

Opéra **SPORT**

Product Health & Safety Standard

Manual of Restricted Substances On Garments and Accessories

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00. OpéraSPORT Restricted Substance List

Chemical Substance	Limit Value	Testing Method
Azo Dyes	20mg/kg each Aniline 100mg/kg	LFGB § 64 B82.02-2,-4,-9,-15 EN ISO 14362-1, EN ISO 14362-3 for PAAB Leather: LFGB § 64 B 82.02-3,-9 ISO 17234-1; ISO 17234-2 for PAAB
Blue Color	50 mg/kg	DIN 54231
Carcinogenic Dyes	50 mg/kg	DIN 54231
Allergenic Dyes	75 mg/kg	DIN 54231
Other banned dyestuffs	50 mg/kg	DIN 54231
pH value	4.0 – 7.5	EN ISO 3071 (Textiles) ISO 4045 (Leather)
Formaldehyde	Adults: 75 mg/kg Babies: <16 mg/kg	EN ISO 14184-1 (Textiles) EN ISO 17226-2 (Leather)
Odour	Grade 3	SNV 195651 modified: grading 1-5
PVC	Prohibited	Beilstein and confirmation by IR
Alkylphenol Ethoxylates (APEO) Surfactant, wetting agent residues such as OP, NP, HeP, PeP	10 mg/kg	Pr EN ISO 18254 modified: Determination with GC/MS
Alkylphenol Ethoxylates (APEO) Surfactant, wetting agent residues such as OP, NP, HeP, PeP OP(EO) NP(EO)	100 mg/kg	Pr EN ISO 18254 NP, OP Determination with GC/MS NPEO, OPEO Determination with LC/MS For leather: EN ISO 18218-2 (mod)

Chemical Substance	Limit Value	Testing Method
Phthalates	1000 mg/kg	DIN EN ISO 14389, analysis by GC- MS/ LC-MS Footwear = EN ISO TS 16181
Cadmium for non-textile accessories and components and coating	40 mg/kg	DIN EN 16711-1 Leather: EN ISO 17072-2 Footwear: DIN EN 146202
Lead for non-textile accessories and components and coating	90 mg/kg	DIN EN 16711-1 Leather: EN ISO 17072-2 Footwear: DIN EN 146202
Mercury for non-textile accessories and components and coating	Not allowed	DIN EN 16711-1 Leather: EN ISO 17072-2 Footwear: DIN EN 146202
Nickel for non-textile accessories and components and coating	0,28 µg /cm/week	Nickel release test EN 1811
Heavy metals in packaging materials such as Cadmium, Chromium VI,Mercury,Lead	100 mg/kg (sum)	Others: Acid digestion. ICP analysis. Cr (VI): alkaline digestion UV-Vis analysis.
Aluminum as extractable heavy metal	Limit value 200 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Antimony as extractable heavy metal	Limit value 30 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Arsenic as extractable heavy metal	Limit value 1.0 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Cadmium as as extractable heavy metal	For Babies: 0,2 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Chromium (Cr) as as extractable heavy metal	Textiles: Limit value: 2.0 mg/kg For Babies 1,0 mg/kg Leather: Limit value: 200 mg/kg For Babies 1,0 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1

Chemical Substance	Limit Value	Testing Method
Chromium (VI) Cr (VI) as extractable heavy metal	Limit value 0.5 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Cobalt as extractable heavy metal	Limit value 4.0 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Copper as extractable heavy metal	For Babies 1,0 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Lead as extractable heavy metal	Limit value 1.0 mg/kg For Babies 0,2 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Mercury as extractable heavy metal	Limit value 0.02 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Nickel as extractable heavy metal	Textiles: Limit value 4.0 mg/kg For Babies 1 mg/kg Metallic and metalized surfaces: Limit value 1.0 mg/kg.	DIN EN 16711-2 Leather: EN ISO 17072-1
Titanium (Leather only) as extractable heavy metal	Limit value 200 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Zirconium (Leather only) as extractable heavy metal	Limit value 200 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Chromium VI (Leather only) as extractable heavy metal	Not allowed Limit value 1 µg /m ²	ISO 17075
Perfluorooctane sulfonate and related	Not allowed Limit value 1 µg /m ²	CEN/TS 15968
Perfluorooctanoic acid	Textiles: Limit value: 2.0 mg/kg For Babies 1,0 mg/kg Leather: Limit value: 200 mg/kg For Babies 1,0 mg/kg	CEN/TS 15968
Other PFCs	Limit value 0,1 mg/kg Baby only: Limit value 0,05mg/kg	CEN/TS 15968

