight gain.
- Deterioration of physical appearance, personal grooming habits.
- Unusual smells on breath, body or clothing.
- Tremors, slurred speech or impaired coordination.

Behavioral signs of drug abuse:

- Drop in attendance and performance on the job.
- Unexplained need for money or financial problems.
- Engaging in secretive or suspicious behaviors.
- Sudden change in friends, favorite hangouts, and hobbies.
- Frequently getting into trouble (fights, accidents, illegal activities).

Psychological warning signs of drug abuse:

- Unexplained change in personality or attitude.
- Sudden mood swings, irritability or angry outbursts.
- Periods of unusual hyperactivity, agitation or giddiness.
- Lack of motivation; appears lethargic or "spaced out."
- Appears fearful, anxious, or paranoid, with no reason. (HelpGuide, n.d.)

Goal: Eliminate tobacco use and drug and alcohol abuse.

Objectives:

- Establish and enforce no-tolerance policies relating to each substance.
- Create awareness and prevention programs on the risks associated with each substance.
- Provide tools, resources and support groups to help those struggling with substance abuse; ensure resources to get help are clearly visible and available at the department.
- Provide information to families to identify risk factors and warning signs associated with each substance.

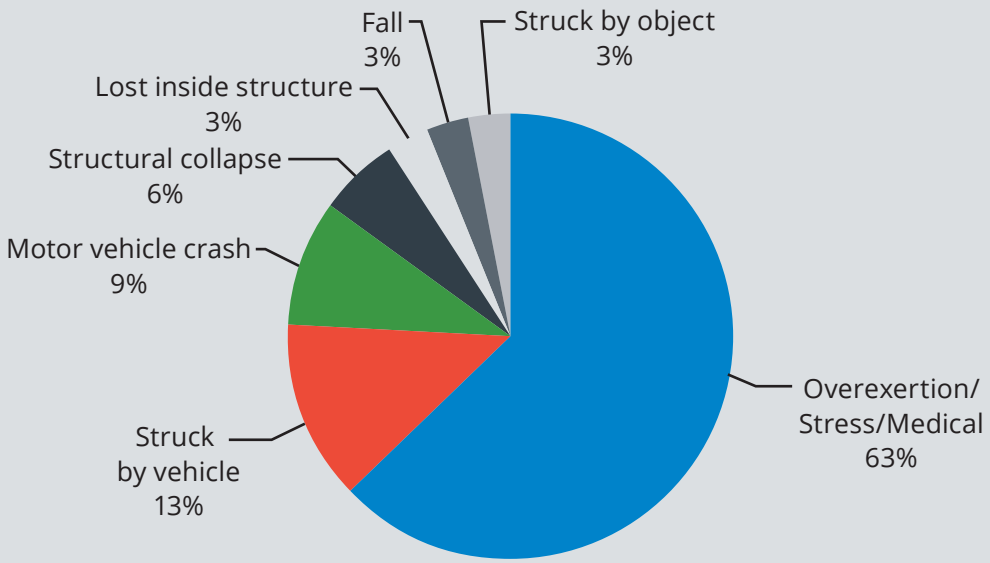
Section Summary — Personal Health: Medical, mental, physical and emotional well-being are all critical aspects to the health and safety of firefighters. Departments are responsible for creating an environment that provides resources for both physical and behavioral health to ensure members are taken care of and able to do their job safely and effectively. Multiple programs, services and standards are available to implement at the local level. Leaders must lead by example, and also set and enforce regulations that will benefit their members' well-being. Firefighters must also take responsibility and use the opportunities given by the department to improve their own personal health.

Safety Protocols

The NSCCI study advocates that a culture shift is needed to change adverse behaviors in the fire and emergency services and to reduce LODDs and injuries. The study focuses on leadership, situational awareness, safe vehicle operations, and other firefighting behaviors — all of which have been identified as critical issues in the volunteer fire service, specifically in regards to safety.

As mentioned earlier, the NFPA reported 32 on-duty volunteer firefighter deaths in 2015. While most of the those were attributed to personal health (e.g., heart attack, stroke), the second-leading cause was being struck by a vehicle, followed by motor vehicle crashes, structural collapse, lost inside the structure, falls, or struck by an object, as noted in Figure 4. Fortunately, volunteer fatalities over the last five years have continued to remain low in comparison to the average of 42 deaths per year since the study was first conducted in 1977 (Fahy et al., 2016). Proactive measures can be taken to continually reduce these numbers year after year by focusing on factors that influence change to improve safety.

Figure 4. 2015 Volunteer Fatalities by Cause



Source: Statistics adapted from NFPA (Fahy et al., 2016).

Codes and Standards

Codes and standards provide a roadmap that fire departments and local governments can implement to improve health and safety. Generally speaking, codes tell you what you need to do, and standards tell you how you should do it. Many organizations create codes and standards, each having a different process for developing documents. All of the processes, on some level, use stakeholder and participant feedback to regularly update and improve their texts.

One of the principal organizations generating codes and standards for the fire and emergency services is NFPA. NFPA maintains hundreds of codes and standards, some of which have already been mentioned throughout this report, covering topics regarding firefighter training, equipment and apparatus. NFPA Technical Committees and panels represent a balance of interests and serve as the principal consensus bodies responsible for developing and updating all NFPA standards (NFPA, n.d.). NFPA also encourages public input and comment for each standard revision. Additionally, NVFC partnered with NFPA to develop standard implementation guides specifically aimed at helping volunteer departments understand and successfully implement select NFPA standards. The guides are available on both the NVFC and NFPA websites.

One code that can greatly improve volunteer department safety operations is NFPA 1, *Fire Code.* NFPA 1 establishes a reasonable level of fire safety and property protection of new and existing buildings through comprehensive, integrated approaches to fire code regulations and hazard management. It pulls many of its requirements from 57 other NFPA codes and standards that can be used in conjunction with NFPA 1, and addresses distinctive areas like fire department access, required fire flow, and fire hydrants (NFPA 1, n.d).

The International Code Council (ICC) is another primary code-making organization that develops model-building construction and fire safety codes, including the International Fire Code (IFC). IFC establishes "minimum regulations for fire prevention and fire protection systems using prescriptive and performance-related provisions" to address "conditions hazardous to life and property from fire, explosion, handling or use of hazardous materials, and the use and occupancy of buildings and premises" (Overview of the IFC, n.d., para. 1, 2). The IFC and other ICC codes are coordinated to create a systematic approach to building safety and work hand-in-hand with the fire safety code. NVFC and ICC created a guide and supplemental training, "Understanding & Utilizing the International Fire Code," to help volunteer fire chiefs and firefighters gain a basic understanding of how to use a model fire safety code to ensure an acceptable level of safety for the public and firefighters (NVFC & ICC, 2014).

To understand the value of codes and standards in a fire service context, consider a world in which they did not exist at all. Every fire chief would be responsible for developing their own training program, based on whatever he or she felt was appropriate. Departments would have to purchase equipment and apparatus that they knew to be safe based solely on the guarantees of manufacturers. Firefighters would respond to and rescue people from burning buildings that were constructed in whatever manner the builder felt best, probably without much, if any, concern for fire safety.

There are several problems with the scenarios described above. How much time would be wasted reinventing the wheel if every fire chief were to develop their own training program? How effective would those training programs be if they each relied only on the expertise and experiences of one or a handful of fire service leaders in a single community? How could we be confident that profit-seeking manufacturers and builders would incorporate necessary safety features in their products?

Codes and standards are the solution to these problems. Organizations like NFPA and ICC bring together experts from across the world, including the fire service, who spend far more time than the average fire chief, manufacturer or builder to identify best practices and write codes and standards that fire departments and local governments can adopt, ensuring that they have up-to-date and comprehensive measures in place to protect the health and safety of the community.

It is important to recognize, however, that codes and standards are not a cure-all. It can be expensive to adopt them, particularly in smaller communities that have limited funding to pay for new equipment and training. As training requirements based on NFPA standards have increased, many volunteer fire departments have found it harder to recruit and retain personnel. Adopting codes is important, but unless they are enforced, having codes on the books can actually be counterproductive by giving fire department and community leaders a false sense of safety.

Motivated local leaders will find that implementing codes and standards may not be easy, but it is certainly possible, even in a low-resource environment. Feasibility of implementation is always a significant consideration in the codes- and standards-development process. Additionally, organizations like NFPA and ICC are able to help end users with implementation. After all, it is in their best interest to do so in order to create more users of the products that they develop.

Ultimately, codes and standards are the most efficient and affordable way to provide maximum protection to communities. Fire service leaders should invest time and resources in learning about and implementing codes and standards in their communities in order to keep themselves, their personnel, and the public safe.

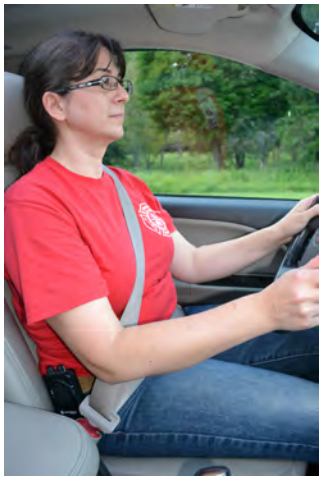
Goal: Improve firefighter safety and operational efficiency by adopting and enforcing current, applicable codes and standards.

Objectives:

- Use guides and supplemental resources to help with code and standard implementation.
- Stay informed about codes and standards that have been updated or are currently in review.
- Use NFPA and ICC for implementation guidance when necessary.

