



## 9.4. Exposure scenario 4: Service life (consumers) - Article service life of articles containing screen printed silver chloride mixtures

Environment contributing scenario(s):			SPERC
CS 1	Article service life of articles containing screen printed silver chloride mixtures	ERC 11a	Eurometaux SPERC 11A.3.v1
Consumer contributing scenario(s):			SCED
CS 2	Articles containing screen printed silver chloride mixtures	AC 2	

### Exposure scenario(s) of the uses leading to the inclusion of the substance into the article(s):

ES3: Use at industrial sites - Use of silver chloride mixtures for screen printing

### 9.4.1. Env CS 1: Article service life of articles containing screen printed silver chloride mixtures ( ERC 11a )

Assessment entity group used for the assessment of this contributing scenario: ERA

#### 9.4.1.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
<ul style="list-style-type: none"> <li>Daily local widespread use amount: <math>\leq 5.5E-7</math> tonnes/day</li> </ul> <i>All the amounts are expressed as Ag as this is the driver for the environmental risk assessment.</i>
Conditions and measures related to external treatment of waste (including article waste)
<ul style="list-style-type: none"> <li>Particular considerations on the waste treatment operations: Dedicated recollection infrastructure required</li> </ul>
Other conditions affecting environmental exposure
<ul style="list-style-type: none"> <li>Place of use: Indoor</li> </ul>
<ul style="list-style-type: none"> <li>Water contact during use: No</li> </ul>
<ul style="list-style-type: none"> <li>Biological STP: Standard [Effectiveness Water: 80.1%]</li> </ul>

#### 9.4.1.2. Releases

The releases have been estimated on the basis of SPERC Eurometaux SPERC 11A.3.v1: Service life of metallic articles with no emission

Modification date: 09/09/2021

#### Description of activities/processes covered by the SPERC

Service life of metallic articles with no emission

Service life covers foreseen use of articles by consumers.

The service life covers only uses with no water-contact (either by using the article away from water or if the metal in the article is encapsulated or coated to avoid water-contact) and uses with no emissions from the article. Processes such as sanding, polishing, machining etc. are not covered.

#### Product/substance domain:

Scope of the SPERC

Substance groups or function:

Included in the metal definition (Eurometaux SPERCs): alkali metals, alkaline earth metals, transition metals, post-transition metals, metalloids Excluded from the metal definition: non-metals, halogens, noble gases and metallo-organic compounds.

Type of products: Products are metallic articles where the metal is either encapsulated / there is a mechanical barrier (to avoid direct contact with water) or there is no intended contact with water because incompatible with water (because this would lead to disfunctioning of the article): electronic and electric devices such as screens, monitors, IT and telecommunication equipment (e.g. mobile phone), large household appliances, small household appliances, photovoltaic cells, vehicles, etc..

Excluded type of products: brake pads, tyres, monitoring instruments.

Explanation for the release factor to water:

Metal in either encapsulated / there is a mechanical barrier (to avoid direct contact with water) or there is no intended contact with water because incompatible with water (because this would lead to disfunctioning of the article) AND there is no abrasion of the article

Explanation for the release factor to air:

Metals and metal compounds do not volatilise. Due to the massive physical state in service life, there is no dust formation that can become air-borne.

Explanation for the release factor to soil:

ERC default: not applicable

**Sub-SPERC Eurometaux SPERC 11A.3.v2** is used for Ag dissolved:

The local releases to the environment are reported in the following table.

**Table 9.25. Local releases to the environment**

Release	Assessment entity	Release factor	Local release rate
Water	Ag dissolved	0%	0 kg/day
Air	Ag dissolved	0%	- kg/day
Non agricultural soil	Ag dissolved	0%	- kg/day

Releases to waste

**Release factor to external waste:** 54 %

Recycling rates for WEEE in the EU was in 2016 46% (range between 30% and 96%) (Eurostat). Potential fraction for solid waste is then 54%.

**9.4.1.3. Exposure and risks for the environment and man via the environment**

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

**Table 9.26. Exposure concentrations and risks for the environment and man via the environment**

Protection target	Assessment entity	Exposure concentration	Risk quantification
Fresh water	Ag dissolved	<b>Local PEC:</b> 6.06E-6 mg/L RCR = 0.132	Final RCR = 0.132
Sediment (freshwater)	Ag dissolved	<b>Local PEC:</b> 1.155 mg/kg dw RCR = 2.64E-3	Final RCR < 0.01
Marine water	Ag dissolved	<b>Local PEC:</b> 1.91E-6 mg/L RCR = 2.22E-3	Final RCR < 0.01
Sediment (marine water)	Ag dissolved	<b>Local PEC:</b> 0.364 mg/kg dw RCR = 8.31E-4	Final RCR < 0.01
Sewage Treatment Plant	Ag dissolved	<b>Local PEC:</b> 0 mg/L RCR = 0	Final RCR < 0.01
Agricultural soil	Ag dissolved	<b>Local PEC:</b> 0.096 mg/kg dw RCR = 0.091	Final RCR = 0.091

**9.4.2. Cons CS 2: Articles containing screen printed silver chloride mixtures ( AC 2 )**

Assessment entity group used for the assessment of this contributing scenario: HHRA

**9.4.2.1. Conditions of use**

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	TRA Consumers 3.1



	Method
	(R15)
• Physical form of the used product: Solid (non or low dusty form) <i>The substance is included in an article and not available for exposure.</i>	
• Exposure via inhalation route: Inhalation exposure is considered to be not relevant <i>The substance is integrated in the electrical circuit and not volatile.</i>	TRA Consumers 3.1 (R15)
• Exposure via dermal route: No dermal contact <i>The substance is integrated in the electrical circuit and not available for contact.</i>	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant <i>The substance is integrated in the electrical circuit and not available for contact.</i>	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency of use over a year: Infrequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1 events per day	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed: Adult	TRA Consumers 3.1 (R15)

#### 9.4.2.2. Exposure and risks for consumers

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table.

**Table 9.27. Exposure concentrations and risks for consumers**

Route of exposure and type of effects	Assessment entity	Exposure concentration	Risk quantification
Inhalation, systemic, long term	Silver chloride	0 mg/m <sup>3</sup> (TRA Consumers) RCR = 0	Final RCR < 0.01
Dermal, systemic, long term	Silver chloride	0 mg/kg bw/day (TRA Consumers) RCR = 0	Final RCR < 0.01
Oral, systemic, long term	Silver chloride	0 mg/kg bw/day (TRA Consumers) RCR = 0	Final RCR < 0.01
Combined routes, systemic, long-term			Final RCR < 0.01

**Remarks on exposure dataset obtained with ECETOC TRA**