Chemical Substance	Limit Value	Testing Method
Perfluorinated Carbonic acids, Perfluorinated & partly fluorinated sulfonic acids	Baby only: Limit value 0,05mg/kg	CEN/TS 15968
Partly fluorinated linear alcohols and esters with acrylic acid	Baby only: Limit value 0,05mg/kg	CEN/TS 15968
Flame retardants	Not allowed Limit value 30 mg/kg each	DIN EN ISO 17881-1-2
Lead as extractable heavy metal	Limit value 1.0 mg/kg For Babies 0,2 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Mercury as extractable heavy metal	Limit value 0.02 mg/kg	DIN EN 16711-2 Leather: EN ISO 17072-1
Short chain chlorinated paraffin's (SCCP,C10-C13)	Not allowed Limit value 100 mg/kg	DIN EN ISO 18219 (modified)
Pesticides (for natural materials only)	Not allowed Limit value 1 mg/kg	Extraction with acetone, silica gel clean up, analysis with GC-MS
Pentachlorophenol	Limit value 0.5 mg/kg Baby: 0,05 mg/kg	LFGB §64 82.02.8 DIN EN ISO 17070 (Modified KOH extraction followed by derivatization)
Tetrachlorophenols Sum	Limit value 0.5 mg/kg Baby: 0,05 mg/kg	LFGB §64 82.02.8 DIN EN ISO 17070 (Modified KOH extraction followed by derivatization)
Trichlorophenols sum	Limit value 2 mg/kg Baby: 0,2 mg/kg	LFGB §64 82.02.8 DIN EN ISO 17070 (Modified KOH extraction followed by derivatization)
Dichlorophenols	Limit value 3 mg/kg Baby: 0,5 mg/kg	LFGB §64 82.02.8 DIN EN ISO 17070 (Modified KOH extraction followed by derivatization)

Chemical Substance	Limit Value	Testing Method
Monochlorophenols	Limit value 3 mg/kg Baby: 0,5 mg/kg	LFGB §64 82.02.8 DIN EN ISO 17070 (Modified KOH extraction followed by derivatization)
Orthophenylphenol	Limit value 25 mg/kg Baby: 10 mg/kg	LFGB §64 82.02.8 DIN EN ISO 17070 (Modified KOH extraction followed by derivatization)
Organic Tin Compounds	Not allowed Limit value 1.0 mg/kg (TBT,TPHT) Limit value 2.0 mg/kg (others)	DIN SPEC 91179/ DIN CEN ISO/TS 16179 (modified)
(Di-,Tri-,Tetra-,Penta-,Hexa)Chlorinated Benzenes	Not allowed Limit value 1.0 mg/kg sum	DIN 54232
(Mono-,Di-,Tri-,Tetra-Penta)Chlorinated Toluenes	Not allowed Limit value 1.0 mg/kg sum	DIN 54232
Short chain chlorinated paraffin's (SCCP,C10-C13)	Not allowed Limit value 100 mg/kg	DIN EN ISO 18219 (modified)
Dimethyl Fumarate	Not allowed Limit value 0.1 mg/kg	DIN EN ISO/TS 16186
Benzene	Not allowed Limit value 1.0 mg/kg	Headspace GC-MS
Toluene	Not allowed Limit value 10 mg/kg	Headspace GC-MS
Other Solvent Residues / Volatile Organic Compounds	Limit value 10 mg/kg each	Headspace GC-MS
Benzo(a)pyrene	Limit value 1.0 mg/kg; Baby: 0.5 mg/kg	AfPS GS 2014: 01 PAK
Benzo(e)pyrene	Limit value 1.0 mg/kg; Baby: 0.5 mg/kg	AfPS GS 2014: 01 PAK

