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Sommario/riassunto	In this study, environmentally stressed OS fabrics containing melamine fiber blends were evaluated for thermal and mechanical properties that are critical to the protective performance of firefighter turnout gear. Environmental stress factors that affect the durability of turnout gear include thermal exposures, UV radiation, moisture exposures, abrasion, and laundering. The effect of fiber blend, fabric construction, and finishing processes including water repellent coating and pigmentation of melamine containing OS fabrics was also studied. Melamine containing OS fabrics show comparable thermal protective performance and have far more superior tear resistance when compared to the traditionally used polyaramid blends. This study reveals that TPP rating of environmentally stressed OS fabrics containing melamine fiber blends is well above the NFPA minimum TPP requirement of 35 Cal/cm2. The tear strength of all melamine containing OS fabrics exposed to environmental stressing has significantly deteriorated and most OS fabrics, depending on fiber blend and fabric structure, would

fail to meet requirements of NFPA 1971 standard. The study thus suggests that environmental stressing has more detrimental impact on tear strength than the thermal protective performance of OS fabrics. Deterioration in tearing strength of all UV exposed OS fabrics is largely due to photodegradation of constituent fibers. Changes in tear strength of OS fabrics subjected to thermal exposures and laundering is cumulative effect of loss in tensile strength of single yarns and dimensional stability of the fabric itself.