Vehicle-Related Safety

Driving a vehicle is one of the most common types of transportation in the U.S. Getting to a desired location that requires vehicle transport shouldn't be a life or death situation no matter if you are a civilian or first responder. Unfortunately, as previously mentioned, the second-leading cause of on-duty volunteer firefighter deaths was being struck by a vehicle, followed by motor vehicle crashes. Vehicle-related incidents are unnecessarily causing injuries and deaths in the fire and emergency services. While not all accidents can be avoided, proper practices can drastically improve vehicle safety operations.



Personally Operated Vehicles

Most volunteer emergency service departments rely heavily on the ability of their members to respond to calls, either to the scene or the station, in their personal vehicles. While this is essential to the organization's ability to react to emergencies in a timely manner, there are also inherent risks. Responders who may be coming from outside the station must be provided training on safe personal vehicle

operations. Personal vehicle operators need to understand that reduced speed, use of seat belts, and following current motor vehicle laws will significantly decrease risk.

From May 2004 to December 2014, 40 volunteer firefighters died in motor vehicle crashes that involved personal vehicles. A NIOSH incident investigation report provides one example:

> A 30-year-old male volunteer firefighter was fatally injured after his personally operated vehicle (POV) hydroplaned and struck a billboard signpost. The victim was responding in his POV to the fire department to pick up a fire apparatus when the incident occurred. According to the state police report, he drove over a large pool of water that caused him to hydroplane and lose control. (2004)

In response to that incident, NIOSH advised fire departments to encourage drivers to "drive at speeds appropriate for the conditions to prevent hydroplaning and loss of vehicle control and … wear seat belts when responding to emergencies in their POVs" (2004).

Emergency service organizations need to have comprehensive operating policies and procedures regarding POV response. VFIS advises that these procedures should include, but not be limited to, the following:

- Volunteers responding in a personal vehicle must obey their state's motor vehicle code with respect to courtesy lights and siren privileges.
- Courtesy lights must not be used by volunteers as a license to operate their personal vehicles as if they are emergency vehicles. All courtesy lights should be approved by the chief of the department and a written permit issued. The permit should include the "rules of the road" that apply.
- Volunteers responding in personal vehicles should never exceed the posted speed limit.
- Volunteers responding in personal vehicles should come to a complete stop at all stop signs and red traffic signals, and must wait for normal right of way before proceeding.
- Procedures for at-the-scene parking/staging should be included in all SOPs.
- Individual volunteers must have personal auto liability insurance with appropriate liability limits that protect not only the volunteer but also the organization. (2011, para. 2)

Additionally, VFIS suggests that vehicle-related SOPs be included in all new-member orientations and driver training sessions. Every member should receive a written copy of the SOPs and sign off that they have received them and understand them. In addition, the organization should develop written enforcement and progressive discipline guidelines for any member who violates the procedures and should make these guidelines known to all members.

To address the issue of POV response, NVFC and IAFC released the guide "Let's Make a Difference: Best Practices to Minimize Injuries and Deaths while using Privately Owned Vehicles for ESO Responses." This guide provides model policies and recommended procedures departments can adopt to minimize injuries and deaths while responders are using their own vehicles during emergencies (Eggleston, n.d.).

When volunteers respond to calls, they need to understand that, first and foremost, they must arrive at the emergency scene or station safely in order to be of any help to the public.

Emergency Vehicle Operations

USFA summary incident reports showed that in 2014, approximately 27 percent of on-duty volunteer firefighter fatalities occurred while responding to or returning from incidents, with over half of these fatalities resulting from vehicle crashes. In fact, vehicle collision is typically one of the leading causes of firefighter fatalities (USFA, 2015).

The USFA (2014) study "Emergency Vehicle Safety Initiative" consolidates past research and provides best practices and recommendations for safer emergency vehicle and roadway incident response. Topics covered in this report include:

- Common crash causes and crash prevention.
- The impact of vehicle design and maintenance of safety.
- Internal and external factors for improving response-related safety.
- Regulating emergency vehicle response and roadway scene safety.
- Roadway incident scene safety.

In today's emergency services organizations, there is a need for the development and use of standard operating guidelines (SOGs) and issue-specific training. One area that requires a great deal of attention is the operation of emergency vehicles.

Chiefs, officers and directors, as well as supervisors and drivers, need to recognize the fact that the emergency vehicle response is the basis for the success or failure of all other emergency functions. These expensive vehicles carry all of the portable emergency equipment, in addition to all of the personnel of the organization. Without the safe conveyance of these vehicles to the emergency scene, the emergency service organization cannot achieve its mission of saving lives and protecting property (VFIS, 2011).

USFA partnered with the Department of Transportation's (DOT) Intelligent Transportation System and NVFC to create the guide "Emergency Vehicle Safe Operations for Volunteer and Small Combination Emergency Service Organizations." The objective was to take recommendations from USFA's "Emergency Vehicle Safety Initiative" and develop targeted outreach implementation strategies specifically for the volunteer and combination fire and emergency services. In addition, information from the NFFF's FLSI; NFPA 1451, *Standard for a Fire and Emergency Service Vehicle Operations Training Program*; and existing best practices in the emergency service community were integrated into the research and development of this report (NVFC, 2014).

The guide outlines several aspects to improve driver safety, including behavior management/motivation and SOGs. Multiple sample SOGs are identified and provide purpose, scope, responsibility/rationale, and key points to consider. These SOGs include:

- Backing apparatus.
- Collision investigation.
- Crash and injury investigation.
- Driver qualifications.
- Driver selection.
- Drug and alcohol policy.
- Highway safety.
- Intersection navigation.
- Limitation of warning devices.
- Motor vehicle record check.

- On-the-quiet response.
- Priority dispatching.
- Reflective striping and roadway vests.
- Regulatory and statute compliance.
- Responding in private vehicles.
- Routine maintenance.
- Safe driving award program.
- Seat belt and hearing protection use policy.
- Speed limitations.
- Traffic incident management — optimum vehicle placement.
- Traffic preemption.
- Use of personal electronic devices.
- Vehicle design and construction.
- Vehicle inspection.
- Vehicle safety program management. (NVFC, 2014)

Traffic Incident Management

T.J. Nedrow is the NVFC's Washington Director; the NVFC primary representative to the NFPA 1091, *Standard for Traffic Control Incident Management Professional Qualifications* committee; and a CVVFA Emergency Responder Safety Institute member. He said:

> A byproduct to effective management of a traffic incident on our roadways is the promising notion that commuters, commerce, and our very own families can go about their travels as a result of first responders partnering so we all go home. (2015, para. 6)

In 2014, there were an estimated six million police-reported motor vehicle crashes where 33 thousand people died and over two million were injured, according to the National Highway Traffic Safety Administration (NHTSA, 2016). That means emergency personnel, whether they are paid or volunteer, are responding to over 11 accidents every minute. Sadly, an average of five firefighters die every year as a result of being struck at a motor vehicle accident (Fahy, 2014).

"Roadway-related incidents constitute some of the greatest safety concerns for first responders" (NFPA 1091, n.d., para. 1). NFPA 1091 is a tool that helps reduce the risks to response personnel and the public through proper traffic control training (NFPA 1091, n.d.). It promotes safer operations with minimum job performance requirements (JPRs) that help ensure personnel are adequately prepared to carry out the duties of the assignment. NFPA 1091 is unique in the fact that its composition offers JPRs for all responders.

In 2004, NFPA 1091 was preceded by an all-inclusive initiative that remains the foundation of safety and performance for roadway incident responses — the National Unified Goal (NUG) on Traffic Incident Management (TIM). It was crafted with three objectives:

- Responder safety.
- Safe, quick clearance.
- Prompt, reliable, interoperable communications.

These three objectives are succinctly embraced by 18 related strategies covering a variety of situations, such as partnerships, goals for performance and progress, awareness, availability, time goals, technology, and more. These strategies are meant to deliver on the overarching objectives, but to do so, require partnerships with planned and coordinated

multidisciplinary processes in order to protect the protectors. The plan to accomplish the NUG is training — training the trainers to train responders.

The TIM training has been deployed on many fronts and with many methods. Training by way of the classroom and the internet are prevalent and accessible. As of August 2016, over 200,000 total first responders have received the Federal Highway Administration's (FHWA) TIM training (U.S. DOT, 2016); however, only 69,000 of the estimated 1.1 million firefighters in the U.S. have received this crucial training (FHWA, 2016). Information about how to participate in TIM training can be accessed from the National Highway Institute's website.

CVVFA's Emergency Responder Safety Institute, supported by USFA and the U.S. Department of Justice, developed a comprehensive traffic incident safety website that provides educational materials and resources to support responder safety training and offers a free online opportunity to earn the FHWA TIM Training Certificate.

Goal: Decrease death and injury caused by unsafe vehicle operations.

Objectives:

- Create and enforce SOPs around all areas of vehicle safety, including emergency vehicle operations and POVs.
- Develop written enforcement and progressive discipline guidelines for any member who violates procedures, and make sure all personnel are aware of these guidelines.
- Provide training and certification for all areas of vehicle safety.
- Enforce standards, and influence behavior from the top down.
- Participate in the FHWA's TIM training.
- Adopt NFPA 1091.

Occupational Safety and Health Act

Under the Occupational Safety and Health Act of 1970, employers are responsible for providing safe and healthful workplaces for their employees. OSHA's role is to ensure these conditions for America's working men and women by setting and enforcing standards, and providing training, education, and assistance. OSHA standards are not meant to further burden departments, but rather to provide safety practices that include engineering out the problem, providing PPE when a safety problem cannot be engineered out, and using administrative practices like training and SOPs to supplement PPE and engineering safeguards (NIOSH, 2010).