Chemical Substance	Limit Value	Testing Method
Benzo(a)anthracene	Limit value 1.0 mg/kg; Baby: 0.5 mg/kg	AfPS GS 2014: 01 PAK
Chrysene	Limit value 1.0 mg/kg; Baby: 0.5 mg/kg	AfPS GS 2014: 01 PAK
Benzo(b)fluoranthene	Limit value 1.0 mg/kg; Baby: 0.5 mg/kg	AfPS GS 2014: 01 PAK
Benzo(i)fluoranthene	Limit value 1.0 mg/kg; Baby: 0.5 mg/kg	AfPS GS 2014: 01 PAK
Benzo(k)fluoranthene	Limit value 1.0 mg/kg; Baby: 0.5 mg/kg	AfPS GS 2014: 01 PAK
Dibenz(a,h)anthracene	Limit value 1.0 mg/kg; Baby: 0.5 mg/kg	AfPS GS 2014: 01 PAK
Other PAH	Sum of all 18PAHs Limit value 10 mg/kg; Baby: 5 mg/kg	AfPS GS 2014: 01 PAK
2-Mercaptobenzothiazol (2-MBT)	Not allowed Limit value 0.1 mg/kg	Extraction with acetonitrile 1h/70°c.
Bisphenol A	Limit value 0,1%	Solvent extraction and analysis by GC-MS
Phenol	Limit value 50 mg/kg; Baby: 20 mg/kg	Solvent extraction and analysis by GC-MS

01. Dyestuffs

What are they?

Dyestuffs are substances that can yield a dye or that can be used as a dye, especially when in solution.

1.1 Azo Dyes

What are they?

These are chemical substances which may form part of the structure of certain dyes-azo dyes-and which, under certain conditions, may be released and absorbed by the human body through perspiration and saliva. The Azo dyes are commonly used as colorants for textile and leather dyeing.

Toxicology

The Azo group is susceptible to reducing giving rise to the formation of aromatic rings (arylamines), some of which are proven to be potentially carcinogenic.

Substance Analyzed

NAME	CAS NUMBER
4-Aminobiphenyl	92-67-1
Benzidine	92-87-5
4-Chloro-o-toluidine	95-69-2
2- Naphthylamine	91-59-8
o-Aminoazotoluene	97-56-3
2-Amino-4-nitrotoluene	99-55-8
p-Chloroaniline	106-47-8
2,4-Diaminoanisoole	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' -Methylene-bis-(2-chloroaniline)	101-14-4
4,4' -Oxydianiline	101-80-4
4,4' -Thiodianiline	139-65-1
0 -Toluidine	95-53-4
2,4 -Toluyldiamine	95-80-7
2,4 -Toluyldiamine	95-80-7
2,4,5 -Trimethylaniline	137-17-7
o -Anisidine (2-Methoxyaniline)	90-04-0
4 -Aminoazobenzene	60-09-3

1.2 Carcinogenic Dyes

What are they?

These dyes can be used to dye animal based fibers such as wool, alpaca, silk, or plant based fibers such as cotton, linen, hemp, or synthetic fibers such as nylon, or acrylic.

Toxicology

These dyes are considered to be acutely toxic to humans when ingested. Dermal exposure may cause skin rashes and irritation. Chronic exposure to benzidine in humans may affect the bladder. Animal studies have reported various tumor types at multiple sites from benzidine exposure via oral, inhalation, and injection exposure. Animal studies also showed effects on blood, liver, kidney, and the central nervous system.

Substance Analyzed

NAME	CAS Number
Acid Red 26	3761-53-3
Basic Red 9	569-61-9
Basic Violet 14	632-99-5
Direct Black 38	632-99-5
Direct Blue 6	2602-46-2
Pigment Yellow 34	1344-37-2
Direct Red 28	537-58-0
Disperse Blue 1	2475-45-8
Disperse Orange 11	82-28-0
Disperse Yellow 3	2832-40-8
Pigment Red 104	12646-85-8

1.3 Allergenic Dyes

What are they?

Allergenic disperse dyes are dyes that will cause allergy to skin, mucous membrane or respiratory passage allergy of human body or animal. These dyes are mainly used in dyeing of polyester, polyamide and cellulose acetate fiber.

Toxicology

Allergenic dyes can cause severe eczema or dermatitis when dyes bleed onto skin. Many dyes are water soluble and sweat from the body can have the same effect.

