



9.10. Exposure scenario 10: Service life (consumers) - Service life of articles containing disilver oxide being encapsulated in the internal part of the product (e.g. plasma screens)

Environment contributing scenario(s):		SPERC
CS 1	Service life of articles containing disilver oxide being encapsulated in the internal part of the product (e.g. plasma screens)	ERC 11a Eurometaux SPERC 11A.3.v1
Consumer contributing scenario(s):		SCED
CS 2	Service life of articles containing disilver oxide being encapsulated in the internal part of the product	AC 2

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

ES5: Use at industrial sites - Non reactive use of disilver oxide containing formulations

9.10.1. Env CS 1: Service life of articles containing disilver oxide being encapsulated in the internal part of the product (e.g. plasma screens) (ERC 11a)

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

9.10.1.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: $\leq 2.75E-5$ tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: Dedicated recollection infrastructure required
Other conditions affecting environmental exposure
• Place of use: Indoor
• Water contact during use: No
• Biological STP: Standard [Effectiveness Water: 80.1%]

9.10.1.2. 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 9.65. 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%.

9.10.1.3. 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 9.66. Exposure concentrations and risks for the environment and man via the environment

Protection target	Assessment entity	Exposure concentration	Risk quantification
Fresh water	Ag dissolved	Local PEC: 6.06E-6 mg/L RCR = 0.132	Final RCR = 0.132
Sediment (freshwater)	Ag dissolved	Local PEC: 1.155 mg/kg dw RCR = 2.64E-3	Final RCR < 0.01
Marine water	Ag dissolved	Local PEC: 1.91E-6 mg/L RCR = 2.22E-3	Final RCR < 0.01
Sediment (marine water)	Ag dissolved	Local PEC: 0.364 mg/kg dw RCR = 8.31E-4	Final RCR < 0.01
Sewage Treatment Plant	Ag dissolved	Local PEC: 0 mg/L RCR = 0	Final RCR < 0.01
Agricultural soil	Ag dissolved	Local PEC: 0.096 mg/kg dw RCR = 0.091	Final RCR = 0.091
Man via environment - Inhalation (systemic effects)	Ag dissolved	Concentration in air: 8.53E-8 mg/m ³ RCR = 5.69E-7	Final RCR < 0.01
Man via environment - Oral	Ag dissolved	Exposure via food consumption: 3.84 µg/kg bw/day (Measured data: See section 9.0.3.6)	Final RCR = 0.035



Protection target	Assessment entity	Exposure concentration	Risk quantification
		RCR = 0.035	
Man via environment - combined routes			Final RCR = 0.035

Remarks on measured exposure:

See section 9.0.3.6 for Ag dissolved:

Identity of the substance used: Ag

Explanation: Worst case exposure of 3.84 µg Ag/kg bw/day from food (section 9.0.3.6) was taken forward to the risk characterisation.

The intake via drinking water calculated with CHESAR was 3-4 orders of magnitudes lower compared to the intake via food and has thus not been taken into account.

9.10.2. Cons CS 2: Service life of articles containing disilver oxide being encapsulated in the internal part of the product (AC 2)

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

9.10.2.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 100 %	TRA Consumers 3.1 (R15)
• Exposure via dermal route: No dermal contact <i>Under normal use conditions the consumer will not come in contact with disilver oxide in articles when the substance is encapsulated in the internal part of the product.</i>	TRA Consumers 3.1 (R15)
• Exposure via inhalation route: Inhalation exposure is considered to be not relevant <i>Under normal use conditions the consumer will not come in contact with disilver oxide in articles when the substance is encapsulated in the internal part of the product. In addition, disilver oxide is not a volatile substance.</i>	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant <i>Under normal use conditions the consumer will not come in contact with disilver oxide in articles when the substance is encapsulated in the internal part of the product.</i>	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency of use over a year: Frequent	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	TRA Consumers 3.1 (R15)

9.10.2.2. Exposure and risks for consumers

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

Table 9.67. Exposure concentrations and risks for consumers

Route of exposure and type of effects	Assessment entity	Exposure concentration	Risk quantification
Inhalation, systemic, long term	Disilver oxide	0 mg/m ³ (TRA Consumers) RCR = 0	Final RCR < 0.01
Dermal, systemic, long term	Disilver oxide	0 mg/kg bw/day (TRA Consumers) RCR = 0	Final RCR < 0.01



Route of exposure and type of effects	Assessment entity	Exposure concentration	Risk quantification
Oral, systemic, long term	Disilver oxide	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**Risk characterisation**

Qualitative risk characterisation (Eye, local):

Under normal use conditions the consumer will not come in contact with disilver oxide in articles when the substance is encapsulated in the internal part of the product.