

NFPA 1970-P2025 Edition

Standard on Protective Ensembles for Structural and Proximity Firefighting, Work Apparel and Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, and Personal Alert Safety Systems (PASS)

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Reference: Various in Chapters 2 thru 5, 8, 9, Annexes H.1.2.14 and H.3 (re: restricted substances criteria)

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www.nfpa.org/1970

1. Revise 2.3.5, 2.3.9, 2.3.11 and 2.3.15 to read as follows:

2.3.5* ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

...

ASTM D7359, *Standard Test Method for Total Fluorine, Chlorine and Sulfur in Aromatic Hydrocarbons and Their Mixtures by Oxidative Pyrohydrolytic Combustion followed by Ion Chromatography Detection (Combustion Ion Chromatography-CIC)*, ~~2023-2018~~.

...

2.3.9 DIN Publications.

Deutsches Institut für Normung e.V. (German Institute for Standardization), Am DIN-Platz, Burggrafenstraße 6, 10787 Berlin.

~~DIN 50009, *Textiles — Determination of tetrachlorophenol, trichlorophenol, dichlorophenol, monochlorophenol isomers and pentachlorophenol content*, 2021.~~

DIN 54231, *Textiles — Detection of disperse dyestuffs*, 2005.

2.3.11 EN Publications.

European Committee for Standardization, Rue de la Loi 200, 1049 Bruxelles, Belgium.

...

EN 17134-2, *Textiles and textile products — Determination of biocide additives — Part 2: Chlorophenol-based preservatives, method using gas chromatography*, 2023.

...

2.3.15 ISO Publications.

International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland.

...

ISO 6401, *Plastics — Poly (vinyl chloride) — Determination of residual vinyl chloride monomer — Gas chromatographic method*, ~~2022-2008~~.

...

~~ISO 16186, *Footwear — Critical substances potentially present in footwear and footwear components — Determination of dimethyl fumarate (DMFU)*, 2021.~~

...

ISO 22818, *Textiles — Determination of short-chain chlorinated paraffins (SCCP) and middle-chain chlorinated paraffins (MCCP) in textile products out of different matrices by use of gas chromatography negative ion chemical ionization mass spectroscopy (GC-NCI&-MS)*, 2021.

...

ISO 23702, *Leather – Organic fluorine – Part 1: Determination of the nonvolatile compound content by extraction method using liquid chromatography/tandem mass spectrometry detector (LC-MS/MS)*, 2023-2018.
...

2. *Revise annex A.3.3.170, add new definition 3.3.171 with associated Annex, and renumber subsequent definitions:*

3.3.170* Restricted Substance. A specific substance that poses a potential threat to human health or the environment, which can include, but is not limited to, an ingredient, treatment, or byproduct of manufacturing that is subject to specific concentration limits or being present in a material or component used in the construction of a protective element.

A.3.3.170 Restricted Substance. Restricted substances can be hazardous, toxic, corrosive, ignitable, explosive, chemically reactive, persistent, or bioaccumulative. These substances are restricted because governments or other organizations have established specific limits for their use in various products that either prohibit their use or set maximum limits for their concentration in the respective product. Limits for restricted substances are specifically addressed for forms of PPE given the potential for exposure of individual wearers of the PPE or to individuals handling the PPE, or for potential for contamination of environment in the manufacture of PPE.

3.3.171* Restricted Substance Attestation Organization.

An independent organization that provides test services for assuring supplier conformity of materials or components used in protective elements against the criteria in a recognized restricted substances list.

A.3.3.171 Restricted Substance Attestation Organization. Specific criteria for restricted substances and their measurement are established in Chapters 4, 7, 8, and 9 as part of this standard.

3. *Add a new section 4.3.10 and associated Annex to read as follows:*

4.3.10* In lieu of the requirements in 4.3.9, compliance of recognized components to the requirements specified in 7.1.14, 7.4.9, 7.7.6, 7.10.10, 7.13.7, and Section 8.21 shall be permitted to be based on a certificate provided by a restricted substance attestation organization that meets the following requirements:

(1) The restricted substance attestation organization shall be independent from the supplier.

(2) The restricted substance attestation organization shall use a restricted substance list that is equivalent to or more rigorous than the specific criteria for restricted substances in Section 8.21.

(3) Laboratories conducting the evaluations of restricted substances shall be accredited in accordance with the requirements of ISO 17025, *General requirements for the competence of testing and calibration laboratories*, with analytical testing for restricted substances as part of its scope.

(4) A separate test report shall be provided, along with the certificate, that provides the results of all applicable restricted substances evaluations.

A.4.3.10 An example of a restricted substance attestation organization meeting these requirements is OEKO-TEX Service in their application of OEKO-TEX Standard 100 and the OEKO-TEX Standard 100 Supplement PPE & Materials for PPE.

4.3.10.1* The certificate in 4.3.10 shall be required only for initial certification or if there is a

change to the materials used in the recognized component.

A.4.3.10.1 Modification of the finish, coating, fiber type, or fiber sources is considered a change to the recognized component.

4. *Revise paragraphs 5.1.2.1.1 and 5.1.2.1.2 add new associated Annexes to read as follows:*

5.1.2.1.1* To achieve this purpose, Chapters 5 through 9 of this standard shall establish minimum requirements for structural firefighting protective ensembles and ensemble elements designed to provide firefighting personnel limited protection from thermal, physical, environmental, biological, chemical, electrical, person-position, person-equipment, and other and bloodborne pathogen hazards encountered during structural firefighting operations.

A.5.1.2.1.1 A list of potential fireground and other related emergency hazards that can be addressed in this standard appears in Table A.5.1.2.1.1 (extracted from NFPA 1851). These hazards include not only hazards arising from the emergency scene but also hazards that might be present from wearer contact with, or use of, protective ensembles and ensemble elements before, during, and after emergency operations.