Approximately half the states fall under federal OSHA authority. The other states have their own State Plan occupational safety and health programs and have adopted their own regulations which must, at minimum, meet the standards set by OSHA at the federal level. The OSHA State Plans cover only state public employees. However, in an effort to include volunteer responders, some states have extended their regulations to cover those working in the public sector.

Although career fire departments in all OSHA-approved State Plan jurisdictions must comply with state OSHA standards, the question of volunteer compliance in these jurisdictions varies from state to state. If volunteer firefighters are considered "employees" under the state's OSHA law, they must be protected under the state OSHA standards. If they are not considered "employees," state OSHA standards do not apply. Federal law allows each State Plan jurisdiction to determine for itself whether volunteer firefighters

are "employees" and, therefore, whether their departments must comply with state OSHA standards. For states that do fall under OSHA guidelines, violations can result in fines and negative public perception; more importantly, compliance can reduce firefighter injury and loss of life (Bentivoglio, 1996).

As of summer 2016, OSHA was in the process of updating existing regulations. The impact of new regulations on volunteer firefighters is yet to be determined, but they will more than likely remain state-specific unless Congress passes a new law. Department leaders need to keep up-to-date with current and future OSHA regulations for the protection of the department, as well as for the health and safety of members.

Goal: Comply with OSHA standards.

Objectives:

- Include OSHA standards in department SOPs and training.
- Use other departments in your state and region for best practice implementation of current OSHA standards.
- Keep abreast of new regulations.

Standard Operating Procedures

SOPs, sometimes called SOGs, are fundamental for fire departments. They prevent chaos through written communication, explaining the rules and setting clear expectations for which personnel will be held accountable. They exist not only to perform the job efficiently, but also to protect first responders and those they are serving.

For example, a volunteer firefighter died in 2012 when the driver of the engine lost control and crashed into trees. The victim was ejected from the engine and pronounced dead at the scene. He was not wearing a seat belt. A contributing factor noted in the NIOSH report was "inadequate SOPs for seat belt usage" (NIOSH, 2013). Not establishing and adhering to pertinent SOPs, such as seat belt usage, tragically cost him his life. This is just one example of too many incidents that could have been prevented had SOPs existed and been enforced.

A 1999 USFA document, "Developing Effective Standard Operating Procedures," notes the importance of SOPs in fire departments that still holds true today.

> Fire service organizations must meet these growing requirements in an environment that itself is a challenge ... As a result, the decisions that personnel face are more complex and controversial. Mistakes have greater repercussions and costs. Emergency service providers need help understanding and navigating the maze of regulatory and administrative requirements. Managers, on the other hand, need a mechanism to convey operational guidance to the members and ensure departmental compliance with laws, regulations and standards. They need tools to direct and control the rapid pace of change. Well-designed standard operating procedures help fill both needs. For individual workers, SOPs clarify job requirements and expectations in a format that can be readily applied on the job. They explain in detail what the department wants them to do in the situations they are most likely to encounter. The result is improved safety, performance, and morale. For department managers, the advantages are equally great. SOPs provide a mechanism to identify needed

> changes, articulate strategies, document intentions, implement regulatory requirements, enhance training, and evaluate operational performance. The result is improved operational efficiency, greater accountability, and reduced liability. Everybody's a winner! (p. 4)

Fire departments should have an understanding of SOPs versus policies. Below are specific definitions to better grasp the difference.

- Standard: applies to any definite rule, principle or measure.
- Operating: used or engaged in performing operations.
- Procedures: an act or a manner of proceeding in any action or process; conduct.

SOPs address activities at an emergency incident, training, or are used for safety purposes. An SOP dictates the manner in which activities are to be performed, and there should not be any deviation. A policy is a plan or course of action designed to influence and determine decisions and actions (Cook, 1999). Policies are generally used for administrative purposes. Policies address issues, such as tardiness, sick leave, social media, and other routine day-to-day department administrative activities.

A similarity between the two is that neither is eternal. Time and circumstance may call for updates to SOPs and policies, as best practices and lessons learned come to light, technology enhances or communities shift.

Firefighter safety is greatly enhanced when good SOPs are developed, trained on and enforced. SOPs should reflect federal, state and local laws and standards. If these requirements do not address the issues, then departments should consider creating new SOPs applicable to fire service best practices.

The Fire Protection Research Foundation is currently undertaking a project on behalf of the Technical Committee for NFPA 1700, *Guide for Structural Firefighting,* that involves collecting SOPs/SOGs from fire departments in North America "to determine similarities, differences, and trends that will help guide the development of a model SOP/SOG template" (Review of SOP/SOG, 2016, para. 2). The contributed SOPs/SOGs will be analyzed for key features and characteristics, and then information about the contributing fire department and the results of the analysis will be put into a database for the NFPA 1700 technical committee to use to draft an annex that will provide a template for fire departments to use to develop their own SOPs/SOGs. It is not the intent of this project to develop standard SOPs for adoption by fire departments. The project deliverable will be a report that describes the method of collection, the analysis methodology, and the results of the analysis. The project should be completed and the final report should be published by the end of December 2016.

Goal: Reduce firefighter death and injury through SOPs.

Objectives:

- Generate and enforce SOPs that create improved operational efficiency, greater accountability and reduced liability.
- Update and amend SOPs as necessary.
- Stay informed of practices that may affect existing SOPs or require creating new SOPs.
- Use best practices.

Role of the Company Officer in Safety

One of the most important roles of a CO is safety. COs who are responsible for day to day supervision of personnel play a critical role in setting safety expectations and determining placement of a crew in a hazard zone. Behavior of that supervisor will directly impact the crew. If the CO refuses to use a seat belt or places a crew on an unstable roof, the crew will begin to model this behavior. Although much is to be said about individual responsibility, it is still the supervisor/CO who monitors day-to-day activities of members and is responsible for enforcing SOPs.

Situational Awareness

Situational awareness is defined as "the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future" (Endsley, 1988). In the fire service, situational awareness involves being aware of what is happening at an incident. It could be the total incident scene, a location on the fireground, or in a room.

Reichenbach says that when situational awareness is compromised, the potential for human error increases. Confusion, lack of a safety officer, procedural violations, unmet goals, unresolved discrepancies, fixation/tunnel vision, overload, complacency, and fatigue all hinder situational awareness. The concept is more of a mindset and not necessarily a skill, but there are definite factors that can help develop proper situational awareness to improve safety (2009).

Tools for Your Toolbox

Four Factors That Can Help You Maintain Awareness

1. **Clear communication.** Effective communication may be the most important factor in achieving and maintaining situational awareness. Clearly communicate a course of action to follow as needed; clearly verbalizing any intended action. Understand that the proper situational awareness achieved depends on the level and quality of communication among all personnel. Clarifying the expectations of all personnel eliminates doubt. Understand that clear expectations that create a shared understanding of the situation ensure personnel will have high levels of situational awareness.
2. **Task performance awareness.** Awareness of how your job and the jobs of other team members contribute to the overall mission is essential. Although it may not be necessary to know the technical aspects of other team members' jobs, you must be aware of what actions, information, and so forth you can provide to them so they can do their jobs effectively, and what would happen if you did not.
3. **Status awareness.** Ensure that your performance reflects an understanding and awareness of the mission or task performed. Effective leaders plan ahead and communicate the plan to all personnel. This ensures that everyone is aware of the plan and fosters a clear understanding of the established goals.
4. **Continual reassessment.** Assess and reassess the incident's progress in relation to established goals to determine if the team is on track to safely and effectively accomplish the mission goals. (Reichenbach, 2009)

Shupert states:

> Situational awareness is a lot like the weather — people talk about it a lot, but many people don't prepare for it properly. We forget or forego things like sunscreen, umbrellas, hats, or gloves because we're in a hurry or because we're not really convinced we'll need them. The same can be said for our reaction to situational awareness. Some people forget about it on the fireground at times because they think there are more pressing issues at hand, or they don't think it's important. However, fire service has loads of data on how, when and where we get hurt. And many times, properly managed situational awareness could have made a difference. (2012, para. 2)

The five leading casual factors related to firefighter deaths, often referred to as the NIOSH 5, include:

1. Improper risk assessment (poor size-up).
2. Lack of incident command.
3. Lack of accountability.
4. Inadequate communications.
5. Lack of SOPs or failure to follow SOPs.

An analysis of firefighter injuries showed that, from 2012 to 2014, volunteers (52 percent) were more likely to receive injuries at the fireground than all firefighters combined (41 percent) (Haynes, 2016). Situational awareness can mean life or loss. Leaders and training officers must identify measures, enforce SOPs, and train personnel to improve situational awareness.

NVFC offers training through its Virtual Classroom about situational awareness to educate fire and rescue personnel about reducing responder casualty and injury incidents by improving the ability to develop and maintain situational awareness under stress. The course provides the attendee with a thorough understanding of situational awareness — what it is, how challenging it can be to develop, and how easy it can be to lose.

Goal: Increase and improve situational awareness.

Objectives:

- Clearly identify, enforce and train around situational awareness SOPs.
- Identify situational awareness best practices.
- Integrate situational awareness concepts into initial and continuing education.

Personal Protective Equipment

PPE is designed to safeguard firefighters from coming into contact with hazards that could lead to injury or illness.

To ensure that your department has adequate PPE, survey the needs for each member. Does every firefighter have the appropriate PPE available for the job function they are expected to perform? For instance, the person assigned to traffic control should have at minimum a reflective vest, helmet and hand lights for giving direction. EMS personnel should have available to them body substance isolation equipment and appropriate duty wear to perform this function. SCBAs should be available to all personnel expected to work in the

immediate danger to life or health area of an emergency scene. Not only should each firefighter be equipped with the necessary PPE to do the job safely, but they should also ensure that the necessary PPE is worn properly and when mandated per department SOPs.

