# WHY GREENSCREEN CERTIFIED™ STANDARD FOR FIREFIGHTING FOAM GOES BEYOND FLUORINE-FREE

## MANY FLUORINE-FREE FIREFIGHTING FOAM PRODUCTS EXIST ON THE MARKET, BUT WHAT CHEMICALS DO THESE PRODUCTS CONTAIN?

### And are those chemicals less hazardous than per- and polyfluoroalkyl substances (PFAS)?

GreenScreen Certified™ works to provide purchasers and firefighters with the assurance that PFAS-free* firefighting foam products are not regrettable substitutes by building on the widely recognized GreenScreen chemical scores to:

- Require manufacturers to disclose all intentionally added chemicals in the products.
- Require analytic testing to ensure products are PFAS-free.
- Prohibit over 2,000 other chemicals of high concern.
- Require products meet rigorous criteria and aquatic toxicity testing of the product in concentrate form to minimize potential harm to aquatic life.

The harm from the PFAS chemical class underlines why analytical testing is required for GreenScreen Certified™ products:

- All PFAS are highly persistent or break down into highly persistent chemicals, which is why they are termed 'forever chemicals.' This persistence allows their associated chemical hazards to remain in the environment for hundreds if not thousands of years and many PFAS bioaccumulate, or increase in concentration, up the food chain.
- The short-chain PFAS are highly mobile in soil and water allowing them to spread easily through the environment making them difficult to find and remediate.
- Because PFAS are global contaminants, all humans are exposed to PFAS and firefighters face ongoing exposure on the job. A recent review from the U.S. Centers for Disease Control and Prevention (CDC) outlines a host of health effects associated with PFAS exposure, including cancer, liver damage, decreased fertility, and increased risk of asthma and thyroid disease.

*PFAS-free is defined as zero intentionally added PFAS to the product and PFAS contamination in the product must be less than 0.0001 percent by weight of the product (1 part per million) total organic fluorine as measured by combustion ion chromatography.

**Ensuring a firefighting foam product is PFAS-free* is only the beginning. GreenScreen Certified™ Firefighting Foam also prohibits thousands of other chemicals of concern, including:**

1. All organohalogens. Thousands of chemicals fall into this class. General features of organohalogens include: persistence in the environment or breakdown into persistent chemicals; ability to increase in concentration up the food chain (bioaccumulation); and toxicity to exposed people and wildlife. Products that contain organohalogens also create chemical risks at the waste disposal stage, such as the formation of dioxins when burned. The US Environmental Protection Agency notes: "dioxins are highly toxic and can cause cancer, reproductive and developmental problems, damage to the immune system, and can interfere with hormones. "
2. Siloxanes (D4, D5, and D6) are chemicals that can be used in film formers. Film formers enable the spreading of the aqueous surfactant solutions in Aqueous Film Forming Foam and form a water film on top of the liquid fuel in order to suppress the fire. These three chemicals are categorized as Substances of Very High Concern (SVHCs) by the European Union. D4, D5, and D6 are very persistent and very bioaccumulative and D4 is also persistent, bioaccumulative, and toxic.
3. The Zero Discharge of Hazardous Chemicals (ZDHC) Manufacturing Restricted Substances List (MRSL), has been adopted by ZDHC companies to reduce hazardous chemicals in the global manufacturing of textile, leather, apparel, and footwear. The ZDHC MRSL is relevant to this Standard because it is focused on eliminating toxic chemicals from discharges into water.
4. Alkyl Phenols (APs) & Alkylphenol Ethoxylates (APEOs) can be used as surfactants to increase spreading and wetting. These chemicals are persistent, bioaccumulative, and toxic to aquatic organisms. They are chemicals known to disrupt normal hormone functioning in humans and wildlife.
5. Over 2,000 other chemicals of high concern (CoHCs) identified as GreenScreen Benchmark-1 or GreenScreen List Translator-1 because they are carcinogens, mutagens, reproductive or developmental toxicants (CMRs); persistent, bioaccumulative, and toxic chemicals (PBTs); very persistent and very bioaccumulative (vPvB); or equivalent concern such as endocrine disruptors.

Finally, GreenScreen Certified requires products to meet strict criteria to protect aquatic life, even if spilled in concentrated form. Acute aquatic toxicity on the product level is evaluated for each of the following groups of organisms: fish, aquatic invertebrates, and algae.

The GreenScreen Certified Standard for Firefighting Foam defines a clear trajectory for moving away from PFAS to safer alternatives. At a minimum, manufacturers must disclose all intentionally added chemicals and impurities, avoid thousands of chemicals and chemical classes of concern, and complete important analytic testing.

CLEAN PRODUCTION ACTION

GREENSCREEN CERTIFIED™