Table A.5.1.2.1.1 List of Potential Fireground and Other Related Emergency Hazards

Physical Hazards

Falling objects

Flying debris

Projectiles or ballistic objects

Abrasive or rough surfaces

Sharp edges

Pointed objects

Slippery surfaces

Excessive vibration

Environmental Hazards

High heat and humidity

Ambient cold

Wetness

High wind

Insufficient or bright light

Excessive noise

Thermal Hazards

High convective heat

Low radiant heat

High radiant heat

Flame impingement

Steam

Hot liquids

Molten metals

Hot solids

Hot surfaces

Biological Hazards

Bloodborne pathogens

Airborne pathogens

Biological toxins

Biological allergens

Chemical Hazards

Inhalation

Skin absorption or contact

Chemical ingestion or injection

Liquefied gas contact

Chemical flashover

Chemical explosions

Electrical Hazards

High voltage

Electrical arc flashover

Static charge buildup

Radiation Hazards

Ionizing radiation

Non-ionizing radiation

Person-Position Hazards

Daytime visibility

Nighttime visibility

Falling

Drowning

Person-Equipment Hazards

Material biocompatibility

Ease of contamination

Thermal comfort

Range of motion

Hand function

Ankle and back support

Communications ease

Fit (poor)

Ease of donning and doffing

5.1.2.1.2 To achieve this purpose, Chapters 5 through 9 of this standard shall establish minimum requirements for proximity firefighting protective ensembles and ensemble elements designed to provide firefighting personnel limited protection from thermal exposures where high levels of radiant heat as well as convective and conductive heat are released, and from physical, environmental, biological, chemical, electrical, person-position, person-equipment, and other bloodborne pathogen hazards encountered during proximity firefighting operations. (*See also, A.5.1.2.1.1.*)

5. Revise Section 8.21 including associated Tables 8.21(a) through (k) and Annex to read as follows:

8.21* Acceptable Levels of Restricted Substances in Specified Protective Element Recognized Components.

Components that are required to be certified for individual protective elements shall meet the acceptable restricted substances as established in Table 8.21(a) when tested as specified in 9.10.1, Test Method for Acceptable Levels of Specific Restricted Substances, subject to the following applications or exceptions:

1. Testing for acetophenone and 2-Phenyl-2-propanol shall only be applied to polymers that contain ethylene vinyl acetate.
2. Testing for acidic or alkaline substances (pH) shall be excluded for materials and components that are plastics, rubber, or polymers.
- ~~3.4.~~ Testing for azo-amines and aryl amine salts shall be excluded for materials and components that are plastics, rubber, or polymers.
- ~~4.2.~~ Testing for bisphenols shall only be applied to materials and components that are plastics, rubber, or polymers, including elastomers.
- ~~5.3.~~ Testing for chlorobenzenes and chlorotoluenes shall only be applied to materials and components that include synthetic fibers, natural and synthetic fiber blends, or artificial leather.
6. A maximum level of 30 mg/kg of 1,2-Dichlorobenzene shall be permitted when C.I. Pigment Violet 23 (CAS No. 6358-30-1), Yellow 93 (CAS No. 5580-57-4), Orange 61 (CAS No. 40716-47), and Red 214 (CAS No. 82643-43-4) solution-dyed fibers are used.
7. Testing for chlorinated paraffins shall be excluded for materials that include natural or synthetic fibers.
- ~~8.4.~~ Testing for chlorophenols shall be only applied to materials and components that include natural fibers, synthetic fibers, or natural and synthetic fiber blends.
- ~~9.5.~~ Testing for dyes shall only be applied to materials and components that include synthetic fibers or natural and synthetic fiber blends.
- ~~10.6.~~ Testing for formaldehyde shall be excluded for materials and components that are plastics or polymers.
- ~~11.7.~~ Testing for heavy metal Chromium VI shall be only applied to materials and components that consist of natural fibers or synthetic fibers.
- ~~12.8.~~ Testing for total heavy metal content that includes arsenic, cadmium, lead, and mercury shall be excluded for materials and components that include synthetic fibers.
- ~~13.9.~~ Testing for monomers shall be only applied to materials and components that include artificial leather or are plastics, rubber, and polymers.
- ~~14.10.~~ Testing for nitrosamines shall be only applied to materials and components that are rubber.
- ~~15.11.~~ Testing for ortho-phenylphenol shall be excluded for materials and components that

- are plastics, rubber, or polymers.
- ~~16.42.~~ Testing for phthalates shall be excluded for materials and components that include natural fibers, synthetic fibers, and natural and synthetic fiber blends.
- ~~17.43.~~ Testing for polycyclic aromatic hydrocarbons shall be excluded for materials and components that include natural fibers, synthetic fibers, and natural and synthetic fiber blends.
- ~~18.44.~~ Testing for quinoline shall be applied to materials and components that include synthetic fibers or natural and synthetic fiber blends.
- ~~19.45.~~ Testing for solvent residuals shall be applied to materials and components that include synthetic coated fabrics or artificial leather or that are polyurethane-based plastics or polymers.
- ~~20.~~ A maximum level of 1000 mg/kg for Dimethylacetamide (DMAC), Dimethylformamide (DMF), and N-Methyl-2-pyrrolidone (NMP) shall be permitted for materials made of acrylic, elastane, polyurethane, polyimide, aramids, and coated textiles.
- ~~21.~~ A maximum level of 3.0 weight percent for Dimethylacetamide (DMAC), Dimethylformamide (DMF), and N-Methyl-2-pyrrolidone (NMP) shall be permitted for material products that must undergo further industrial production stages, such as fibers that are spun with the aid of DMAC, DMF, or NMP.
- ~~22.46.~~ Testing for UV stabilizers shall be applied to materials and components that include plastics, rubber, or polymers.
- ~~23.47.~~ Testing for volatile organic compounds shall be applied to materials and components that include artificial leather or are polyurethane-based plastics or polymers.
- ~~24.48.~~ Perfluorinated and polyfluorinated alkyl substances shall be tested in relevant materials and components for both total PFAS and individual PFAS chemicals.

Table 8.21(a) Acceptable Levels of Restricted Substances in Specified Protective Element Recognized Components

Chemical Class or Group	Restricted Substance(s)	Maximum Level
<u>Acetophenone and 2-Phenyl-2-propanol</u>	<u>Acetophenone and 2-Phenyl-2-propanol</u>	<u>10 mg/kg</u>
Acidity and alkaline substances	Measured by reporting pH	Acceptable range 4.0–7.5 (if direct skin contact) 4.0–9.0 (if not direct skin contact)
Akyl phenols and ethoxylates	Sum of 4-tert butylphenol, nonylphenol, octylphenol, heptaphenol, and pentylphenol Sum of 4-tert butylphenol, nonylphenol, octylphenol, heptaphenol, pentylphenol, nonylphenolethoxylates, and octylphenol-ethoxylates	10.0 mg/kg 100.0 mg/kg
Azo-amines and aryl amine salts	Each individual substance in Table 8.21(b)	20 mg/kg

