BETTER MARKET SURVEILLANCE AND PRODUCT COMPLIANCE

for textile products

Risk-based textile testing

REACH 4 textiles

Every year, about 28 billions of garments circulate across Europe, 80% of which are imported from outside the EU and its jurisdiction. Inevitably, such huge volumes are a challenge for market surveillance authorities who have to ensure that non-compliant dangerous products are kept away from EU citizens.

The European Union has the world's most comprehensive chemical legislation to protect consumers, the environment and, theoretically, the competitiveness of responsible companies.

The EU chemical legislation is constantly evolving, widening its scope and ambition. New restrictions imply new legal obligations and additional costs for authorities and sectors such as the European textile value chain.

However, this advanced regulatory framework is not supported by an equally advanced or effective EU-wide control system capable of ensuring compliance especially in the case of imported products.

A WELL-FUNCTIONING EU MARKET SURVEILLANCE SYSTEM IS AN ESSENTIAL PREREQUISITE TO PROTECT CITIZENS, THE ENVIRONMENT AND THE COMPETITIVENESS OF RESPONSIBLE BUSINESSES. A STRONG COLLABORATION BETWEEN AUTHORITIES, THE TEXTILE AND CLOTHING INDUSTRY AND TESTING LABORATORIES IS URGENTLY NEEDED TO ADDRESS THIS ISSUE.

European Commission, Directorate General XII
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RISK BASED SAMPLING PLAN

THE REACH4TEXTILES PROJECT AIMS AT

- Increasing knowledge on market surveillance functioning by and working on a risk-based approach to identify products (and chemicals) at higher risk.
- Maximising the chances on finding substances of concern when analysing textile garments.
- Refining relevant standard testing methods for chemicals

With this leaflet, the REACH4Textiles project team will explain the methodology behind the risk-based approach for sample selection and testing, which was eventually reviewed by chemical experts and the members of the Advisory Board.

IN GENERAL, THE RISK-BASED SAMPLING PLAN CONTAINS 2 MAIN PILLARS WHICH ARE IMPORTANT TO EXPLAIN IN DETAIL:

RISK BASED SAMPLING

Competent authorities can use the following steps to initiate better market surveillance on textile products.

- Focus on specific textile articles: PVC/PU coated materials, prints, leather, recycled wool, textile articles with claims (water-, dirt repellent, easy ironing, stain- odor proof, ...).
  - FTIR-spectroscopy can be used to identify the chemical composition.
- Buy enough material that all parts of the complex article can be tested.
- Complex articles from the Middle East have higher risk

RISK BASED TESTING

Based on the results of 2 test campaigns and testing of 160 complex articles on several chemicals (x amount of tests), a risk based testing matrix was designed. This matrix indicates exactly what specific chemicals to test on defined complex articles. In certain cases, mixing of samples for testing is possible in order to reduce costs.

Every component of a complex article has to be tested separately.

A SINGLE COMPONENT IN A COMPLEX ARTICLE CAN BE DEFINED AS AN OBJECT, WHICH:

- is given a special shape, surface or design during production, which determines its function to a greater extent than its chemical composition (definition REACH)
- is a knitted, woven or non-woven fabric
- is made up of different materials, especially non-textile particulates
- has different colors
- and is sewn or glued together

Complex articles should be split up into separate components in order to be able to define what chemical tests are necessary. Extra information on the composition, claims, origin, ... of the material could also be incorporated into the data. The easiest way of reporting is shown below.

SAMPLE CODE

Sample ID #

MATERIAL/ SPECIAL TREATMENTS

50% polyester, 32% polyamide, 18% elastane

COMPONENTS

1. Main flower fabric
2. Black lining
3. Black mesh
4. Pads
5. Elastic breast
6. Black elastic shoulder
7. Flower elastic shoulder

MADE IN

"Country of origin"

TESTING

1+2+3+5+6+7: Bisphenols, Quinoline, NPEO

1-3: Carcinogenic Amines

5-7: PAHs

4: Organotin

The same approach and guidelines can be used by Market Surveillance Authorities to easily report on chemical testing of textile consumer products.

RISK-BASED TESTING MATRIX

	CARCINOGENIC AMINES	PHTHALATES	NPEO	CADMIUM	PAH'S	PFC'S	CHROMIUM VI
COLOURED FABRICS (MIDDLE EAST)							
PRINTS							
PLASTIC, RUBBER PARTS (TEETH ZIPPER, BUCKLE, BUTTON)							
WATER RESISTANT, REPELLENT FABRICS							
TEXTILES WITH IRON FREE FINISH							
PU-COATED MATERIALS/PU PRINTS							
PVC-COATED MATERIALS							
LEATHER							
PA/ELASTANE OR MIXTURES							
WOOL, RECYCLED WOOL							IF DARK
METAL PARTS							
ELASTIC PARTS							
FOAM							
SILICONE FROM CHINA							
PRINTED SILK							

