PFOS, PFOA, and other PFAS have also been widely used in high performance firefighting products, like AFFF. In the 1960s, the DOD issued military specifications for AFFF used by the military. Subsequently, airports, oil refineries, and firefighting training facilities also began to use AFFF. Military use accounts for a significant portion of AFFF use in the United States.

AFFF with PFOS has not been manufactured in the U.S. since 2002, and eight major global manufacturers phased out production of PFOA between 2006 and 2015. Nevertheless, AFFF products containing PFOS and PFOA may still be in use because, although AFFF was reformulated and may no longer contain PFOS and PFOA, civilian and military airports may still have pre-phase out inventory of PFOS- and PFOA-based AFFF. Similarly, this pre-phase out AFFF may still be stored and used in various industries where its fire-retardant uses are of value, including refiners, pipelines, and other commercial enterprises involving flammable or combustible products or other substantial fire hazards.

Today, most AFFF is manufactured primarily with short-chain PFAS, but some AFFF still contain PFOA and other long-chain PFAS in trace amounts.