Chemical Class or Group	Restricted Substance(s)	Maximum Level
<u>Bisphenols</u>	<u>Bisphenol A, Bisphenol B, and Bisphenol S, each</u>	<u>1000 mg/kg</u>
Chlorinated benzenes and toluenes	Sum of all chemicals in Table 8.21(c), <u>except Chlorobenzene</u>	1.0 mg/kg
	<u>Chlorobenzene</u>	<u>30 mg/kg^a</u>
<u>Chlorinated paraffins</u>	<u>Short-chain chlorinated paraffins (SCCPs) (C10–C13)</u>	<u>1000 mg/kg</u>
Chlorinated phenols	Pentachlorophenol	0.5 mg/kg
	Tetrachlorophenols	0.5 mg/kg
	Trichlorophenols	2.0 mg/kg
	Dichlorophenols	3.0 mg/kg
	Monochlorophenols	3.0 mg/kg
<u>Dimethylfumarate</u>	<u>Dimethylfumarate</u>	<u>0.1 mg/kg</u>
Dyes	Each individual substance in Table 8.21(d)	50 mg/kg
	Navy blue	Not present
<u>Flame retardants-retardant</u>	Each individual substance in Table 8.21(e)	10 mg/kg
	Sum of all chemicals in Table 8.21(e)	50 mg/kg
Formaldehyde	Free and partially releasable	75 mg/kg
Heavy metals, extractable	Antimony	30.0 mg/kg
	Arsenic	1.0 mg/kg
	Barium	1000 mg/kg
	Cadmium	0.1 mg/kg
	Chromium	2.0 mg/kg
	Chromium VI	0.5 mg/kg
	Cobalt	4.0 mg/kg
	Copper	50.0 mg/kg
	Lead	1.0 mg/kg
	Mercury	0.02 mg/kg
	Nickel	4.0 mg/kg
	Selenium	100 mg/kg
Heavy metals, total content	Arsenic	100 mg/kg
	Cadmium	40.0 mg/kg
	Lead	90.0 mg/kg
	Mercury	0.5 mg/kg
Monomers	Styrene	0.005 kg/m ³
	Vinyl chloride	0.002 kg/m ³
Nitrosamines	Each individual substance in Table 8.21(f)	0.5 mg/kg
	Sum of N-nitrosatable substances	5 mg/kg
Organotin compounds	Tributyltin (TBT)	1.0 mg/kg
	Triphenyltin (TPhT)	1.0 mg/kg
	Each individual substance in Table 8.21(g)	2.0 mg/kg
Ortho-phenylphenol	Ortho-phenylphenol	25 mg/kg

Chemical Class or Group	Restricted Substance(s)	Maximum Level
Perfluorinated and polyfluorinated alkyl substances (PFC/PFAS)	Total fluorine content [<u>includes non-PFAS</u>]	Report
	Total organic fluorine content, extractable, sum	10 mg/kg
	<u>Sum of C9-C14 PFCA-related substances</u>	<u>260 µg/kg</u>
	Sum of PFOS, PFOSA, PFOSF, N-Me-FOSA, N-Et-FOSA, N-Me-FOSE, NEt-FOSE	<u>1 µg/m²</u> 250 µg/kg
	Each and sum of PFHpA, PFNA, PFDA, PFUdA, PFDoA, PFTrDA, PFTeDA and further perfluorinated carboxylic acids in Table 8.21(j)	25 µg/kg
	Each and sum <u>Sum</u> of perfluorinated sulfonic acids in Table 8.21(j)	250 µg/kg
	Each partially fluorinated carboxylic/sulfonic acids in Table 8.21(j)	250 µg/kg
	Each other partially fluorinated carboxylic/sulfonic acids in Table 8.21(j)	Report only
	Each <u>Sum</u> of partially fluorinated linear alcohols in Table 8.21(j)	250 µg/kg
	Each ester <u>Sum</u> of esters of fluorinated alcohols with acrylic acid in Table 8.21(j)	250 µg/kg
	Sum of partially fluorinated compounds	250 µg/kg
	Sum of PFOA and salts	25 µg/kg
	Sum of PFOA-related substances	250 µg/kg
Phthalates	Sum of substances listed in Table 8.21(h)	<u>500 mg/kg</u> 0.05 wt.%
Polycyclic aromatic hydrocarbons (PAH)	Benzo(a)pyrene	1.0 mg/kg
	Benzo(e)pyrene	1.0 mg/kg
	Benzo(a)anthracene	1.0 mg/kg
	Chrysene	1.0 mg/kg
	Benzo(b)fluoroanthrene	1.0 mg/kg
	Benzo(j)fluoroanthrene	1.0 mg/kg
	Benzo(k)fluoroanthrene	1.0 mg/kg
	Dibenzo(a,h)anthracene	1.0 mg/kg
	Sum of substances listed in Table 8.21(i)	10.0 mg/kg
Quinoline	Quinoline	50.0 mg/kg
Solvent residues	Dimethylacetamide (<u>DMAC</u>)	<u>500 mg/kg</u> <u>1000 mg/kg^b</u> 0.05 wt.%
	Dimethylformamide (<u>DMF</u>)	<u>500 mg/kg</u> <u>1000 mg/kg^b</u> <u>3.0%^c</u> 0.05 wt.%
	Formamide	<u>1000 mg/kg</u>

Chemical Class or Group	Restricted Substance(s)	Maximum Level
	<u>N-Methyl-2-pyrrolidone (NMP)</u>	<u>500 mg/kg</u> <u>1000 mg/kg^b</u> <u>3.0%^c</u>
UV absorbers or stabilizers	2-Benzotriazol-2-yl-4,6-di-tert-butylphenol (UV 320)	<u>1000 mg/kg</u> <u>0.1 wt.%</u>
	2,4-Di-tert-butyl-6-(5-chlorobenzotriazol-2-yl) phenol (UV 327)	<u>1000 mg/kg</u> <u>0.1 wt.%</u>
	2-(2H-Benzotriazol-2-yl)-4,6-di-tert-pentylphenol (UV 328)	<u>1000 mg/kg</u> <u>0.1 wt.%</u>
	2-(2H-Benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV 350)	<u>1000 mg/kg</u> <u>0.1 wt.%</u>
Volatile organic compounds (VOCs)	<u>Benzene</u>	<u>5 mg/kg</u>
	<u>Each VOC listed in Table 8.21(k)</u>	<u>10 mg/kg</u>

^a A maximum level of 30 mg/kg of 1,2-Dichlorobenzene applies when C.I. Pigment Violet 23 (CAS No. 6358-30-1), Yellow 93 (CAS No. 5580-57-4), Orange 61 (CAS No. 40716-47), and Red 214 (CAS No. 82643-43-4) solution-dyed fibers are used [see 8.21 (6)].

^b A maximum level of 1000 mg/kg applies to materials made of acrylic, elastane, polyurethane, polyimide, aramids, and coated textiles [see 8.21(20)].

^c A maximum level of 3.0 weight percent applies to material products that must undergo further industrial production stages, such as fibers that are spun with the aid of DMAC, DMF, or NMP [see 8.21(21)].