With the widespread awareness of cancer in the fire service, proper care and maintenance of PPE is critical to the safety and well-being of all responders. A checklist should be developed that addresses the issue of proper cleaning and storing of PPE. It is suggested that PPE be thoroughly cleaned after each exposure to materials of combustion resulting from a structure fire. The checklist should also include inspection of the PPE to determine if it is still within the service life of 10 years as is required by NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting.* Additionally, frequent inspections should be conducted looking for tears, rips, burned areas, and other damage to the PPE. PPE that does not meet the requirements set forth in NFPA 1851 is to be taken out of service.

SCBAs should be inspected daily, or at the very least weekly, for operational functionality. Inspections should asses the condition of all straps and fasteners, battery operated components, operation of low air and emergency bypass indicators, personal alert safety systems (PASS), and the pressure of the breathing air in the cylinder. Masks should be attached to the regulators and the cylinder opened, ensuring that the end of service alarm is functioning. The emergency bypass and PASS alarm should be activated, ensuring they work properly.

Record keeping is a vital component of PPE inspections, maintenance and repairs. In the event of failure of PPE, fire departments will need to have written proof that the PPE had been inspected, maintained or repaired. Remember, if it is not documented, it did not happen.

NVFC created a video series that provides short, simple tips and ideas for cleaning, maintaining, replacing and funding PPE in order to prevent injury, illness and death from improper use of PPE. The videos can be accessed from the NVFC's YouTube channel — NVFCCommunications.

Goal: Decrease death and injury caused by inadequate PPE.

Objectives:

- Survey member needs to ensure everyone has the proper PPE.
- Regularly inspect, repair and replace PPE as needed, according to NFPA 1851.
- Document PPE inspections and their results.
- Develop a checklist to properly clean and store PPE.
- Enforce SOPs regarding inspections, cleaning and storing of PPE.
- Enforce SOPs regarding when and how to wear the proper PPE.

Mutual and Automatic Aid

A 2012 NIOSH firefighter fatality investigation reported a 34-year-old volunteer lieutenant lost his life during a roof collapse at a theater. Lack of fireground communications between departments was listed as a contributing factor to his death, and a key recommendation to avoid future incidents of this nature was for fire departments to work together "to develop mutual-aid SOPs for fireground operations that support interagency operability and accountability, and train on those procedures" (NIOSH, 2012, para. 3).

Another NIOSH report made the following recommendations in response to a 31-year-old volunteer firefighter who died while responding to a basement fire at a residential building in 2003:

- Fire departments should develop and coordinate preincident planning protocols with mutual-aid departments.
- Fire departments should implement joint training on response protocols with mutual-aid departments.
- Municipalities should establish one central dispatch center to coordinate and communicate activities involving units from multiple jurisdictions.
- Municipalities should ensure that companies responding to mutual-aid incidents are equipped with mobile and portable communications equipment that are capable of handling the volume of radio traffic and allow communications between all responding companies within their jurisdiction. (2004)

Many volunteer fire departments rely on mutual (dispatched upon request) or automatic (dispatched automatically) aid in order to provide their communities with the most efficient and effective service, as well as to ensure the health and welfare of responders. Each should be defined by a written agreement. Mutual and automatic aid is a cooperation between two agencies to help when necessary and should not exist to supplement regularly inadequate operations.

Michael Capoziello, former Chief of the Elmont (New York) Fire Department, wrote:

> Well-thought-out mutual-aid planning should take into consideration the following four areas of concern, which can be remembered by using the acronym PATS:
>
> - **P**roximity — Proximity is the distance of neighboring departments and the shortest travel time a mutual-aid company has to get to a response area or to the scene of an incident.
> - **A**vailability — Volunteers have varying schedules. Chief officers should not only evaluate their own department's response times and staffing to alarms but also those of their mutual-aid partners.
> - **T**raining — Officers should also know the training levels of their mutual-aid partners to ensure the right people are available for the incident at-hand. Departments in a geographic area should strive to achieve the same training and credentials. Regular mutual-aid partners should drill with each other on a consistent basis.
> - **S**pecial needs and considerations — This may include the community's geographic makeup, hazardous materials sites, and high-occupancy target buildings, as well as special procedures, apparatus, or equipment needs. (2015, para. 3)

In addition to PATS, mutual- or automatic-aid agreements should also have an effective incident management system and capable communications as noted in the NIOSH recommendations. Also take into account personal vehicle response, which is very common for volunteer firefighters. Captain Stan Merrett, volunteer firefighter and founder of Emergency Technology & Tactics (ETT), recommends that mutual-aid personnel respond on fire apparatus and not in their private vehicles, to cause less congestion on-scene. This will also help the IC in three major areas:

- It will cut down on the IC having to assign personnel to companies.
- Personnel in preset companies will be more familiar with skills and limitations of each other.
- It will reduce the chances of personnel freelancing. (ETT, n.d.)

The relationships of volunteers and career personnel of neighboring departments should also be considered. Chief Brandon Loboschefski states:

> Issues that separate departments, such as union and non-union, career and volunteer, can be challenging when forming an automatic-aid agreement. If the departments have worked together effectively in previous situations, the job at hand will be much easier. If there's been a history of conflict, however, or if the departments are largely unfamiliar with one another, you must anticipate what types of conflict could occur and ensure that the agreement resolves them. (2009, para. 15)

The importance of training cannot be overstated. Fireground accountability becomes very critical on mutual-aid emergencies. Companies assisting each other must cohesively train and drill together to build a foundation of trust, cooperation, and over-all safety and effectiveness for each organization, and more specifically, for each firefighter who responds.

Cohesive SOPs and policies that cover specifics (e.g., dispatching, incident command, training, staffing, and POV response) should be developed and included in the agreement for all agencies (e.g., law enforcement, EMS, emergency management agencies, and any state and federal government agencies and officials). These will ensure maximum efficiency, fireground accountability, and safe operations where multiple jurisdictions are involved. Once a department develops a mutual- or automatic-aid agreement, it should be reviewed by organizational leadership and the department's legal counsel before being put into action. Also, department's should periodically review and update agreements as resources, staffing and geography change.

NFPA 1201, *Standard for Providing Fire and Emergency Services to the Public,* Section 4.6, discusses Intercommunity Organization (Mutual Aid and Automatic Aid) and aid agreement specifications that address indemnity, liability, staffing levels, resources and more.

IAFC provides sample mutual-aid plans covering Intrastate Mutual-Aid Systems, state fire service plans, and regional fire service compacts and agreements. They also provide a Mutual Aid 101 PowerPoint to help first responders develop an awareness of the basic tenets and challenges of mutual aid. The PowerPoint covers guidelines on how to be a good host and a good guest; an overview of the documentation, resources, and response operations necessary for mutual aid; and the framework for safe and effective mutual-aid operations. All of these resources are available on their website.

Goal: Create proficient mutual- or automatic-aid agreements to decrease firefighter death and injury.

Objectives:

- Establish one central dispatch center to coordinate and communicate activities involving units from multiple jurisdictions.
- Implement the Incident Command System.
- Establish joint training between mutual-aid agencies, and train regularly.
- Equip mutual-aid responders with proper communication systems.
- Develop and enforce policies and SOPs that can be used by all agencies involved.
- Create staffing and capabilities index of assisting departments/agencies.

Section Summary — Safety Protocols: Occupational safety injuries and deaths can be prevented. Refer back to the issue of culture change — change the mindset to reduce injury and loss. The running theme of strong leadership; leadership by example; comprehensive standards and enforcement of those standards; training; and personal accountability, along with the implementation of applicable codes and standards, will directly reflect the safety structure of a department's environment.

Conclusion

Creating a healthy and safe work environment in volunteer fire departments is dependent upon implementing risk-reduction behaviors that require strong leadership, personal accountability, training, and enforceable safety protocols. Volunteer departments must understand that good recruitment and retention practices, a financially sound fire department, and the ability to evolve to meet current standards and expectations are also necessary to secure the future of the volunteer fire and emergency services, and more importantly, to protect the men and women who devote themselves to volunteer as firefighters.

The critical issues that must be addressed are:

- **The Culture:** changing the mindset.
- **Recruitment and Retention:** competent, qualified and healthy personnel.
- **Funding:** alternative funding methods, resources and fidelity.
- **Expanded Role of Firefighters:** EMS, wildland firefighting, and violence against responders.
- **Personal Health:** behavioral; cardiovascular disease; physicals and fitness; nutrition; cancer; and alcohol, tobacco, prescription drug abuse.
- **Safety Protocols:** codes and standards; OSHA; SOPs; CO role; vehicle-related safety, including POVs, emergency vehicle operations, and TIM; situational awareness; PPE; and mutual and automatic aid.

Multiple tools, resources, programs and standards are available to implement at the local level to help departments and their responders make the necessary changes to reduce volunteer firefighter injuries and deaths. As written in the 2010 critical issues report:

> “The challenge is great, but the reward is far greater.”

Fire Department Resources

B.E.S.T Practices for Health and Safety: NVFC's Volunteer Firefighter Health and Safety Priorities are set forth in a series of B.E.S.T. practices divided into four main focus areas: Behavior, Equipment, Standards and Codes, and Training. The priorities were developed by the NVFC's Health, Safety, and Training Committee to further NVFC's focus on protecting first responders. Departments can learn more about these priorities through an online training and can also download a poster that can be hung at the station (http://www.nvfc.org/b-e-s-t-practices-for-health-and-safety).

