WILDLAND FIRE RESPIRATORY RISKS

Every year, wildland firefighters brave many of the same respiratory hazards, primarily wood pyrolysis and combustion byproducts, that structural firefighters avoid by using Self-Contained Breathing Apparatus (SCBAs).

Unfortunately, wildland firefighters cannot use SCBAs. For many, a scarf is their only respiratory protection, and its protection is minimal. Sore throats, headaches, and respiratory damage are commonplace in the wildland firefighting community. A firefighter’s participation in wildland firefighting usually ends when they are no longer willing to subject themselves to more respiratory damage.

During the 2018 California Camp Fire, many wildland firefighters reached their respiratory damage limit and retired from fighting wildfires. For some, the respiratory damage they absorbed during that one incident ended their structural firefighting careers.

Reasons wildland firefighters give for avoiding current adequate respiratory protection include the intolerable breathing resistance or increased heat load that masks can produce. However, respiratory protection can be made tolerable by using existing technologies to create powered, air-purifying respirators designed for the hazards of wildland firefighting.

DHS’ WILDLAND FIREFIGHTER RESPIRATOR PROJECT

Wildland firefighters need a small, lightweight respirator that is easy to don and doff. Under the Science and Technology Directorate’s (S&T) Wildland Firefighter Respirator project, TDA Research is developing a respirator capable of removing airborne hazards present in the wildland firefighting operating environment.

S&T, California Department of Forestry and Fire Protection – International Association of Firefighters, National Fire Protection Association, International Association of Fire Chiefs, U.S. Forest Service, and local Colorado fire departments have all contributed to the development and testing of TDA’s Wildland Firefighter Respirator (WFR) and are stakeholders in the development of this technology.

TDA’s WFR contains a HEPA filter module that will remove very fine particulates, and a carbon sorbent to remove toxic gases. The team is investigating wildland firefighter-approved designs like the Radio Carrier and Hip-Mounted units shown at right.

If wildland firefighters use respiratory protection, their careers could be significantly extended, leading to a more educated and experienced workforce capable of more efficient operations, with lower medical bills and training costs.

IMPORTANT MILESTONES ACHIEVED

Since July 2019, the team has held in-person meetings with wildland firefighters in California and Colorado to review its WFR prototypes. Feedback received has been invaluable in steering the designs towards ones that the wildland firefighting community will accept.

UPCOMING MILESTONES

The Wildland Respirator’s Operational Field Assessment (OFA) will occur in May 2022. The OFA planning process has begun, and the team is preparing for evaluators to test WFRs while riding in vehicles and on foot.

If you are a wildland firefighter and would like to review the WFR, please contact TDA.