Table 8.21(b) List of Restricted Azo-amines and Aryl Amine Salts

Azo-amine or Aryl Amine Salt Chemical	CAS Number
4-Aminobiphenyl	92-67-1
Benzidine	92-87-5
4-Chloro-o-toluidine Chloro-o-toluidine	95-69-2 95-69-2-4
2-Naphthylamine Naphthylamine	91-59-8 91-59-8-2
o-Aminoazotoluene	97-56-3
2-Amino-4-nitrotoluene	99-55-8
p-Chloraniline	106-47-8
2,4-Diaminoanisole	615-05-4
4,4'-Diaminodiphenylmethane	101-77-9
3,3'-Dichlorobenzidine	91-94-1
3,3'-Dimethoxybenzidine	119-90-4
3,3'-Dimethylbenzidine	119-93-7
3,3'-dimethyl-4,4'-diaminodiphenylmethane	838-88-0
p-Cresidine	120-71-8
4,4'-Methylen-bis(2-chloraniline)	101-14-4
4,4'-Oxydianiline	101-80-4
4,4'-Thiodianiline	139-65-1
o-Toluidine	95-53-4

Azo-amine or Aryl Amine Salt Chemical	CAS Number
2,4-Toluenediamine	95-80-7
2,4,5-Trimethylaniline	137-17-7
2,4 Xylidine	95-68-1
2,6 Xylidine	87-62-7
2-Methoxyaniline (= o-Anisidine)	90-04-0
p-Aminoazobenzene	60-09-3
4-Chloro-o-toluidinium chloride	3165-93-3
2-Naphthylammoniumacetate	553-00-4
4-Methoxy-m-phenylene diammonium sulphate	39156-41-7
2,4,5-Trimethylaniline hydrochloride	21436-97-5

Table 8.21(c) List of Restricted Chlorinated Benzenes and Toluenes

Chlorinated Benzene or Toluene Chemical	CAS Number
2-Chlorotoluene	95-49-8
3-Chlorotoluene	108-41-8
4-Chlorotoluene	106-43-4
2,3-Dichlorotoluene	32768-54-0
2,4-Dichlorotoluene	95-73-8
2,5-Dichlorotoluene	19398-61-9
2,6-Dichlorotoluene	118-69-4
3,4-Dichlorotoluene	95-75-0
3,5-Dichlorotoluene	25186-47-4
2,3,5-Trichlorotoluene	56961-86-5
2,3,6-Trichlorotoluene	2077-46-5
2,4,5-Trichlorotoluene	6639-30-1
3,4,5-Trichlorotoluene	21472-86-6
2,4,6-Trichlorotoluene	23479-65-7
2,3,4,5-Tetrachlorotoluene	76057-12-0
2,3,4,6-Tetrachlorotoluene	875-40-1
2,3,5,6-Tetrachlorotoluene	1006-31-1
<u>2,3,4,5,6-Pentachlorotoluene</u>	877-11-2
<u>1,2-Dichlorobenzene</u>	<u>95-50-1</u>
1,3-Dichlorobenzene	541-73-1
<u>Dichlorobenzenes</u>	<u>25321-22-6</u>
1,4-Dichlorobenzene	106-46-7
1,2,3-Trichlorobenzene	87-61-6
1,2,4-Trichlorobenzene	120-82-1
1,3,5-Trichlorobenzene	108-70-3
<u>Trichlorobenzenes</u>	<u>12002-48-1</u>
1,2,3,4-Tetrachlorobenzene	634-66-2
1,2,3,5-Tetrachlorobenzene	634-90-2
1,2,4,5-Tetrachlorobenzene	95-94-3
Pentachlorobenzene	608-93-5

Chlorinated Benzene or Toluene Chemical	CAS Number
<u>Hexachlorobenzene</u>	<u>118-74-1</u>
p-Chlorobenzotrichloride	5216-25-1
Benzotrichloride	98-07-7
Benzyl chloride	100-44-7
<u>1,2-Dichlorobenzene</u>	<u>95-50-1</u>

Table 8.21(d) List of Restricted Dyes

Dye Chemical	CAS Number
C.I. Acid Red 26	3761-53-3
C.I. Acid Red 114	6459-94-5
C.I. Basic Blue 26	2580-56-5
C.I. Basic Green 4	569-4-2, 10309-95-2, and 2437-29-8
C.I. Basic Red 9	569-61-9
C.I. Basic Violet 3	548-62-9
C.I. Basic Violet 14	632-99-5
C.I. Basic <u>Yellow 2</u> Yellow	2465-27-2 and 492-80-9
C.I. Direct Black 38	1937-37-7
C.I. Direct Blue 6	2602-46-2
C.I. Direct Blue 15	2429-74-5
C.I. Direct Brown 95	16071-86-6
C.I. Direct Red 28	573-58-0
C.I. Disperse Blue 1	2475-45-8
C.I. Disperse Blue 3	2475-46-9
C.I. Disperse Blue 7	3179-90-6
C.I. Disperse Blue 26	3860-63-7
C.I. Disperse Blue 35	12222-75-2
C.I. Disperse Blue 102	12222-97-8
C.I. Disperse Blue 106	12223-01-7
C.I. Disperse Blue 124	61951-51-7
C.I. Disperse Brown 1	23355-64-8
C.I. Disperse Orange 1	2581-69-3
C.I. Disperse Orange 3	730-40-5
C.I. Disperse Orange 11	82-28-0
C.I. Disperse Orange <u>37/59/76</u> 37/76/59	12223-33-5, 13301-61-6, and 51811-42-8
C.I. Disperse Orange 149	85136-74-9
C.I. Disperse Red 1	2872-52-8
C.I. Disperse Red 11	2872-48-2
C.I. Disperse Red 17	3179-89-3
C.I. Disperse Red 60	12223-37-9 and

Dye Chemical	CAS Number
	17418-58-5
C.I. Disperse Yellow 1	119-15-3
C.I. Disperse Yellow 3	2832-40-8
C.I. Disperse Yellow 9	6373-73-5
C.I. Disperse Yellow 23	6250-23-3
C.I. Disperse Yellow 49	54824-37-2
C.I. Pigment Red 104 (lead chromate molybdate sulphate red)	12656-85-8
C.I. Pigment Yellow 34 (lead sulfochromate yellow)	1344-37-2
C.I. Solvent Blue 4	6786-83-0
C.I. Solvent Yellow 1 (4-Aminoazobenzene)	60-09-2
C.I. Solvent Yellow 3 (2-Aminoazobenzene)	97-56-3
4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	561-41-1