Substance Analyzed

NAME	CAS Number
Disperse Blue 1	2475-45-8
Disperse Blue 3	2475-46-9
Disperse Blue 7	3179-90-6
Disperse Blue 26	3860-63-7
Disperse Blue 35	12222-75-2
Disperse Blue 102	12222-97-8
Disperse Blue 106	12223-01-7
Disperse Blue 124	61951-51-7
Disperse Orange 1	258-69-3
Disperse Orange 3	730-40-5
Disperse Orange 37/76	13301-61-6
Disperse Red 1	2872-52-8
Disperse Red 11	2872-48-2
Disperse Red 17	3179-89-3
Disperse Yellow 1	119-15-3
Disperse Yellow 3	2832-40-8
Disperse Yellow 9	6373-73-5
Disperse Yellow 39	12236-29-2
Disperse Yellow 49	54824-37-2
Disperse Brown 1	23355-64-8

02. Formaldehyde

What are they?

It is a volatile chemical used in the textile industry as a preservative, anti-wrinkling and anti-shrinking agent for cotton products, dyeing and printing fixative agents.

Toxicology

It is strongly allergenic through contact with skin, eyes, inhalation and digestion. Furthermore, it is potentially a human carcinogenic agent and is also associated with allergic asthma.

03. Alkylphenol

What are they?

Alkylphenols are used as emulsifiers, wetting agents, detergent auxiliaries in scouring and bleaching processes. Some derivatives have been used as additives in plastics such as in PVC or modified polystyrene.

Toxicology

Alkylphenols are persistent and bioaccumulative toxic substances that may have harmful effects on estrogenic activity and represent a risk factor to lymphocytes, complications in the placenta and in the umbilical cord. They may be toxic in aquatic organisms and upset the sexual development in other types of organisms.

04. Phthalates

What are they?

They are chemical compounds coming from phthalic acids. These have plasticizing properties and are often added to PVC for more flexibility. It can be used as plastic coatings in both textiles and in leather.

Toxicology

Phthalates are reproductive and developmental toxicants in animals and suspected endocrine disruptors in humans. Consumer products containing phthalates can result in human exposure through direct contact and use.

Substance Analyzed

NAME	CAS NUMBER	ACRONYM
Butylbenzylphthalate	85-68-7	BBP
Dibutylphthalate	84-74-2	DBP
Di-(2-ethylhexyl)-phthalate	117-81-7	DEHP
Di-(2-methoxyethyl)-phthalate	117-82-8	DMEP
Di-C6-8-branched alkylphthalates. C7 rich	117-82-8	DIHP
Di-C7-11-branched and linear alkylphthalates	68515-42-4	DHNUP
Di-hexylphthalate, branched and linear	68515-50-4	DHxP
Di-iso-butylphthalate	84-69-5	DIBP
Di-iso-decylphthalate	26761-40-0	DIDP
Di-iso-nonylphthalate	68515-49-1	DINP
Di-n-hexylphthalate	28553-12-0	DHP
Di-n-octylphthalate	68515-48-0	DNOP
Di-pentylphthalate, (n-, iso- or mixed)	84-75-3	DPP
di-C6-10-alkylphthalates; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with $\geq 0.3\%$ of dihexyl phthalate (EC 201-559-5)	117-84-0	N/A

05. Heavy Metals

What are they?

All heavy metals can be absorbed by the natural fibers through the soil.

5.1 Cadmium

What are they?

Cadmium is a heavy metal and can be found in plastic materials such as PVC, polyurethane, polyethylene and in the cadmium plating of metal accessories and painted metals. It is also used for production of color pigments of textile dyes and to treat textile products.

Toxicology

Cadmium is poisonous if ingested, inhaled or injected. It can be carcinogenic and may cause tumors. It may also have a harmful effect on reproduction. When accumulated in bones, it may have pathological effects such as osteoporosis and rickets, among others. It is linked to hypertension and heart disease.

Cadmium can be accumulated in the liver and kidneys in people. In exceptional cases, too much cadmium can lead to kidney failure.

5.2 Lead

What are they?

Lead is used in the textile industry as a component of dyestuffs and can also be found in certain pigments.

Toxicology

Lead can be absorbed by inhalation, ingestion, and through the skin. Lead can produce weakness in the fingers and wrists, anemia and damage to the brain, kidneys and sperm producing organs.

5.3 Mercury

What are they?

Mercury is used as a preservative for textiles.