Emergency Responder Safety Institute: Emergency Responder Safety Institute serves as an advisory group of public safety leaders and transportation experts committed to reducing deaths and injuries to America's emergency responders by developing educational materials and resources to support responder safety training; promoting the NUG for TIM; encouraging the development of TIM Teams; promoting collaboration, communication, and cooperation among the nation's emergency responders; and keeping emergency responders up-to-date on national rules, regulations and trends related to safe roadway incident operations (http://www.respondersafety.com/).

Everyone Goes Home Program: The Everyone Goes Home Program, founded by NFFF, provides free training, resources and programs to champion and implement the 16 FLSIs. The goal of the program is to reduce the number of preventable firefighter line-of-duty injuries and deaths (http://www.everyonegoeshome.com/).

Firefighter Arson Prevention: NVFC (with support from USFA and the NVFC Foundation, and guidance from a work group comprised of arson investigators and fire service professionals), developed tools and training to help prevent future cases of firefighter arson and to help guide departments through mitigation in the event an incident does happen. These include the "Report on the Firefighter Arson Problem, the Firefighter Arson Prevention and Recovery Toolkit," a video, and an awareness poster (http://www.nvfc.org/firefighter-arson).

Firefighter Behavioral Health Alliance: FBHA collaborates, develops and implements behavioral health awareness, prevention, intervention and post crisis strategies to provide firefighters with an easily accessible and confidential source of information. FBHA also provides workshops to fire departments and EMS organizations that focus on behavioral health awareness with a strong emphasis toward suicide prevention and promoting resources available to firefighters, EMTs and their families (http://www.ffbha.org).

Firefighter Cancer Support Network: FCSN provides timely assistance to fire service members and their families in the event of a cancer diagnosis. They maintain and continuously update a roster of mentors who have personal experience with many types of cancers and who will personally guide those in need through the process of dealing with their specific illness. FCSN also provides awareness about the importance of cancer prevention and screening by coordinating educational opportunities with various health programs (http://www.firefightercancersupport.org).

Firefighter Life Safety Initiatives: NFFF and representatives of the major fire service constituencies developed these 16 initiatives in 2004. Since then, the initiatives have informed the emerging safety culture in the U.S. fire and emergency services and have become the bedrock foundation for thousands of departments who have a desire to ensure that their firefighters and EMTs return home safely after every shift. NFFF also develops materials to support the initiatives' implementation (http://www.everyonegoeshome.com/16-initiatives).

Heart-Healthy Firefighter Program: NVFC launched the Heart-Healthy Firefighter Program in 2003 to reduce the number of firefighter and EMS deaths from heart attack. This mission is accomplished by promoting a healthier lifestyle and by providing firefighters with fitness, nutrition, cholesterol and other pertinent information and resources to assist them on the road to becoming heart-healthy. It is the nation's only heart attack awareness and prevention program targeted at all firefighters and EMS personnel, both volunteer and career (http://www.healthy-firefighter.org).

Make Me A Firefighter Campaign: NVFC, through a federal SAFER grant, developed the Make Me A Firefighter recruitment and retention campaign to put research-based, ready-to-use tools and resources in the hands of local departments. The goal is to make the process of recruiting new volunteers as easy as possible for local departments (http://portal.nvfc.org).

National Fire Protection Association Codes and Standards: NFPA develops consensus standards and codes to provide the fire and emergency services with ways to prevent disasters from occurring, to manage their impact, and to protect responders. Over 300 codes and standards can be viewed for free at www.nfpa.org/freeaccess. Administered by more than 250 Technical Committees comprising more than 8,500 volunteers, these codes and standards are adopted and used throughout the world (http://www.nfpa.org/codes-and-standards).

National Institute for Occupational Safety and Health: NIOSH creates projects, programs, publications and resources to improve the health and safety of structural and wildland firefighters. The NIOSH Fire Fighter Fatality Investigation and Prevention Program conducts independent investigations of firefighter LODDs and provides recommendations to prevent deaths and injuries. View NIOSH studies and publications at www.cdc.gov/niosh/fire.

National Safety Culture Change Initiative: Led by IAFC, in partnership with USFA, NSCCI advocates for the need for a health and safety culture change within the fire service. NSCCI identifies individual behaviors and organizational factors that adversely impact firefighter safety and health and strategies to mitigate these effects (http://www.ffsafetyculture.org/).

National Volunteer Fire Council Virtual Classroom: This online learning center features free and low-cost courses designed and delivered by fire service members and industry professionals. The courses are on-demand and self-paced. They cover a variety of topics, such as leadership, retention and recruitment, grant writing and funding, health and safety, and more (http://www.nvfc.org/firefighters/education/).

Responder Safety Learning Network: The Emergency Responder Safety Institute of CVVFA provides the Responder Safety Learning Network to further the NUG for TIM by providing free, vetted, multidisciplinary training and resources to all roadway emergency responders — fire, police, EMS, Fire Police Units, DOT, and towing and recovery (http://learning.respondersafety.com).

Share the Load™ Support Program for Fire and Emergency Medical Services: Firefighters and EMS providers face the risk of many behavioral health concerns, such as anxiety, depression, burnout, PTSD, and addiction, among others. The NVFC's Share the Load program provides access to critical resources and information to help first responders and their families manage and overcome personal and work-related problems. This includes the Fire/EMS Helpline at 1-888-731-FIRE (3473), which offers free 24-hour assistance with a variety of behavioral health issues (http://www.nvfc.org/help).

U.S. Fire Administration Fire Service Operational Safety Resources: USFA sponsors research and provides resources on a variety of topics to create safer operational environments for firefighters. These include the following: voice radio communications, building construction during fires, emergency incident rehabilitation, firefighting techniques and tactics, risk management capabilities, and violence against first responders (https://www.usfa.fema.gov/operations/ops_safety.html).

Wildland Fire Assessment Program: NVFC, in partnership with USFS, created WFAP to train fire service volunteers on how to properly conduct safety assessments for homes in the WUI to encourage communities to become more fire adapted. WFAP prepares volunteers to identify steps homeowners can take to better protect their property from the next wildfire (www.nvfc.org/wfap).

References

American Heart Association. (2015, January 12). *Alcohol and heart health*. Retrieved from http://www.heart.org/HEARTORG/HealthyLiving/HealthyEating/Nutrition/Alcohol-and-Heart-Health_UCM_305173_Article.jsp#.V0TRRfmDGko

Ashen, D. (2014, June 24). *Study: How to cut firefighter heart attacks.* Retrieved from http://www.firerescue1.com/fire-chief/articles/1932589-Study-How-to-cut-firefighter-heart-attacks/

Bentivoglio, J. (1996, July 1). *Legal limbo, part 3: volunteer coverage under the federal occupational safety and health act.* Retrieved from http://www.fireengineering.com/articles/print/volume-149/issue-7/departments/volunteers-corner/legal-limbo-part-3-volunteer-coverage-under-the-federal-occupational-safety-and-health-act.html

Bloms, R. (n.d.). *Wildland fire safety and risk management.* Retrieved from https://www.doi.gov/wildlandfire/wildland-fire-safety-risk-management

Bray, R., Pemberton, M., Hourani, L., Witt, M., Rae Olmsted, K., Brown, J., Weimer, B., Lane, M., Marsden, M., Scheffler, S., Vandermaas-Peeler, R., Aspinwall, K., Anderson, E., Spagnola, K., Close, K., Gratton, J., Calvin, S., Bradshaw, M. (2009). *2008 Department of Defense Survey of health related behaviors among active military personnel: a component of the Defense Lifestyle Assessment Program (DLAP).* Retrieved from http://www.tricare.mil/tma/2008HealthBehaviors.pdf

Bureau of Labor Statistics. (2015). *Labor force statistics from the current population survey* [Data file] [Table]. Retrieved from http://www.bls.gov/cps/cpsaat11.htm

Capoziello, M. (2015, December 3). *Volunteer firefighting: thoughts on mutual aid.* Retrieved from http://www.fireengineering.com/articles/print/volume-168/issue-11/departments/volunteers-corner/thoughts-on-mutual-aid.html

Cash, Chief Jeff. (2015, March 3). *Combination fire department cohesiveness.* Retrieved from http://www.nvfc.org/combination-fire-department-cohesiveness/

Cawley, J., & Meyerhoefer, C. (2012, January). The medical care costs of obesity: an instrumental variables approach. *Journal of Health Economics*, 31(1), 219-30. doi: 10.1016/j.jhealeco.2011.10.003.

Centers for Disease Control and Prevention. (2015, August 10). *Heart disease facts.* Retrieved from http://www.cdc.gov/heartdisease/facts.htm

Centers for Disease Control and Prevention. (n.d.-a). *Smokeless tobacco.* Retrieved from https://www.cdc.gov/tobacco/data_statistics/fact_sheets/smokeless/use_us/

Centers for Disease Control and Prevention. (n.d.-b). *Understanding the epidemic: Drug overdose deaths in the United States hit record numbers in 2014.* Retrieved on August 25, 2016, from https://www.cdc.gov/drugoverdose/epidemic/

Cook, Jr., L. (1999, August 1). *Writing standard operating procedures and guidelines.* Retrieved from http://www.fireengineering.com/articles/print/volume-152/issue-8/features/writing-standard-operating-procedures-and-guidelines.html

Cumberland Valley Volunteer Firemen's Association. (2010, May 10). *Fire service reputation management white paper.* Retrieved from http://www.firecompanies.com/MFC/public/userfiles/file/Firefighter%20Behavior/Reputation%20Management%20White%20Paper.pdf

Daniels, R., Bertke, S., & Dahm, M. (2015, January 26). Exposure-response relationships for select cancer and non-cancer health outcomes in a cohort of U.S. firefighters from San Francisco, Chicago, and Philadelphia (1950-2009). *Occupational and Environmental Medicine*. doi:10.1136/oemed 2014-102671. Retrieved from http://www.cdc.gov/niosh/firefighters/pdfs/Daniels-et-al-(2015).pdf

Daniels, R., Kubale, T., & Yiin, J., et al. (2013, October 14). Mortality and cancer incidence in a pooled cohort of US firefighters from San Francisco, Chicago, and Philadelphia (1950-2009). *Occupational and Environmental Medicine.* doi: 10.1136/oemed-2013-101662. Retrieved from http://www.cdc.gov/niosh/firefighters/pdfs/OEM_FF_Ca_Study_10-2013.pdf

Dietz, N., Lee, D., Fleming, L., LeBlanc, W., McCollister, K., Arheart, K., Davila, E., & Caban-Martinez, A. (2011, June 1). *Trends in smokeless tobacco use in the U.S. workforce: 1987-2005.* Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21631951

Eggleston, D. (n.d). *Let's make a difference. Best practices to minimize injuries and deaths while using POV for ESO response.* Retrieved from http://www.nvfc.org/wp-content/uploads/2015/09/POV-Best-Practices-to-Minimize-Injuries-and-Deaths.pdf

Emergency Technology & Tactics. (n.d.). *Automatic vs. mutual aid.* Retrieved from http://www.ettfire.com/automatic_aid.html

Endsley, M. (1988). Design and evaluation of situation awareness enhancement. *Proceedings of the Human Factors Society 32nd Annual Meeting* (pp. 97-101). Santa Monica: Human Factors Society.