Table 8.21(e) List of Restricted Flame Retardant Substances

Flame Retardant Chemical	CAS Number
<u>Decabromodiphenyl ethane (DBDPE)</u>	<u>84852-53-9</u>
Pentabromodiphenyl ether (PentaBDE)	32534-81-9
Octabromodiphenyl ether (OctaBDE)	32536-52-0
Decabromodiphenyl ether (DecaBDE)	1163-19-5
All other polybrominated diphenyl ethers (PBDEs)	<u>Various</u>
Tetrabromobisphenol A (TBBP A)	79-94-7
Polybromobiphenyls (PBB)	59536-65-1
Hexabromocyclododecane (HBCDD)	3194-55-6
2,2-bis(bromomethyl)-1,3-propanediol (BBMP)	3296-90-0
Tris(1,3-dichloro-isopropyl) phosphate (TDCPP)	13674-87-8
Trixylyl phosphate (TXP)	25155-23-1
Tris(2,3,-dibromopropyl) phosphate (TRIS)	126-72-7
Tris(1-aziridiny)phosphine oxide) (TEPA)	545-55-1
Tris(2-chloroethyl)phosphate (TCEP)	115-96-8
Bis(2,3-dibromopropyl) phosphate (BIS)	5412-25-9

Table 8.21(f) List of Restricted Nitrosamines

Nitrosamine Chemical	CAS Number
N-nitrosodimethylamine (NDMA)	62-75-9
N-nitrosodiethylamine (NDEA)	55-18-5
N-nitrosodipropylamine (NDPA)	621-64-7
N-nitrosodibutylamine (NDBA)	924-16-3
N-nitrosopiperidine (NPIP)	100-75-4
N-nitrosopyrrolidine (NPYR)	930-55-2
N-nitrosomorpholine (NMOR)	59-89-2
N-nitroso N-methyl N-phenylamine (NMPPhA)	614-00-6
N-nitroso N-ethyl N-phenylamine (NEPhA)	612-64-6

Table 8.21(g) List of Restricted Organotin Substances

Organotin Chemical	CAS Number
Dibutyltin (DBT)	Various
Dimethyltin (DMT)	Various
Dicotyltin (DOT)	Various
Diphenyltin (DPhT)	Various
Dipropyltin (DPT)	Various
Monobutyltin (MBT)	Various
Monooctyltin (MOT)	Various
Monomethyltin (MMT)	Various
Monophenyltin (MPhT)	Various
Tetrabutyltin (TeBT)	Various
Tetraethyltin (TeET)	Various
Tetraoctyltin (TeOT)	Various
Tricyclohexyltin (TCyHT)	Various
Trimethyltin (TMT)	Various
Trioctyltin (TOT)	Various
Tripoyltin (TPT)	Various

Table 8.21(h) List of Restricted Phthalate Substances

Phthalate Chemical	CAS Number
Butylbenzylphthalate (BBP)	85-68-7
Dibutylphthalate (DBP)	84-74-2
Diethylphthalate (DEP)	84-66-2
Dimethylphthalate (DMP)	131-11-3
Di-(2-ethylhexyl)-phthalate (DEHP)	117-81-7
Di-(2-methoxyethyle)-phthalate (DMEP)	117-82-8
Di-C6-8 branched alkylphthalates (DIHP)	71888-89-6
Di-C7-11 branched and linear alkylphthalates (DHNUP)	68515-42-4
Di-cyclohexyl phthalate (DCHP)	84-61-7
Di-hexylphthalates, branched and linear (DHxP)	68515-50-4
Di-iso-butylphthalate (DIBP)	84-69-5
Di-iso-hexyl phthalate (DIHxP)	71850-09-4
Di-iso-octyl phthalate (DIOP)	27554-26-3
Di-iso-nonylphthalate (DINP)	28553-12-0, <u>68515-48-0</u>
Di-iso-decylphthalate (DIDP)	26761-40-0, <u>68515-49-1</u>
Di-n-propyl phthalate (DPrP)	131-16-8
Di-n-hexylphthalate (DHP)	84-75-3
Di-n-octylphthalate (DNOP)	117-84-0
Di-n-nonylphthalate (DNP)	84-76-4
Di-n-pentyl phthalate (DPP), also iso- or mixed	131-18-0, 605-50-5,

Phthalate Chemical	CAS Number
	776297-69-9, and 84777-06-0
1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters	68515-51-5
1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters	68648-93-1

Table 8.21(i) List of Restricted Polycyclic Aromatic Hydrocarbon (PAH) Substances

PAH Chemical	CAS Number
Acenaphthene	83-32-9
Acenaphthylene	208-96-8
Anthracene	120-12-7
Benzo[a]anthracene	56-55-3
Benzo[a]pyrene	50-32-8
Benzo[b]fluoranthene	205-99-2
Benzo[e]pyrene	192-97-2
Benzo[g,h,i]perylene	191-24-2
Benzo[j]fluoranthene	205-82-3
Benzo(k)fluoranthene	207-08-9
Chrysene	218-01-9
Cyclopenta[c,d]pyrene	27208-37-3
Dibenzo[a,h]anthracene	53-70-3
Dibenzo[a,e]pyrene	192-65-4
Dibenzo[a,h]pyrene	189-64-0
Dibenzo[a,i]pyrene	189-55-9
Dibenzo[a,l]pyrene	191-30-0
Fluoranthene	206-44-0
Fluorene	86-73-7
Indeno(1,2,3-cd)pyrene	193-39-5
1-Methylpyrene	2381-21-7
Naphthalene	91-20-3
Phenanthrene	85-01-8
Pyrene	129-00-0

Table 8.21(j) List of Perfluorinated and Polyfluorinated Compounds (PFCs)

PFC Chemical	CAS Number	Acronym
<i>C9-C14 PFCA-related substances</i>		
Perfluorooctane sulfonic acid and sulfonates	1763-23-1, et al.	PFOS
Perfluorooctane sulfonamide	754-91-6	PFOSA
Perfluorooctane sulfonfluoride	307-35-7	PFOSF/ <u>POSF</u>
N-Methyl perfluorooctane sulfonamide	31506-32-8	N-Me-FOSA
N-Ethyl perfluorooctane sulfonamide	4151-50-2	N-Et-FOSA
N-Methyl perfluorooctane sulfonamide ethanol	24448-09-7	N-Me-FOSE