Toxicology

Mercury when inhaled can cause stinging throat pain, headache, nausea, loss of appetite and muscle weakness. When mercury comes into contact with the eye and skin, it can cause reddening and irritation. When mercury is ingested, it can cause vomiting, diarrhea, loss of appetite and muscle weakness. Prolonged or repeated exposure may cause damage to the kidneys, brain and nervous system.

5.4 Nickel

What are they?

Nickel is a silver metallic element and is used frequently in combination with other metals such as iron, copper, chrome and zinc in order to produce alloys mixtures. It can be found in pigments, dyes, metal coatings and alloys such as buttons, zips, buckles and snap fasteners.

Toxicology

Some nickel compounds can be carcinogenic to humans when directly ingested or inhaled in very high doses. It can also cause lung and nasal sinus cancers, or cause an allergic reaction and sensitization effect through direct and prolonged skin contact with nickel.

5.5 Antimony

What are they?

Antimony is a heavy metal which can be found in some finishing processes as a fire retardant and other polyester and polyurethane catalysts.

Toxicology

Antimony may have a negative impact of a hormonal nature and is considered to be a potentially carcinogenic agent in humans.

5.6 Arsenic

What are they?

Arsenic is a heavy metal which can be found in natural fibers due to the use of biocides and pesticides. It can also be found in metal accessories.

Toxicology

Acute exposure to arsenic may cause fever, anorexia, liver enlargement or even death. Chronic exposure may cause poisoning of the nervous system, liver failure and peripheral vascular illness, which may cause gangrene in the lower limbs. It can be applied as a pesticide action on textiles.

5.7 Chromium

What is it?

Chromium is used in the textile dyeing process as a color stabilizer to prevent color from bleeding and fading.

Toxicology

Chromium when inhaled can irritate respiratory tracts and increase the risk of lung, nasal and sinus cancer. When coming into contact with skin, it can cause severe dermatitis and painless skin ulcers.

5.8 Cobalt

What is it?

Cobalt is a hard gray metal that occurs naturally and is used in the textile dyeing process.

Toxicology

Exposure to cobalt can harm the eyes, skin, heart, and lungs. It may also cause cancer.

06. Perfluorinated Chemicals

What are they?

The Perfluorinated Chemicals are repellent to water and oils. They may appear in waterproof textiles with anti-stain treatments.

Toxicology

The Perfluorinated Chemicals are persistent and poorly biodegradable organic compounds. Human health effects from exposure to low environmental levels of PFCs are unknown. Studies of laboratory animals given large amounts of PFCs have found that some PFCs may affect growth and development, reproduction, and injure the liver. More research is needed to assess the human health effects of exposure to PFCs.

Substance Analyzed

NAME	CAS NUMBER	ACRONYM
Perfluoroundecanoic acid /heneicosaf luoroundecanoic acid	2058-94-8	PFUdA
Perfluorotridecanoic acid /pentacosaf luorotridecanoic acid	72629-94-8	PFTrDA
Perfluoroheptanoic acids	Various	PFHpA
Perfluorononanoic acids	Various	PFNA
Perfluoroundecanoic acid /tricosaf luoroundecanoic acid	305-55-1	PFDoA
Perfluorotetradecanoic acid /heptacosaf luorotetradecanoic acid	376-06-7	PFTeDA
Perfluorodecanoic acids	Various	PFDA

6.1 Perfluorooctane sulfonate and related

What are they?

Perfluorooctane sulfonate and related chemicals are repellent to water and oils. They may appear in waterproof textiles with anti-stain treatments.

Toxicology

Exposure to Perfluorooctane sulfonate can cause chemical driven toxicity (known as hepatotoxicity), neurotoxicity, reproductive toxicity, immunotoxicity, thyroid disruption, cardiovascular toxicity, lung damage (known as pulmonary toxicity), and kidney damage (known as renal toxicity) in laboratory animals and many in vitro human systems. It can cause birth defects or other reproductive harm. Exposure to the chemical may increase the risk of cancer.

6.2 Perfluorooctanoic acid

What are they?

Perfluorooctanoic acid is used to make coatings and products that are heat, oil, stains, and water resistant.

Toxicology

Higher levels of Perfluorooctanoic acid present in a person's body may be associated with higher cholesterol, changes to liver function, reduced immune response, thyroid disease, and increased kidney and testicular cancer.

