

Wildland Firefighters Advanced Personal Protection System

Firefighters face multiple challenges

Wildland fires have no bounds. Wildland firefighters are often required to respond to emergencies in remote areas. To get there, they must hike long distances and wear and carry heavy gear. These challenges are made more difficult by the extreme heat and humidity that typically accompany wildland fires. Additionally, the heavy personal protective gear needed to prevent injuries makes heat stress a major concern for wildland firefighting personnel.

The Wildland Firefighters Advanced Personal Protection System initiative aims to develop a National Fire Protection Association (NFPA) 1977 and 1975 certified garment system that improves radiant thermal protection; reduces heat stress; improves the form, fit and function of garments and upgrades requirements that industry uses to develop advanced gear.



S&T identifying new better materials

To address these challenges, the Department of Homeland Security Science and Technology Directorate (S&T) is developing an advanced personal protection system for wildland firefighters. S&T leveraged more than \$1.7 million from the Department of Defense, the U.S. Forest Service and a Federal Emergency Management Agency grant provided to North Carolina State University to support this project.

Materials were chosen based on their ability to meet the California Department of Forestry and Fire Protection's (CAL FIRE) requirements. They were tested and compared by an independent laboratory at North Carolina

State University. Using these test results, S&T and its partners then selected the materials for the prototype garment system.



Testing garments in live fires

S&T initiated a "wear trial" with 1,000 wildland firefighters from CAL FIRE, the U.S. Forest Service and seven local California fire departments. Operational personnel were asked to wear the prototype garment system and compare its performance to their current garment system. S&T used questionnaires, interviews and other tools to collect feedback from the operational wildland firefighters.

The data from this research is currently being analyzed to determine how the prototype garment system performed under operational conditions and whether they meet firefighters' needs.

Making better garments available

To successfully commercialize the garments and increase their availability, prototype garments must receive favorable evaluations from the operational testing and meet the program objectives. S&T plans to transition the design for the prototype garment system to the commercial sector for production. This will enable the new garment system to become widely available to the wildland firefighting community for use during the wildfire season.