PFC Chemical	CAS Number	Acronym
N-Ethyl perfluorooctane sulfonamide ethanol	1691-99-2	N-Et-FOSE
Perfluoroheptanoic acid and salts	375-85-9, et. <u>et</u> al.	PFHpA
Perfluorooctanoic acid and salts	335-67-1, et. <u>et</u> al.	PFOA
Perfluorononanoic acid and salts	375-95-1, et. <u>et</u> al.	PFNA
Perfluorodecanoic acid and salts	335-76-2, et. <u>et</u> al.	PFDA
Henicosafuoroundecanoic acid and salts	2058-94-8, et. <u>et</u> al.	PFUdA
Tricosafuorododecanoic acid and	307-55-1, et. <u>et</u> al.	PFDoA
Pentacosafuorotridecanoic acid and salts	72629-94-8, et. <u>et</u> al.	PFTTrDA
Heptacosafuorotetradecanoic acid and salts	376-06-7, et. <u>et</u> al.	PFTeDA
<i>Further perfluorinated carboxylic acids</i>		
Perfluorobutanoic acid and salts	375-22-4, et. <u>et</u> al.	PFBA
Perfluoropentanoic acid and salts	2706-90-3, et. <u>et</u> al.	PFPeA
Perfluorohexanoic acid and salts	307-24-4, et. <u>et</u> al.	PFHxA
Perfluoro(3,7-dimethyloctanoic acid) and <u>salts</u>	172155-07-6, et. <u>et</u> al.	PF-3,7-DMOA
<i>Perfluorinated carboxylic and sulfonic acids under observation</i>		
2,3,3,3-tetrafluoro-2-(heptafluoro propoxy) propionic acid, its various salts and its acyl halides	various	
Perfluorinated sulfonic acids		
Perfluorobutane sulfonic acid and salts	375-73-5, 59933-66-3, et. <u>et</u> al.	PFBS
Perfluorohexane sulfonic acid and salts	355-46-4, et. <u>et</u> al.	PFHxS
Perfluoroheptane sulfonic acid and salts	375-92-8, et. <u>et</u> al.	PFHpS
Henicosafuorodecane sulfonic acid and salts	335-77-3, et. <u>et</u> al.	PFDS
Partially fluorinated carboxylic/sulfonic acids		
7H-Perfluoro heptanoic acid and salts	1546-95-8, et. <u>et</u> al.	7HPFHpA
2H,2H,3H,3H-Perfluoroundecanoic acid and	34598-33-9, et.	4HPFUaA

PFC Chemical	CAS Number	Acronym
salts	<u>et al.</u>	
1H,1H,2H,2H-Perfluorooctane sulfonic acid and salts	27619-97-2, <u>et. et al.</u>	6:2 FTS 1H,1H,2H,2HFPFOS
PFOA-related substances		
1H,1H,2H,2H-Perfluorodecyl acrylate	27905-45-9-8:2	8:2 FTA
1H,1H,2H,2H-Perfluoro-1-decanol	678-39-7-8:2	8:2 FTOH
1H,1H,2H,2H-Perfluorodecanesulphonic acid and its salts	39108-34-4, <u>et. et al.</u>	8:2 FTS
<i>Partially fluorinated linear alcohols</i>		
1H,1H,2H,2H-Perfluoro-1-hexanol	2043-47-2	4:2 FTOH
1H,1H,2H,2H-Perfluoro-1-octanol	647-42-7	6:2 FTOH
1H,1H,2H,2H-Perfluoro-1-decanol	678-39-7	8:2 FTOH
1H,1H,2H,2H-Perfluoro-1-dodecanol	865-86-1	10:2 FTOH
<i>Esters of fluorinated alcohols with acrylic acid</i>		
1H,1H,2H,2H-Perfluorooctyl acrylate	17527-29-6	6:2 FTA
1H,1H,2H,2H-Perfluorodecyl acrylate	27905-45-9	8:2 FTA
1H,1H,2H,2H-Perfluorododecyl acrylate	17741-60-5	10:2 FTA

Table 8.21(k) List of Restricted Volatile Organic Compounds

<u>Volatile Organic Compound</u>	<u>CAS Number</u>
<u>Carbon disulfide</u>	<u>71-43-2</u>
<u>Carbon tetrachloride</u>	<u>75-15-0</u>
<u>Chloroform</u>	<u>67-66-3</u>
<u>Cyclohexanone</u>	<u>108-94-1</u>
<u>1,2-Dichloroethane</u>	<u>107-06-2</u>
<u>1,2-Dichlorethylene</u>	<u>75-35-4</u>
<u>Ethylbenzene</u>	<u>100-41-4</u>
<u>Pentachloroethane</u>	<u>76-01-7</u>
<u>1,1,1,2-Tetrachloroethane</u>	<u>630-20-6</u>
<u>1,1,2,2-Tetrachloroethane</u>	<u>73-34-5</u>
<u>Tetrachloroethylene</u>	<u>127-18-4</u>
<u>Toluene</u>	<u>108-88-3</u>
<u>1,1,1-Trichloroethane</u>	<u>71-55-6</u>
<u>1,1,2-Trichloroethane</u>	<u>79-00-5</u>
<u>Trichloroethylene</u>	<u>79-01-6</u>
<u>Xylenes (meta-, ortho-, para-)</u>	<u>1330-20-7, 108-38-3, 95-47-6, and 106-24-3</u>

A.8.21 The specific limits or criteria for restricted substances are derived from the combination of the 2024 editions of the OEKO-TEX Standard 100, the Supplement PPE & Materials OEKO-TEX Standard 100, and the AFIRM Restricted Substances List. The certification organization should use its best judgment in determining the relevant categories of restricted substances to be evaluated based on the information provided by the manufacturer or supplier for the respective material(s) and component(s).

6. Revise section 9.10.1 and add a new Annex A.9.10.1.1:

9.10.1 Tests for Acceptable Levels of Specific Restricted Substances.

9.10.1.1* Specified components of specified protective elements shall be evaluated for each listed restricted substance or category of restricted substances and not exceed the maximum concentration as specified in Table 9.10.1.1.

Table 9.10.1.1 Test Methods for Evaluating Protective Element Components for Specific Restrictive Substances

Chemical Class or Group	Restricted Substance(s)	Test Method
<u>Acetophenone and 2-Phenyl-2-propanol</u>	<u>Acetophenone and 2-Phenyl-2-propanol</u>	<u>Extraction in acetone or methanol, sonification for 30 minutes at 60°C (140°F); analysis by GC/MS</u>
Acidity and alkaline substances	Measured by reporting pH	Textiles and artificial leather: ISO 3071 using KCl solution
Akyl phenols and ethoxylates	4-tert Butylphenol, nonylphenol, octylphenol, heptaphenol, and pentyphenol	Textiles: ISO 21084 Polymers and other materials: 1 g sample/20 mL THF, sonification for 60 min at 70°C (158°F) with analysis in accordance with ISO 21084
	Nonylphenoethoxylates and octylphenol-ethoxylates	All materials: ISO 18254-1 with analysis using LC/MS or LC/MS/MS
Azo-amines and aryl amine salts	See Table 8.21(b)	All materials: ISO 14362-1 For p-aminoazobenzene: All materials: ISO 14362-3
Bisphenol	<u>Bisphenol A, Bisphenol B, and Bisphenol S</u>	All materials, extraction: 1 g sample/20 ml THF, sonication for 60 minutes at 60°C (140°F), analysis with LC/MS
Chlorinated benzenes and toluenes	See Table 8.21(c)	All materials: EN 17137
<u>Chlorinated paraffins</u>	<u>Short chain and medium chain chlorinated paraffins</u>	<u>ISO 22818</u>
Chlorinated phenols	Pentachlorophenol	All materials: <u>EN 17134-2-DIN 50009</u>