6.3 Perfluorinated Carbonic acids, Perfluorinated & partly fluorinated sulfonic acids

What are they?

Perfluorinated Carbonic acids and others are a group of persistent chemicals that are used to produce water resistant coatings.

Toxicology

Exposure to Perfluorinated Carbonic acids and others may cause hepatotoxicity, immunotoxicity, developmental toxicity, reproductive toxicity, neurotoxicity, and cancer.

Substance Analyzed

NAME	CAS NUMBER
Perfluorobutanoic acid	375-22-4
Perfluoropentanoic acid	2706-90-3
Perfluorohexanoic acid	307-24-4
Perfluoro 3,7-dimethyloctanoic acid	172155-07-6
Perfluorobutane sulfonic acid	375-73-5
Perfluorohexane sulfonic acid	355-46-4
Perfluoroheptane sulfonic acid	375-92-8
Henicosafluorodecane sulfonic acid	335-77-3
7H-Perfluoro heptanoic acid	1546-95-8
2H,2H,3H,3H-Perfluoroundecanoic acid	34598-33-9
1H,1H,2H,2H-Perfluorooctanoic sulfonic acid	27619-97-2

6.4 Partly fluorinated linear alcohols and esters with acrylic acid

What are they?

Partly fluorinated linear alcohols and esters with acrylic acid are used to produce water resistant coatings.

Toxicology

Exposure to partly fluorinated linear alcohols and esters with acrylic acid may cause irritation in lungs, nose and throat.

Substance Analyzed

NAME	CAS NUMBER
1H,1H,2H,2H-Perfluoro-1-hexanol	2043-47-2
1H,1H,2H,2H-Perfluoro-1-octanol	647-42-7
1H,1H,2H,2H-Perfluoro-1-decanol	678-39-7
1H,1H,2H,2H-Perfluoro-1-dodecanol	865-86-1
1H,1H,2H,2H-Perfluorooctyl acrylate	17527-29-6
1H,1H,2H,2H-Perfluorodecyl acrylate	27905-45-9
1H,1H,2H,2H-Perfluorododecyl acrylate	17741-60-5

07. Flame Retardants

What are they?

Flame retardants are a diverse group of chemicals that are added mainly to textile products to prevent or delay the spread of fire.

Toxicology

Exposure to flame retardants can cause neurological damage, hormone disruption, and cancer. They are also linked to endocrine disruption and thyroid dysfunction.

Substance Analyzed

NAME	CAS NUMBER	ACRONYM
Boric acid	10043-35-3	
Decabromodiphenylether	11113-50-1	decaBDE
Diboron trioxide	1163-19-5	
Disodium tetraborate, anhydrous	1303-96-4 1330-43-4 12179-04-3	
Heptabromodiphenylether		heptaBDE
Hexabromocyclododecane	25637-99-4	HBCDD
Hexabromodiphenylether	36483-60-0	hexaBDE
Octabromodiphenylether	32536-52-0	octaBDE
Pentabromodiphenylether	32534-81-9	pentaBDE
Polybrominated biphenyls	59536-65-1	PBB
Tetrabromodiphenylether	various	tetraBDE
Tetraboron disodium heptaoxide, hydrate	12267-73-1	
Trisphosphat (2,3-dibromopropyl)	126-72-7	TRIS
Tris-(2-chloroethyl) phosphate	115-96-8	TCEP
Tris-(1,3-dichlor-2propyl) phosphate	13674-87-8	TDCPP
Tri(aziridiny)-phosphinoxid	545-55-1	TEPA
Trixylylphosphate	25155-23-1	TXP

08. Short Chain Chlorinated Paraffins (SCCP)

What are they?

The SCCP are a group of synthetic compounds mainly used to treat metals and greased leather and in paints and coatings. They can be found in textile and leather.

Toxicology

SCCP are considered hazardous to the environment because they are harmful to aquatic organisms and may cause harmful effects to the environment in the long term. SCCP may penetrate the organism by inhalation, ingestion or through contact with the skin, although these substances are not easily absorbed by the human body. No chronic short-term effects have been detected from exposure to such substances, although they may have serious long-term effects on health. It is suggested that SCCP could be carcinogenic but no firm evidence exists yet to confirm that conclusion.

09. Pesticides

What are they?