Fahy, R. (2014). *U.S. Firefighters killed when struck by vehicles, 2000-2013.* Retrieved from http://www.nfpa.org/~/media/files/news-and-research/fire-statistics/fire-service/osffstruckbyvenicles.pdf?la=en

Fahy, R., LeBlanc, P., & Molis, J. (2016). *Firefighter fatalities in the Unites States — 2015.* Retrieved from http://www.nfpa.org/~/media/files/news-and-research/fire-statistics/fire-service/osfff.pdf?la=en

Federal Highway Administration. (2016, July 11). *National Traffic Incident Management Responder Training Program, Training Status Report.*

Fire adapted communities. (n.d.). Retrieved from http://fireadapted.org/

Fire Protection Research Foundation. (2016, August 29). *Review of emergency responder standard operating procedures/guidelines (SOP/SOG).* Retrieved from http://www.nfpa.org/~/media/files/news-and-research/resources/research-foundation/current-projects/sopreview.pdf?la=en

Firefighter Behavioral Health Alliance. (n.d.). *What are these numbers?* Retrieved from http://www.ffbha.org/what-are-these-numbers/

Firefighter Cancer Support Network. (2013, August). *Taking action against cancer in the fire service.* Retrieved from http://www.firefightercancersupport.org/wp-content/uploads/2013/08/Taking-Action-against-Cancer-in-the-Fire-Service.pdf

FLSI 1 Cultural Change. (n.d.). National Fallen Firefighters Foundation. *16 firefighter life safety initiatives.* Retrieved from http://www.everyonegoeshome.com/16-initiatives/1-cultural-change/

FLSI 12 Violent Incident Response. (n.d.). National Fallen Firefighters Foundation. *16 firefighter life safety initiatives.* Retrieved from http://www.everyonegoeshome.com/16-initiatives/12-violent-incident-response/

FLSI 12 Final Report (2013). *National protocols for response to violent incidents should be developed and championed.* Retrieved from http://1rxflr7bsmg1aa7h24arae91.wpengine.netdna-cdn.com/wp-content/uploads/sites/2/2015/02/FLSI12_FinalReport.pdf

FLSI 13 Psychological Support. (n.d.). National Fallen Firefighters Foundation. *16 firefighter life safety initiatives.* Retrieved from http://www.everyonegoeshome.com/16-initiatives/13-psychological-support/

Fulton, C. (2010, May 15). Nutrition and the fire service. *International Association of Fire Chiefs On Scene,* 24(9). Retrieved from http://www.iafc.org/Operations/LegacyArticleDetail.cfm?ItemNumber=3736

Gorte, R. (2013, June). *The rising cost of wildfire protection.* Retrieved from http://headwaterseconomics.org/wphw/wp-content/uploads/fire-costs-background-report.pdf

Gulliver, S. B., Pennington, M. L., Leto, F., Cammarata, C., Ostiguy, W., Zavodny, C., Flynn, E., & Kimbrel, N. A. (2015). In the wake of suicide: Developing guidelines for suicide postvention in fire service. *Death Studies,* 40, 121-128. doi:10.1080/07481187.2015.1077357

Haddock, C., Jitnarin, N., Poston, W., Tuley, B., & Jahnke, S. (2011, June 8). *Tobacco use among firefighters in the central United States.* Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21656838

Haddock, C., Poston, W., & Jahnke, S. (2011). *Addressing the epidemic of obesity in the United States fire service.* Retrieved from http://www.healthy-firefighter.org/files/documents/Obesity_Study.pdf

Haynes, H. (2016, February). *U.S. volunteer firefighter injuries 2012-2014.* Retrieved from http://www.nfpa.org/research/reports-and-statistics/the-fire-service/fatalities-and-injuries/an-analysis-of-volunteer-firefighter-injuries-2009-to-2011

Haynes, H. & Molis, J. (2016, October). *U.S. firefighter injuries — 2015.* Retrieved from http://www.nfpa.org/~/media/files/news-and-research/fire-statistics/fire-service/osffinjuries.pdf?la=en

Haynes, H. & Stein, G. (2016, January). *U.S. fire department profile — 2014.* Retrieved from http://www.nfpa.org/~/media/files/news-and-research/fire-statistics/fire-service/osfdprofile.pdf?la=en

Haynes, H., Garcia A., & Madsen, R. (2015, November). *Wildland/urban interface: fire department wildfire preparedness and readiness capabilities, phase one report.* Retrieved from http://www.nfpa.org/research/reports-and-statistics/outdoor-fires/wildland-urban-interface

Healy, M. (2015, December 8). *Alcohol and drugs: Problems that won't go away on their own.* Retrieved from http://www.nvfc.org/alcohol-and-drugs-problems-that-won-t-go-away-on-their-own/

HelpGuide. (n.d.). *Drug abuse and addiction: signs, symptoms, and help for drug problems and substance abuse.* Retrieved on August 25, 2016 from http://www.helpguide.org/articles/addiction/drug-abuse-and-addiction.htm

Hess, T. Randy. (2012, Summer). Easy money. *VFIS News,* 12(2). Retrieved from http://www.vfis.com/Portals/vfis/documents/VFIS-news/VFIS-Summer-2012-News.pdf

Holdsworth, A. (2013, April 11). *Arizona fire chief offers tips for facing violence on the job.* Retrieved from http://www.fireengineering.com/articles/2013/04/arizona-fire-chief-offers-tips-for-facing-violence-on-the-job.html

Inside NOVA. (2014, September 9). *Troubled volunteer fire department merging into county system.* Retrieved from http://www.insidenova.com/headlines/troubled-volunteer-fire-department-merging-into-county-system/article_72586e98-382e-11e4-857e-001a4bcf887a.html

International Association of Fire Chiefs. (2012, September 13). *IAFC position: drug and alcohol-free awareness.* Retrieved from http://iafc.cms-plus.com/files/1ASSOC/IAFCposition_DrugAlcoholFreeAwareness.pdf

International Association of Fire Chiefs. (2016, November). *A Healthcare Provider's Guide to Firefighter Physicals.* Retrieved from http://www.fstaresearch.org/resource/?FstarId=11591

International Association of Fire Fighters. (n.d.). *Health, safety & medicine: fire service joint labor management wellness-fitness initiative.* Retrieved from http://www.iaff.org/hs/Well/wellness.html

International Code Council. (n.d.). *Overview of the IFC.* Retrieved from http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/ifc/

Jahnke, S. (2015, April 7). *Firefighters and alcohol, what the data says.* Retrieved from http://www.firerescue1.com/Firefighter-Training/articles/2150808-Firefighters-and-alcohol-what-the-data-says/

Jahnke, S., Poston, W., & Haddock, C. (2014). Perceptions of alcohol use among U.S. firefighters. *Journal of Substance Abuse & Alcoholism* 2(2): 1012. Retrieved from http://www.jscimedcentral.com/SubstanceAbuse/substanceabuse-2-1012.pdf

Jahnke, S., Poston, W., Haddock, C., Jitnarin, N., Hyder, M., & Horvath, C. (2012). The health of women in the US fire service. *BMC Women's Health,* 12(39), 1-12. doi:10.1186/1472-6874-12-39. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3534365/

Jenaway, William. (2015, July 8). *10 steps for theft management in fire departments.* Retrieved from http://www.firehouse.com/article/12071800/fire-chiefs-10-tips-to-avoid-theft-within-your-fire-department

Jitnarin, N., Poston, W., Haddock, C., Jahnke, S., & Day, R. (2015, January 17). Tobacco use pattern among a national firefighter cohort. *National Center for Biotechnology Information.* doi:10.1093/ntr/ntu131. Epub 2014 Aug 21. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/25145378

Klaric, M. (2015, April 10). *Lack of money shuts down volunteer fire department.* Retrieved from http://www.firerescue1.com/fire-chief/articles/2152610-Lack-of-money-shuts-down-volunteer-fire-department/

Kuzemchak, S. (2015, March 24). *Healthy food is more expensive. So now what?* Retrieved from http://www.parents.com/blogs/food-scoop/2015/03/24/nutrition/healthy-food-is-more-expensive-so-now-what/

Loboschefski, B. (2009, March 31). *Planning automatic aid agreements.* Retrieved from http://www.firerescuemagazine.com/articles/print/volume-4/issue-4/command-leadership/planning-automatic-aid-agreements.html

