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PPE Update

Survey: Firefighter PPE care is improving

New survey results show that the fire service is doing a better job of cleaning and repairing its turnout gear than it did 10 years ago

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Fire departments have not always adequately cleaned their members' gear and many firefighters are unaware of the different dangers that exist with wearing soiled and contaminated clothing. However, progress has been made across the industry in many areas.

In the past month, the Fire Protection Research Foundation completed an extensive survey to determine specific industry practices and provide statistics as to how fire departments and firefighters take care of their protective clothing and equipment.

The survey specifically pointed to garments, helmets, hoods, gloves and footwear. But it asked a myriad of questions related to how both firefighters and departments went about specific provision of inspection, cleaning and repair services. The report on the survey can be [found here](#).

The primary theme of the survey was to obtain a clearer answer to the question: "How are firefighters and fire departments maintaining their PPE?" Using this as the basis for the survey, many specific questions were posed to understand practices and attitudes towards a number of other areas, including such questions as:

- How often are firefighters and fire departments cleaning their gear?
- Who or which organizations are performing care and maintenance services?
- Is contamination a concern among firefighters?
- What is the average shelf-time (time spent in storage) of the gear?

- Are firefighters using gear manufactured more than 10 years ago?
- What happens to the gear once it is retired?

The survey was given in an open forum and did not qualify applicants. However, questions at the beginning of the survey categorized respondents as an individual line firefighter (49.4 percent), staff person within the department organization responsible for cleaning and care functions (19.6 percent), or line firefighters with protective clothing policy responsibilities (31 percent).

Most of those firefighters surveyed were full-time firefighters. In addition, separate surveys were administered to the fire service industry including protective clothing manufacturers and independent service providers that inspect, clean and repair turnout gear.

Line firefighter responses

Approximately 75 percent of the fire departments have policies, standard operating procedures or other guidance in place for PPE care and maintenance. Fewer than 50 percent of the organizations said their policies are based on NFPA 1851, although the majority of these policies are mandatory.

Depending on the protective clothing item, approximately one-third of the departments have two or more sets of gear such as coats, pants, hoods and gloves. Firefighters are less likely to have spare helmets or footwear.

The vast majority of firefighters inspect their own gear after each fire or when dirty. Individual firefighters are also generally responsible for cleaning their gear, while a significant proportion, primarily for coats and pants, use a verified service provider for this care. The majority of PPE repairs take place either at the manufacturer or at a verified provider.

Most of the cleaning takes place at individual stations, but a near equal number of departments use central or regional locations within their department. Where service providers are used, more than 40 percent of the firefighter did not know whether the organization is verified in accordance with NFPA 1851.

Most firefighters believe their clothing is properly cleaned, but almost half are concerned about contamination remaining in their clothing.

Most gear is stored at the fire station with about 20 percent of the respondents indicating that there is a dedicated PPE storage room. Most said their clothing is stored in well-ventilated spaces where there is no exposure to sunlight.

Equal numbers of respondents indicate their gear is destroyed when retired versus being used in non-live fire training. There is still a significant proportion of gear that is also donated to others, including countries outside the United States. Most gear is retired after seven years, with about equal proportions being retired between seven and 10 years of service life.

Staff attitudes

Answers from fire department staff or those firefighters responsible for cleaning and care were

sometimes slightly different than those provided by line firefighters. For example, fire department staff generally indicated greater proportion of existing policies with those cleaning and care policies meeting NFPA 1851 as well being mandatory.

The same group indicated greater use of verified providers for inspection, cleaning and repairs. Most of these respondents further believed that the providers were verified to NFPA 1851.

There were other questions specifically posed to staff members but not line firefighters such as the estimated worst-case shelf time for PPE inventory. For this question, most respondents indicated clothing being in inventory for two and five years; the highest number of respondents said gear could remain in storage for five years.

Independent service provider practices

The large majority of service providers indicated compliance with the latest edition of NFPA 1851. Nearly all indicated providing inspection, cleaning and repair services for fire department clients with the majority of services pertaining to coats and pants.

They said most departments adhere to the NFPA 1851-specified one cleaning per year frequency. However, they indicated that they believe that most departments are not compliant with 1851, citing the reasons of cost of compliance and limited budget or not being a priority within the department as the primary reasons.

The same service providers indicated that a significant proportion of their inspections and cleanings for turnout clothing is not accompanied by hydrostatic testing for gear that is more than three years old. They said a significant proportion of gear that is tested have moisture-barrier failures.

More than 70 percent of the service providers said they conduct specialized cleaning or decontamination for chemicals or other hazardous substances. The majority of these services cover heavy fire ground soiling, oil/grease/petrochemical product contamination, or removal of blood and body fluids. Many refuse to clean or decontaminate clothing with specific contaminants such as asbestos.

Manufacturer practices

The survey directed towards manufacturers was more limited and had a relatively low level of participation. In general, the responding manufacturers indicated that most directly provide at least cleaning services for gear and often rental or lease programs for spare gear with these services primarily provided for coats and pants.

Most manufacturers also offer training on PPE care and maintenance that meets requirements of NFPA 1851; this is primarily provided online or through in-person classes. Many manufacturers further recommend specific cleaning agents or processes associated with their products. However, they also indicated providing only general guidelines for decontamination without specific recommendations, or referring departments to a different organization for that information.

When asked what the highest priorities were for the future revision of NFPA 1851, the leading response was to develop a more extensive criteria to determine when gear should be retired.

This was followed by an equal number of responses for the development of educational material providing greater guidance on selection of structural firefighting protective clothing, providing better specifications for cleaning processes or detergents, and establishing specific criteria for determining cleaning effectiveness.

The takeaway from this survey is that industry needs to do more to help firefighter keep gear clean, while the fire service should look to embrace more of the NFPA 1851 requirements. The good news is that the trends are encouraging and that gear is more likely to have proper care and maintenance than it would have had 10 years ago.


About the author

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Jeffrey and Grace Stull are president and vice president, respectively, of International Personnel Protection, Inc. They are members of several NFPA committees on PPE as well as the ASTM International committee on protective clothing. Mr. Stull was formerly the convener for international work groups on heat/thermal protection and hazardous materials PPE as well as the lead U.S. delegate for International Standards Organization Technical Committee 94/Subcommittees on Protective Clothing and Firefighter PPE. They participate in the Interagency Board for Equipment Standardization and Interoperability and have authored the book, "[PPE Made Easy](#)." Send questions or feedback to the Stulls via [email](#).

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