RELEVANT TO TEST

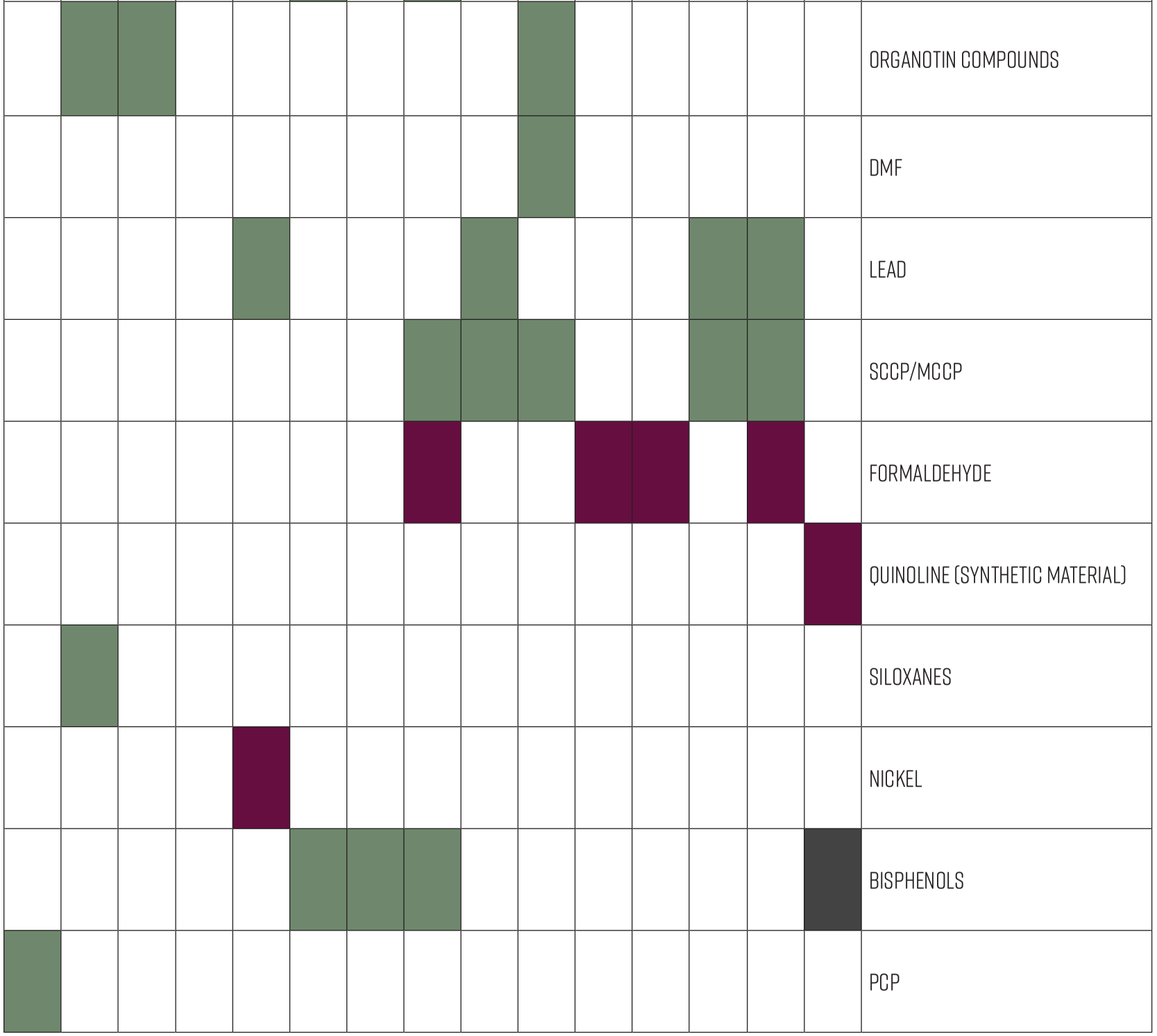
ONLY TEST ON RECYCLED MATERIALS AND/OR ARTICLES PRODUCED IN COUNTRIES FROM THE MIDDLE EAST

ONLY SOFT PLASTIC PARTS

ONLY COATED LEATHER

ONLY DIRECT SKIN CONTACT

PES AND RECYCLED MATERIALS



REACH

textiles

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MORE INFO ON CHEMICALS

BISPHENOLS: Bisphenol A (BPA) Bisphenol S (BPS), Bisphenol B (BPB), Bisphenol F (BPF) and Bisphenol AF (BPAF). BPA can be used in the production of polycarbonate plastics, flame retardants and PVC. BPS can be used as a substitute for BPA and can be found along with BPF in polyamide dye-fixing agents and sulfone- and phenol-based leather tanning agents.

CADMIUM: Cadmium based compounds can be used as pigments (red, orange, yellow and green); as a stabilizer for PVC and in biocides.

CARCINOGENIC AMINES: AZO-dyes and pigments are colorants that incorporate one or several AZO groups (-N=N-) bound with aromatic compounds. Thousands of AZO-dyes exist, but only those which degrade to form the listed cleaved amines are restricted, since they have carcinogenic properties.