Malongowski, K. (2016, May 23). *Fire departments merge to combat lack of volunteers.* Retrieved from http://www.firerescue1.com/fire-department-management/articles/93278018-Fire-departments-merge-to-combat-lack-of-volunteers/

Maruca, J. (2015, August 18). *Factors to consider for fire departments thinking about providing ambulance service.* Retrieved from http://www.nvfc.org/factors-to-consider-for-fire-departments-thinking-about-providing-ambulance-service/

Miller, S., Champ, P. A., & Brenkert-Smith, H. (2013, September/October). Fire on the mountain: What motivates homeowners to reduce their wildfire risk? [Abstract]. *Science You Can Use Bulletin,* 7, 1. Retrieved from http://www.fs.fed.us/rmrs/publications/science-you-can-use-bulletin-fire-mountain-what-motivates-homeowners-reduce-their

Mund, E. (2015, October 2). *Paying all the costs of providing EMS.* Retrieved from http://www.nvfc.org/paying-all-the-costs-of-providing-ems/

National Council on Aging. (n.d.) *Healthy aging facts.* Retrieved from https://www.ncoa.org/news/resources-for-reporters/get-the-facts/healthy-aging-facts/

National Fallen Firefighters Foundation. (n.d.). *From EAP to BHAP: a guide for fire departments.* Retrieved from http://1rxflr7bsmg1aa7h24arae91.wpengine.netdna-cdn.com/wp-content/uploads/sites/2/2014/04/EAPtoBHAP_Guide.pdf

National Fire Protection Association. (2011). *Third needs assessment of the U.S. fire service.* Retrieved from http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/the-fire-service/administration/needs-assessment

National Fire Protection Association. (2016, September). *Fire department calls.* Retrieved on September 23, 2016, from http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/the-fire-service/fire-department-calls/fire-department-calls

National Fire Protection Association. (n.d.). *How the process works.* Retrieved from http://www.nfpa.org/codes-and-standards/standards-development-process/how-the-process-works

National Fire Protection Association. (n.d.) *NFPA 1: Fire code.* Retrieved from http://www.nfpa.org/Assets/files/AboutTheCodes/1/NFPA1_Fact%20Sheet.pdf

National Fire Protection Association. (n.d.). *NFPA 1091: Standard for traffic control incident management professional qualifications.* Retrieved from http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards?mode=code&code=1091

National Fire Protection Association. (n.d.). *NFPA 1201: Standard for providing fire and emergency services to the public.* Retrieved from http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards?mode=code&code=1201

National Fire Protection Association. (n.d.). *NFPA 1451: Standard for a fire and emergency service vehicle operations training program.* Retrieved from http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards?mode=code&code=1451

National Fire Protection Association. (n.d.). *NFPA 1500: Standard on fire department occupational safety and health program.* Retrieved from http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=1500

National Fire Protection Association. (n.d.). *NFPA 1582: Standard on comprehensive occupational medical program for fire departments.* Retrieved from http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=1582

National Fire Protection Association. (n.d.). *NFPA 1583: Standard on health-related fitness programs for fire department members.* Retrieved from http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=1583

National Fire Protection Association. (n.d.). *NFPA 1700: Guide for structural fire fighting.* Retrieved from http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=1700

National Fire Protection Association. (n.d.). *NFPA 1851: Standard for selection, care, and maintenance of protective ensembles for structural fire fighting and proximity fire fighting.* Retrieved from http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=1851

National Fire Protection Association. (n.d.). *Wildfires.* Retrieved on July 26, 2016 from http://www.nfpa.org/public-education/by-topic/outdoors-and-seasonal/wildland-fires

National Highway Traffic Safety Administration. (2016, May). *Summary of motor vehicle crashes*. Retrieved from https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812263

National Institute for Occupational Safety and Health. (2004, February 3). Volunteer firefighter killed after his privately owned vehicle hydroplaned and struck a billboard signpost — Kentucky. *Death in the Line of Duty.* Retrieved from http://www.cdc.gov/niosh/fire/pdfs/face200319.pdf

National Institute for Occupational Safety and Health. (2004, October 26). *Basement fire claims the life of volunteer fire fighter — Massachusetts.* Retrieved from http://www.cdc.gov/niosh/fire/reports/face200402.html

National Institute for Occupational Safety and Health. (2010, July). *Preventing deaths and injuries of firefighters using risk management principles at structure fires.* Retrieved from http://www.cdc.gov/niosh/docs/2010-153/pdfs/2010-153.pdf

National Institute for Occupational Safety and Health. (2012, October 11). *Volunteer lieutenant killed and two fire fighters injured following bowstring roof collapse at theatre fire — Wisconsin.* Retrieved from http://www.cdc.gov/niosh/fire/pdfs/face201208.pdf

National Institute for Occupational Safety and Health. (2013). *Wildland fire fighting hot tips to stay safe and healthy.* Retrieved from http://www.cdc.gov/niosh/docs/2013-158/pdfs/2013-158v2.pdf

National Institute for Occupational Safety and Health. (2013, February 28). *Volunteer fire fighter dies after being ejected from front seat of engine — Virginia.* Retrieved from http://www.cdc.gov/niosh/fire/reports/face201223.html

National Institute for Occupational Safety and Health. (2015, April 7). *Fire chief suffers sudden cardiac death at structure fire — Texas.* Retrieved from http://www.cdc.gov/niosh/fire/pdfs/face201417.pdf

National Institute for Occupational Safety and Health. (2016, July). *Findings from a study of cancer among U.S. fire fighters.* Retrieved from http://www.cdc.gov/niosh/pgms/worknotify/pdfs/FF-Cancer-factsheet-FINAL.pdf

National Institute for Occupational Safety and Health & U.S. Fire Administration. (Updated 2015). *Study of cancer among U.S. fire fighters.* Retrieved from http://www.cdc.gov/niosh/firefighters/ffCancerStudy.html

National Interagency Coordination Center. (2015). *Wildland fire summary and statistics annual report 2015.* Retrieved from http://www.predictiveservices.nifc.gov/intelligence/2015_Statssumm/intro_summary15.pdf

National Interagency Fire Center. (2015). *Total wildland fires and acres (1960-2015).* Retrieved from https://www.nifc.gov/fireInfo/fireInfo_stats_totalFires.html

National Volunteer Fire Council. (2011). *Report on the firefighter arson problem: context, considerations, and best practices.* Retrieved from http://www.nvfc.org/wp-content/uploads/2016/02/FF_Arson_Report_FINAL.pdf

National Volunteer Fire Council. (2014). *Emergency vehicle safe operations for volunteer and small combination emergency service organizations* (2nd ed.). Retrieved from http://www.nvfc.org/wp-content/uploads/2015/09/EVSO_Guide_2014.pdf

National Volunteer Fire Council. (2015). *Volunteer firefighter recruitment and retention formative research results.* Retrieved from http://www.nvfc.org/wp-content/uploads/2016/09/NVFC_Formative-Research_2015_Report_v1f.pdf

National Volunteer Fire Council. (2016). *Volunteer fire service facts sheet.* Retrieved from http://www.nvfc.org/press-room/

National Volunteer Fire Council. (n.d.-a). *B.E.S.T practices for health and safety.* Retrieved from http://www.nvfc.org/b-e-s-t-practices-for-health-and-safety/

National Volunteer Fire Council. (n.d.-b). *Fitness.* Retrieved from http://www.healthy-firefighter.org/fitness

National Volunteer Fire Council. (n.d.-c). *Fitness Tips.* Retrieved from http://www.healthy-firefighter.org/fitness/fitness-resources

National Volunteer Fire Council. (n.d.-d). *Share the load program.* Retrieved from http://www.nvfc.org/help

National Volunteer Fire Council. (n.d.-e). *Smoking.* Retrieved from http://healthy-firefighter.org/lifestyle/smoking

National Volunteer Fire Council & International Code Council. (2014). *Understanding & utilizing the International Fire Code.* Retrieved from http://www.nvfc.org/wp-content/uploads/2015/09/Codes-Guide-2014.pdf

National Wildfire Coordinating Group Smoke Committee's Training Subcommittee & University of Idaho. (2016). Part III: Mitigating exposure — How to reduce or eliminate smoke exposure. *Wildland Fire Personnel Smoke Exposure Guidebook: Version 3-1-2016* [Draft]. Retrieved from https://www.frames.gov/documents/smoke/Smoke-Exposure-Guidebook_NWCG-SmoC-UI_20160301-draft.pdf

National Wildfire Coordinating Group. (n.d.). *6 minutes for safety.* Retrieved from http://www.nwcg.gov/committees/6-Minutes-for-safety

Nedrow, T. (2015, February 2). *A TIM perspective: NFPA 1091.* Retrieved from http://www.nvfc.org/a-tim-perspective-nfpa-1091/

Norris, J. (2011, September 9). *New research shows mental illness common, linked to heart disease.* Retrieved from https://www.ucsf.edu/news/2011/09/10579/mental-illness-common-linked-chronic-diseases

Paull, M., & Omari, M. (2015). Dignity and respect: important in volunteer settings too! *Equal Equality, Diversity and Inclusion: An International Journal,* 34, 244-255. doi:10.1108/edi-05-2014-0033

Peluso, P. (2012, June 20). *Study: healthy foods a difficult find for firefighters.* Retrieved from http://www.firehouse.com/news/10732096/study-healthy-foods-a-difficult-find-for-firefighters

Perry, S. (2002, June 1). *Selecting a health/fitness/wellness director.* Retrieved from http://www.fireengineering.com/articles/print/volume-155/issue-6/features/selecting-a-health-fitness-wellness-director.html