Chemical Class or Group	Restricted Substance(s)	Test Method
Dimethylfumarate Dyes	Tetrachlorophenols Trichlorophenols Dichlorophenols Monochlorophenols	All materials: ISO 16186
	Dimethylfumarate See Table 8.21(d) Navy Blue: Component 1: C ₃₉ H ₂₃ ClCrN ₇ O ₁₂ S ₂ .2Na; and Component 2: C ₄₆ H ₃₀ CrN ₁₀ O ₂₀ S ₂ .3Na	All materials: DIN 54231 All materials: DIN 54231
Flame retardants	See Table 8.21(e)	All materials: ISO 17881-1 and ISO 17881-2
Formaldehyde	Free and partially releasable	All materials: ISO 14184-1
Heavy metals, extractable	Antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, and selenium	All materials: EN 16711-2
	Chromium VI	Textiles: EN 16711-2 with ISO 17075-1 if chromium is detected
Heavy metals, total content	Arsenic, cadmium, and mercury	All materials: EN 16711-2
	Lead	All materials: CPSC-CH-E1002- 08.3
Monomers	Styrene, free	Extraction in methanol; GC/MS, sonication at 60°C (140°F) for 60 minutes
	Vinyl chloride	All materials: ISO 6401
Nitrosamines	See Table 8.21(f)	All materials: ISO 19577
Organotin compounds	Tributyltin (TBT), triphenyltin (TPhT), and chemicals in Table 8.21(g)	All materials: ISO/TS 16179
Ortho-phenylphenol	Ortho-phenylphenol	All materials: DIN 50009 All materials: Combustion ion chromatography in accordance with modified ASTM D7359 or particle induced gamma emission (PIGE) with a minimum detection limit of 0.5 mg/kg All materials: EN 14582 or

Chemical Class or Group	Restricted Substance(s)	Test Method
Perfluorinated and polyfluorinated compounds	Total fluorine	ASTM D7359 All materials: ISO 23702-1 or EN 17681-1 and EN 17681-2 <u>EN 14582 or ASTM D7359</u>
	Total organic fluorine (extractable) individual <u>Individual</u> chemicals in accordance with Table 8.21(j)	<u>All materials: ISO 23702-1 or EN 17681-1 and EN 17681-2</u>
Phthalates	See Table 8.21(h)	Sample preparation for all materials: CPSC-CH-C1001-09.4 Measurement: Textiles: GC/MS, ISO 14389 All materials except textiles: GC/MS
Polycyclic aromatic hydrocarbons (PAH)	See Table 8.21(i)	All materials: AFPS GS 2019:01
Quinoline	Quinoline	All materials: DIN 54231 with methanol extraction at 70°C (158°F)
Solvent residues	Dimethylformamide, and N-methyl-2-pyrrolidone	Textiles: EN 17131 All other materials: ISO/TS 16189
UV stabilizers	2-Benzotriazol-2-yl-4,6-di-tert-butylphenol (UV 320), 2,4-Di-tert-butyl-6-(5-chlorobenzotriazol-2-yl) phenol (UV 327), 2-(2H-Benzotriazol-2-yl)-4,6-di-tert-pentylphenol (UV 328), and 2-(2H-Benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV 350)	EN 62321-6; extraction in THF, analysis by GC/MS)
<u>Volatile organic compounds (VOCs)</u>	<u>See Table 8.21(k)</u>	<u>GC/MS headspace for 45 minutes at 120°C (248°F)</u>

A.9.10.1.1

Identified test methods for restricted substances are based on information in both the 2024 editions of the OEKO-TEX Standard 100 and the AFIRM Restricted Substances List.

9.10.1.2 Alternative test methods shall be permitted if the test method can demonstrate it is capable of providing a lower limit of quantification that is at ~~least 50 percent~~ of the specified limit or below established for the respective substance in Table 8.21(a), unless otherwise stated in Table 9.10.1.1, and that provides an 80 percent or better recovery of the respective substance from the tested material or component.

9.10.1.3 The report for this testing shall include the identification of the recognized component, the specific restricted substances evaluated, and the measured level for each restricted substance against the limits established in Section 8.21.

7. *Revise Annex H.1.2.14 to read as follows:*

H.1.2.14 Other Publications.

AFIRM Restricted Substances List, 2024. Apparel and Footwear International RSL Management Group. 10513 Santa Monica Blvd, Los Angeles, 90025.

Fabian, T., et al., *Firefighter Exposure to Smoke Particulates*, DHS AFG Grant #EMW-2007-FP-02093, Project Number: 08CA31673, 2010.

...

OEKO-TEX Standard 100, 2024, OEKO-TEX Service GmbH, Genferstrasse 23, CH-8002 Zurich.

OEKO-TEX Standard 100 Supplement PPE & Materials for PPE, 2024, OEKO-TEX Service GmbH, Genferstrasse 23, CH-8002 Zurich.

...

US Department of Defense GL/PD 07-13C, *Purchase Description Coat, Army Combat Uniform*, US Army Natick Research, Development and Engineering Center, Attn: RDNS-WPW-C, Kansas Street, Natick MA 01760-5019, 2011.

8. *Revise Annex H.3 to read as follows:*

H.3 References for Extracts in Informational Sections.

NFPA 1801, *Standard on Thermal Imagers for the Fire Service*, 2021 edition.

NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2020 edition.

Substantiation: Overview. Updates to the technical committee agreed-upon restricted substance criteria provided in the second draft for the revision of NFPA 1971 are being proposed to reflect the most recent industry practices related to specific criteria and test methods as reflected in both trade association and independent verification organization services for the range of restricted substances applicable to personal protective equipment, including PPE for firefighter protective clothing. To further clarify the intent for how these requirements can be implemented, additional changes have been proposed in the various sections regarding the recognition of materials and components to the requirements of the NFPA 1971 standard to allow for existing independent verification organizations to ascertain material or component conformity against the new requirements as part of the certification process. To this end, permissive language is introduced to allow for the use of certificates from independent organizations that attest to the qualification of materials and components for meeting restricted substances limits.

Additional changes have been proposed to the purpose statement within the NFPA 1971 portion of NFPA 1970 to clarify already existing practice for addressing hazards that arise from the wearing of firefighting and other emergency responder PPE that have been described in the companion NFPA 1851 document related to the selection, care, and maintenance of PPE addressed in NFPA 1971.