Pesticides are substances used to combat insecticides. They can be found in natural fibers of vegetable origin such as cotton, linen and ramie and animal origin such as wool and silk.

Toxicology

Pesticides promote various carcinogenic pathologies and alter the hormone system and generate the risk of infertility, as well as causing human malformation during pregnancy. Pesticides also contribute to the development of chronic illnesses such as diabetes and increase the risk of suffering other neuro-degenerative illnesses like Alzheimer's and Parkinson's disease. They may also have a negative impact on neurological development and child behavior.

Substance Analyzed

NAME	CAS NUMBER
2-(2,4,5-Trichlorophenoxy) propionic acid, salts &	93-76-5
compounds ("2,4,5-T")	94-75-7
2,4-Dichloropenoxyacetic	86-50-0
Azinophosmethyl	2642-71-9
Azinophosethyl	309-00-2
Aldrine	4824-78-6
Bromophos-ethyl	2425-06-1
Captafol	63-25-2
Carbaryl	57-74-9
Chlordane	6164-98-3
Chlordimeform	470-90-6
Chlorfenvinphos	56-72-4

Cyfluthrin	68359-37-5
Cyhalothrin	91465-08-6
Cypermethrin	52315-07-8
DEF	78-48-8
Deltamethrin	52918-63-5
DDD	53-19-0, 72-54-8
DDE	3424-82-6, 72-55-9
DDT	50-29-3, 789-02-06
Diazinon	333-41-5
Dichlorprop	120-36-2
Dicrotophos	141-66-2
Dieldrine	60-57-1
Dimethoate	60-51-5

Dinoseb its salts and acetate	88-85-7
Endosulfane, alpha	959-98-8
Endosulfane, beta	33213-65-9
Endrine	72-20-8
Esfenvalerate	66230-04-4
Fenvalerate	51630-58-1
Heptachlor	76-44-8
Heptachloroepoxide	1024-57-3
Hexachlorobenzene	118-74-1
Hexachlorcyclohexane, alpha	319-84-6
Hexachlorcyclohexane, beta	319-85-7
Hexachlorcyclohexane, gamma	319-86-8
Isodrin	465-73-6

Kelevane	4234-79-1
Kepone	143-50-0
Lindane	58-89-9
Malathion	121-75-5
MCPA	94-74-6
MCPB	94-81-5
Mecoprop	93-65-2
Metamidophos	10265-92-6
Methoxychlor	72-43-5
Mirex	2385-85-5
Methoxychlor	6923-22-4
Parathion	56-38-2
Parathion-methyl	298-00-0

Perthrane	72-56-0
Phosdrin/ Mevinphos	7786-34-7
Propethamphos	31218-83-4
Profenophos	41198-08-7
Quinalphos	13583-03-8
Strobane	8001-50-1
Telodrin	297-78-9
Toxaphene	8001-35-2
Trifluralin	1582-09-8

10. Phenols

What are they?

Phenols are substances which are used as pesticides in industrial and domestic applications. It can be used as a preservative in textiles and leather goods.

Toxicology

Phenols are highly toxic if ingested or inhaled and highly irritant. Exposure to phenol may cause irritation to the skin, eyes, nose, throat, and nervous system. Exposure to phenol may cause weight loss, weakness, exhaustion, muscle aches, and pain. Severe exposure can cause liver and or kidney damage, skin burns, tremor, convulsions and twitching.

Substance Analyzed

NAME	CAS NUMBER
Pentachlorophenol	87-86-5
2,3,5,6-Tetrachlorophenol	935-95-5
2,3,4,6- Tetrachlorophenol	58-90-2
2,3,4,5- Tetrachlorophenol	4901-51-3
2,3,4- Trichlorophenol	15950-66-0
2,3,5- Trichlorophenol	933-78-8
2,3,6- Trichlorophenol	933-75-5
2,4,5- Trichlorophenol	95-95-4
2,4,6- Trichlorophenol	88-06-2
3,4,5- Trichlorophenol	609-19-8
2,3- Dichlorophenol	576-24-9
2,4- Dichlorophenol	120-83-2
2,5- Dichlorophenol	583-78-8
2,6- Dichlorophenol	87-65-0
3,4- Dichlorophenol	95-77-2
3,5- Dichlorophenol	591-35-5
2- Chlorophenol	95-57-8
3- Chlorophenol	108-43-0
4- Chlorophenol	106-48-9

11. Organic Tin Compounds

What are they?