CHROMIUM VI: This chemical is known from leather tanning, but could also be used in the after-chroming process for wool dyeing (chrome salts applied to acid-dyed wool to improve fastness)

DMF: Solvent used in polyurethane (PU) coating.

FORMALDEHYDE: Used in textiles as an anti-creasing and anti-shrinking agent.

LEAD: Lead based chemicals can be found as stabilizer in PVC. Can also be part of inks and pigments and surface coatings

NICKEL: Nickel and its compounds can be used for plating alloys and improving corrosion-resistance and hardness of alloys. They can also occur as impurities in pigments and alloys. Chemicals based on nickel could induce irritation

NPEO: Nonylphenolethoxylate belongs to the group of AP's (alkylphenols) and APEO's (alkylphenol ethoxylates). APEO's can be used in detergents, scouring agents, spinning oils, wetting agents, softeners, emulsifying/dispersing agents for dyes and prints, impregnating agents, de-gumming for silk-production, dyes and pigment preparations, polyester padding and down/feather fillings. AP's are sued as intermediates in the manufacture of APEO's and anti-oxidants used to protect or stabilize polymers.

ORGANOTIN COMPOUNDS: can be used as biocides and heat stabilizers in plastics/rubber. In textiles, these chemicals are known catalysts for the production of polyurethane (PU)

PAH'S: these are natural components of crude oil and are common residues from oil refining. Oil residues containing PAH's are added to rubber and plastics as a softener or extender. They are often found in printing pastes for screen prints. PAH's can be present as impurities in Carbon Black.

PCP: Chlorophenols are polychlorinated compounds used as preservatives or pesticides. Pentachlorophenol (PCP), Tetrachlorophenol (TeCP) and Trichlorophenols (TriCP) are sometimes used to prevent mold.

PFC'S: Perflurocarbon (PFC) chemicals or PFAS can be used in commercial water-, oil-, and stain-repellent agents as well as in breathable membranes that remove moisture.

PHTHALATES: These chemicals are added as a plasticizer to plastics- to increase the flexibility.

QUINOLINE: Found as an impurity in polyester and some dyestuffs.

SCCP/MCCP: Short-chain chlorinated parraffins (SCCP's, C10-C13) and medium-chain chlorinated parraffins (MCCP's, C14-C17) may be used as softeners, flame retardants or fat-liquoring agents in leather production, but also as a plasticizer in polymer production.

SILOXANES: D4 (cyclotetrasiloxane), D5 (cyclopentasiloxane) and D6 (cyclohexasiloxane) are mainly used as monomers for the silicone production. Silicone finished for textiles offer a durable soft finish to the fabric.

Source: AFIRM RSL list version 08 2023

ABBREVIATIONS

DMF	N,N-dimethylformamide
FTIR	Fourier-transform infrared spectroscopy
PA	Polyamide
PES	Polyester
PU	Polyurethane or artificial leather
PVC	Polyvinylchloride

TESTING METHODS REACH4TEXTILES

- **CARCINOGENIC AMINES:** EN 14362-1 (2017) for textiles and EN 17234-1 (2015) for leather
- **PHTHALATES:** CPSC CH-C1001-09.4 (2018) for plastics and EN 14389 for textiles
- **NPEO:** ISO 18218-1 (2015) for leather and ISO 18254-1 (2016) for textiles
- **CADMIUM:** EN 1122 or US16 CFR1303 CPSC CH-E1001-08.3 (2012); CH-E1002-08.3 (2012); CH-E1003-09.1 (2011)
- **PAH'S:** AfPS GS 2019:01
- **PFC'S:** ISO 23702-1 (2018)
- **CHROMIUM VI:** EN ISO 17075-1 or 2 (2075), chromium VI CMR restriction 1 mg/kg DIN 38405:1987 or EN ISO 16711-2 for Cr VI in textile, ageing method A2
- **ORGANOTIN COMPOUNDS:** ISO/TS 16179 (2012)
- **DMF:** ISO 17131 (2019)
- **LEAD:** US16 CFR1303 CPSC CH-E1001-08.3 (2012); CH-E1002-08.3 (2012); CH-E1003-09.1 (2011)
- **SCCP:** ISO 18219-1, MCCP: ISO 18219-2 (leather)
- **SCCP/MCCP:** ISO 22818 (2021) (textiles)
- **FORMALDEHYDE:** ISO 14184-1 (2011)
- **QUINOLINE:** DIN 54231
- **NICKEL:** EN 1811:2023-04
- **BISPHENOLS:** Ultrasonic extraction with THF, LCMSMS analysis (1h 60°C) Centexbel test method
- **PENTACHLORPHENOL:** ISO 14041 (2004) for textiles and ISO 17070 (2015) for leather

For the following chemicals, mixing of samples is possible:

CHEMICALS	MIX SAMPLES	REMARKS
CARCINOGENIC AMINES	3	
NPEO	3	
ORGANOTIN COMPOUNDS	2	Limited to 4 organotin components: TBT, DBT, MOT & DOT
QUINOLINE	3	

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