The Need to Address Restricted Substances in Firefighter PPE. Structural firefighting represents one of the most hazardous and dangerous professions to which firefighters can be exposed to a variety of substances emanating from the fireground and other scenes of related

emergency operations. Nevertheless, in the design of specific personal protective equipment (PPE) to protect against the various hazards when the firefighter is subjected to relatively extreme conditions in many fire responses, substances used in the fabrication of PPE can be released and create additional exposure hazards to firefighters, whom are already exposed to a broad range of the fireground substances.

For more than 2 decades, there has been the acknowledgment that certain substances used in the manufacturing of products should be restricted to lessen their potential for causing harm to human health, either directly by contact with the product, or through their release into the environment for which later exposure can occur. The concept of applying limitations for restricted substances in products is not new and in fact, provides an additional level of safety to minimize biocompatibility hazards or unintended chemical exposures that arise from the wearing of PPE.

While PFAS (Per- and Polyfluorinated Alkyl Substances) has been an area of restricted substances of concern to the fire service, there are multiple other substances that include a variety of different chemicals, which if present in PPE, create potential exposure hazards. Various organizations, both within the United States and globally have created lists of these restricted substances and through the detailed investigation of regulations from multiple sources that establish limitations for their use, offer a means for manufacturers of products and suppliers of materials and components for those products to exercise responsible product stewardship to address consistent levels of safety and health for chemical levels in such products.

The application of restricted substance requirements within the NFPA 1971 is an important step in ensuring minimal chemical impacts of the PPE itself to the exposure of individual firefighter wearers of PPE that already engage in ultra-hazardous occupational activities. This activity clearly is within the scope of the project on firefighter PPE as well as the scope of the technical committee for NFPA 1971 and scope/purpose statements of the standard.

Efforts to Address Restricted Substances in NFPA 1971 and Other Documents. Activities to address restricted substances began in 2018 at a December meeting of the Correlating Committee on Fire and Emergency Protective Clothing and Equipment held in Austin, Texas, where a task group was formed to investigate was then referred to as hazardous substances. This task group conducted meetings over the years to determine various approaches for how restricted substances could be addressed in PPE worn by firefighters and other emergency responders. The task group eventually transitioned to the Technical Committee on Structural and Proximity Firefighting Protective Clothing and Equipment where investigation of possible requirements to address restricted substances was considered.

As part of the first draft for the NFPA 1971 requirements within the consolidated NFPA 1970, detailed restricted substances criteria and test methods were put into the first draft. These requirements were later refined in the second draft where there was consensus of the technical committee to move forward with this approach for addressing restricted substance requirements related to the health and safety of PPE worn by firefighters.

Over the past several months following the successful ballot of the second draft for the NFPA 1971 portion of NFPA 1970, the task group continued its work for finding the best way to implement these requirements in a way that addresses the specific need while making it practical for the fire service PPE industry to comply as well as comply with the NFPA Regulations

Governing the Development of Standards.

Throughout the process of developing the proposed changes to NFPA 1970/1971, an open and transparent process is followed. When the proposed TIA was provided to the task group for indicating its approval, there were no voting members indicating their opposition to the proposed TIA at the time the TIA was submitted.

Additional Detail for Substantiating Individual Proposed Changes. Further information, providing the basis for each of the sections for the different proposed changes regarding restricted substances in firefighter PPE is given below:

1. Previously referenced test methods used in the measurement of restricted substances have been updated where in some cases the change has included a new edition for the respective standard test method or the replacement of existing test methods with newer test methods.
2. The Annex for the definition of restricted substance has been expanded to explain why restricted substances are relevant. In addition, a new term has been added for a Restricted Substances Attestation Organization to provide an alternative pathway for demonstrating compliance for the certification organization. The qualities of that Restricted Substances Attestation Organization are defined in Chapter 4.
3. A new section 4.3.10 has been added to provide an alternative approach where an issued certificate and the test results from a Restricted Substances Attestation Organization can be used in lieu of the certification organizations own testing process for the purposes of a recognized component supplier to demonstrate compliance with the requirements of the standard. It is important to point out that certification organization has to recognize the legitimacy of the Restricted Substances Attestation Organization for this option to be applied. This new language includes an Annex section that identifies OEKO-TEX Service as an example of a Restricted Substances Attestation Organization. It is further noteworthy that both principal certification organizations that are involved in the vast majority of protective clothing certification to NFPA 1971 supported this approach.
4. Small changes have been made to the purpose statement in Section 5.1.2 to make it completely unambiguous that the standard addresses hazards that emanate from the gear and not just from the working environment. The proposed language arises from the companion standard – NFPA 1851 – that requires fire departments to identify relevant hazards related to their selection of PPE for protection during structural or proximity firefighting. The very same table that appears in that standard has been put into the related Annex A section that applies to the changes in the purpose statement.
5. The specific criteria for restricted substances identified in a series of tables have been updated to reflect 2024 requirements found in OEKO-TEX Standard 100, OEKO-TEX Standard 100 Supplement for PPE & PPE materials, and the AFIRM Restricted Substances List. Many of the changes are due to omissions and errors in the preparation of the second draft.
6. The referenced test methods for the measurement of restricted substances has been likewise updated to also be consistent with information provided in the OEKO-TEX Standard 100 and the AFIRM Restricted Substances List.
7. Additional references appearing in the updated Annex A language have been proposed to be added to Annex H.

Emergency Nature: The standard contains an error or an omission that was overlooked during the regular revision process. The proposed TIA intends to correct a previously unknown existing hazard. The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation.

- (a) The document contains an error or an omission that was overlooked during a regular revision process.

Due to the extensive amount of content including chemical names, Chemical Abstract Service numbers, and other details, some errors were made where specific content as contained in the second draft would not allow the execution of the requirements without significant interpretation on the part the certification organization. Specific changes have been proposed to provide clarity in the implementation for these requirements. Without these changes, the requirements could not be properly implemented by the certification organization.

- (c) The proposed TIA intends to correct a previously unknown existing hazard.

The proposed requirements have been updated to 2024 levels specific to the current state of criteria where the latest criteria for minimizing potential exposure to restricted substances has been accounted for. This allows the standard to address the most recent requirements for health and safety associated with firefighter PPE.

- (d) The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation.

The proposed changes offer a means of implementing the requirements that is easier, but as rigorous, if not more, than the proposed requirements to address restricted substances in the standard. As a consequence, the fire service benefits by potentially having a larger number of sources of gear that can comply with these requirements.

Anyone may submit a comment by the closing date indicated above. Please identify the TIA number, state whether you SUPPORT or OPPOSE the TIA along with your comment, and forward to the Secretary, Standards Council. [SUBMIT A COMMENT](#)