Organic tin compounds are used as catalysts in the production of PU foam and silicones and agricultural biocides. They can also be used as antifoam agents, fungicides and in PVC as stabilizers and plasticisers.

Toxicology

Organic tin compounds can cause both local effects and systemic effects. Locally, it may cause skin irritation and eye irritation when coming into contact with skin and eyes. It can also cause irritation to the skin and the mucous membranes in the respiratory system.

Systematically, it may cause general sickness, nausea, gastric pains, buccal dryness, sight problems, and transitory liver failure.

Substance Analyzed

NAME	ACRONYM
Dibutyltin	DBT
Dimethyltin	DMT
Diocetyl tin	DOT
Diphenyltin	DPhT
Diphenyltin	DPT
Monomethyltin	MMT
Monobutyltin	MBT
Monooctyltin	MOT
Monophenyltin	MPhT
Tetrabutyltin	TeBT
Tetraethyltin	TeET
Tributyltin	TBT
Tricyclohexyltin	TCyHT
Trimethyltin	TMT
Triocetyl tin	TOT
Triphenyltin	TPhT
Tripropyltin	TPT

12. Dimethyl Fumarate

What are they?

Dimethyl Fumarate is a chemical substance used in the textile industry as a biocide to prevent the formation of mold in wood and leather products, during storage and/or transport in humid climates. Dimethyl Fumarate can be found in textiles made from natural fibers and in leather and imitation- leather products.

Toxicology

Dimethyl Fumarate is a potent skin sensitizer which may cause serious skin problems.

13. Benzenes and Toluenes

What are they?

Benzenes and toluenes are chemical substances that are of low environmental biodegradability. They may be used in the dyeing processes of fibers as a transporter vehicle in order to ensure good penetration of the dye molecules in the fiber. They are basically found in certain polyester, wool and or silk items.

Toxicology

Benzenes and toluenes are potentially carcinogenic and endocrine disruptors.

14. Volatile Organic Compounds

What are they?

Volatile Organic Compounds (VOCs) are human-made chemicals that are used in the manufacturing process of many paints and solvents during the production of dyestuffs and pigments to print inks and to remove stains. These compounds are emitted into the atmosphere.

Toxicology

VOCs can cause short and long-term health defects in humans such as respiratory irritation, headaches, nausea and dizziness. It may also cause cancer and damage to the central nervous system.

Substance Analyzed

NAME	CAS NUMBER
1,1,1-trichloroethane	71-55-6
Cyclohexanone	108-94-1
Isophorone	78-59-1
Tetrachloroethylene (perchloroethylene)	127-18-4
Acetone	67-64-1
Ethyl acetate	141-78-6
Methyl ethyl ketone (MEK)	78-93-3
Xylenes (Dimethylbenzenes)	1330-20-7

15. Polycyclic Aromatic Hydrocarbons

What is it?

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas. These Polycyclic aromatic hydrocarbons can be found in the plastic and rubber parts of a wide range of consumer articles. They are present as impurities in some of the raw materials used in the production of such articles. They are not added intentionally and do not perform any specific functions as constituents of the plastic or rubber parts.

Toxicity

Polycyclic aromatic hydrocarbons has shown carcinogenic effects to humans and has shown various toxicological effects such as haematotoxicity (effects on the blood), reproductive and developmental toxicity and immunotoxicity to animals.

Substance Analyzed

NAME	CAS NUMBER
Acenaphthene	83-32-9
Anthracene	120-12-7
Fluorene	86-73-7
Phenanthrene	85-01-8
Pyrene	129-00-0
Benzo[a]anthracene (EU-PAH)	56-55-3
Benzo[a]pyrene (EU-PAH)	50-32-8
Benzo[b]fluoranthene (EU-PAH)	205-99-2
Benzo[e]pyrene (EU-PAH)	192-97-2
Acenaphthylene	208-96-8
Benzo(ghi)perylene	191-24-2
Fluoranthene	206-44-0
Indeno (1,2,3 -cd)pyrene	193-39-5
Naphthalene	91-20-3
Benzo[j]fluoranthene (EU-PAH)	205-82-3
Benzo[k]fluoranthene (EU-PAH)	207-08-9
Chrysene (EU-PAH)	218-01-9