Peus, C., Wesche, J. S., Streicher, B., Braun, S., & Frey, D. (2012). Authentic leadership: an empirical test of its antecedents, consequences and mediating mechanisms. *Journal of Business Ethics,* 107, 331-338. doi:10.1007/s10551-011-1042-3

Pignataro, C. (2013, April 1). *Helping mentally distressed firefighters help themselves.* Retrieved from http://www.fireengineering.com/articles/print/volume-166/issue-4/departments/fireems/helping-mentally-distressed-firefighters-help-themselves.html

Piper, M. (2014, September). *Resolving conflict in the combination fire department.* Retrieved from http://www.fireengineering.com/articles/print/volume-167/issue-9/departments/volunteers-corner/resolving-conflict-in-the-combination-fire-department.html

Pleasant View Volunteer Fire Department and Henrietta Volunteer Fire Department will consolidate services. (2015, May 19). Retrieved from http://www.pvvfd.org/2015%20Events/Immediate%20Release.pdf

Poston, W., Haddock, C., Jahnke, S., Jitnarin, N., & Day, R. (2014). *Health disparities among racial and ethnic minority firefighters.* JHDRP 2014;7:8. Retrieved from http://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=1266&context=jhdrp

Quarles, S., Leschak, P., Cowger, R., Worley, K., Brown, R., & Iskowitz, C. (2012). *Lessons learned from Waldo Canyon.* Retrieved from http://www.fireadapted.org/~/media/fire%20adapted/images/news%20images/waldo-canyon-rpt-final-shrunk%203.pdf?la=en

Reichenbach, S. (2009, March 1). *Situational awareness: key to emergency response.* Retrieved from http://www.fireengineering.com/articles/print/volume-162/issue-3/features/situational-awareness-key-to-emergency-response.html

Schafer, F. (2015, December 22). *Homeowner initiative builds community partnerships.* Retrieved from http://fireadaptednetwork.org/3733-2/

Shafroth, F. (2014, November). *States struggle to contain firefighting costs.* Retrieved from http://www.governing.com/columns/public-money/gov-containing-firefighting-costs.html

Shea, K. (2015, August 16). *Penn Hills firefighters have trouble keeping up with costs.* Retrieved from http://triblive.com/neighborhoods/yourpennhills/yourpennhillsmore/8905012-74/fire-departments-volunteer#axzz3kUQLnBiF

Shupert, S. (2012, June 2). *Making situational awareness part of the routine.* Retrieved from http://www.firefighternation.com/article/firefighter-safety-and-health/making-situational-awareness-part-routine

Sinden, K., Macdermid, J., Buckman, S., Davis, B., Matthews, T., & Viola, C. (2013). A qualitative study on the experiences of female firefighters. *Work,* 45(1), 97-105. doi:10.3233/WOR-121549

Stern, J. (1997, February 28). *Getting along in combination fire departments.* Retrieved from http://www.firehouse.com/news/10545011/getting-along-in-combination-fire-departments

Substance Abuse and Mental Health Services Administration. (2014, February 28). *State estimates of adult mental illness from the 2011 and 2012 national surveys on drug use and health.* Retrieved from http://www.samhsa.gov/data/sites/default/files/sr170-mental-illness-state-estimates-2014/sr170-mental-illness-state-estimates-2014/sr170-mental-illness-state-estimates-2014.htm

U.S. Census Bureau. (V2014). *QuickFacts* [Table]. Retrieved from https://www.census.gov/quickfacts/table/PST045215/00

U.S. Department of Agriculture. (2013). *The expanded food and nutrition education program policies.* Retrieved from https://nifa.usda.gov/sites/default/files/program/EFNEP%20Program%20Policies%20(onscreen%20version).pdf

U.S. Department of Agriculture. (2015, August). *The rising cost of wildfire operations; effects on the forest's service non-fire work.* Retrieved from http://www.fs.fed.us/sites/default/files/2015-Fire-Budget-Report.pdf

U.S. Department of Health and Human Services & United States Department of Agriculture. (2015, December). *2015-2020 dietary guidelines for Americans, 8th edition.* Retrieved from http://health.gov/dietaryguidelines/2015/guidelines/

U.S. Department of Transportation. (2016, August 10). *FHWA's traffic incident management reaches major milestone.* Retrieved from https://www.fhwa.dot.gov/pressroom/fhwa1645.cfm

U.S. Fire Administration. (1999). *Developing effective standard operating procedures.* Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/fa-197-508.pdf

U.S. Fire Administration. (2012, April). *Funding alternatives for emergency medical and fire services.* Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/fa_331.pdf

U.S. Fire Administration. (2014, February). *Emergency vehicle safety initiative.* Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/fa_336.pdf

U.S. Fire Administration. (2014, October). *Electronic cigarette fires and explosions.* Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/electronic_cigarettes.pdf

U.S. Fire Administration. (2015, August). *Firefighter fatalities in the United States in 2014.* Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/ff_fat14.pdf

U.S. Fire Administration. (n.d.). *Summary incident report.* Retrieved July 28, 2016, from https://apps.usfa.fema.gov/firefighter-fatalities/fatalityData/search

U.S. Fire Administration & International Association of Fire Chiefs. (2015, April). *National safety culture change initiative.* Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/fa_342.pdf

U.S. Fire Administration & National Volunteer Fire Council. (2008, March). *Emerging health and safety issues in the volunteer fire service.* Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/fa_317.pdf

U.S. Fire Administration & National Volunteer Fire Council. (2009, February). *Health and wellness guide for the volunteer fire and emergency services.* Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/fa_321.pdf

U.S. Fire Administration & National Volunteer Fire Council. (2010). *Critical health and safety issues in the volunteer fire service.* Retrieved from http://www.nvfc.org/wp-content/uploads/2015/09/CriticalHealthSafetyIssues_10_Final.pdf

Volunteer Firemen's Insurance Services. (2011). Emergency vehicle driver/operator requirements. *Risk Communiqué.* Retrieved from http://www.vfis.com/portals/vfis/documents/communiques/Emergency-Vehicle-Driver-Operator-Requirements-VFIS.pdf

Volunteer Firemen's Insurance Services. (2011). Personal vehicle response. *Risk Communiqué.* Retrieved from http://www.vfis.com/portals/vfis/documents/communiques/Personal-Vehicle-Response-VFIS.pdf

Waters, R. D., & Bortree, D. S. (2012). Improving volunteer retention efforts in public library systems: how communication and inclusion impact female and male volunteers differently. *International Journal of Nonprofit & Voluntary Sector Marketing,* 17(2), 92-107. doi:10.1002/nvsm.438

Wildland Fire Lessons Learned Center. (2015). *2015 incident review summary.* Retrieved from http://www.wildfirelessons.net/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=f2e35130-e572-a220-ab3f-3bac2969e324&forceDialog=0

Williams, C. (2014, May 9). *Firefighter heart disease.* Retrieved from http://ictr.johnshopkins.edu/news_announce/firefighter-heart-disease/

Willing, L. (2012, October 10). *3 keys to changing fire service culture.* Retrieved from http://www.firerescue1.com/cod-company-officer-development/articles/1353585-3-Keys-to-changing-fire-service-culture/

Willing, L. (2016, March 22). The fire chief's role in firefighter mental health. *Fire Chief, 2(1).* Retrieved from http://www.firerescue1.com/fire-chief/articles/73143018-The-fire-chiefs-role-in-firefighter-mental-health/

Wilmouth, J. (2014, May 2). *Trouble in mind.* Retrieved from http://www.nfpa.org/newsandpublications/nfpa-journal/2014/may-june-2014/features/special-report-firefighter-behavioral-health

Acronyms

BC Battalion Chief

BHAP Behavioral Health Assistance Program

CDC Centers for Disease Control and Prevention

CHD coronary heart disease

COs Company Officers

CVD cardiovascular disease

CVVFA Cumberland Valley Volunteer Firemen's Association

CWPP Community Wildfire Protection Plan

DOT Department of Transportation

EFNEP Expanded Food and Nutrition Education Program

EMS Emergency Medical Services

EMTs emergency medical technicians

ETT Emergency Technology & Tactics

FAC fire-adapted community

FBHA Firefighter Behavioral Health Alliance

FCSN Firefighter Cancer Support Network

FHWA Federal Highway Administration

FLSI Firefighter Life Safety Initiative

IAFC International Association of Fire Chiefs

IAFF International Association of Fire Fighters

ICs Incident Commanders

ICC International Code Council

IFC International Fire Code

JPRs job performance requirements

LODDs line-of-duty deaths

NCOA National Council on Aging

NFA National Fire Academy

NFFF National Fallen Firefighters Foundation

NFPA National Fire Protection Association

NICC National Interagency Coordination Center

NIOSH National Institute for Occupational Safety and Health

NSCCI National Safety Culture Change Initiative

NUG National Unified Goal

NVFC National Volunteer Fire Council

NWCG National Wildfire Coordinating Group

OSHA Occupational Safety and Health Administration

OSU Ohio State University

PASS personal alert safety systems

POV personally operated vehicle

PPE personal protective equipment

PTSD post-traumatic stress disorder

PV personal vaporizer

RMC Risk Management Committee

SCBA self-contained breathing apparatus

SLT smokeless tobacco

SOGs standard operating guidelines

SOPs standard operating procedures

TIM Traffic Incident Management

USDA U.S. Department of Agriculture

USFA U.S. Fire Administration

USFS U.S. Forest Service

VFIS Volunteer Firemen's Insurance Services

WFAP Wildland Fire Assessment Program

WFI Wellness-Fitness Initiative

WFLLC Wildland Fire Lessons Learned Center

WHO World Health Organization

WUI wildland urban interface