9.2. Exposure scenario 2: Formulation or re-packing - Formulation

Market sector: Electroplating and surface treatment
Product category formulated: PC 14: Metal surface treatment products, including galvanic and electroplating products; PC 15: Non-metal-surface treatment products

Environment contributing scenario(s):		
CS 1	Formulation	ERC 2
Worker contributing scenario(s):		
CS 2	Handling of medium dusty materials	PROC 26
CS 3	Handling of solutions	PROC 8b
CS 4	Small scale handling of solutions	PROC 9
CS 5	Batch process involving solutions	PROC 4
CS 6	Batch process involving solids	PROC 4
CS 7	Wet cleaning	PROC 28
CS 8	Vacuum cleaning	PROC 28

Explanation on the approach taken for the ES

9.2.1. Env CS 1: Formulation (ERC 2)

9.2.1.1. Conditions of use

The conditions of use are as described in the generic exposure scenario (GES) below.

9.2.1.2. Releases

The GES and associated risk assessment are concerned with releases of silver to waste-water and air during the formulation of potassium dicyanoargentate. This waste-water is treated at a municipal STP before discharge to fresh waters. Exposure assessment for the aquatic environment is based on parameter values from the SpERC for formulation of metal compounds [1] ('formulation of metal compounds in other than plastics and paint sectors) and calculation of the maximum tonnage (Msafe) of potassium dicyanoargentate that can be formulated without risk to environment. The release factor for waste-water in this SpERC is given as 2% before on-site treatment. However, all sites formulating $KAg(CN)_2$ will have waste-water treatment plants (WWTPs), usually using pH adjustment and precipitation. The Msafe tonnage for formulation is therefore calculated using a release factor (RF) adjusted to include a WWTP efficiency of 99% (i.e. the RF for water is reduced from 2% to 0.02%).

A summary of the emission characteristics used to quantify the environmental aspects of the generic exposure scenario (GES) for formulation of $KAg(CN)_2$ is detailed in the table below.

1. Title **ES2: Formulation**	
Life cycle	Formulation - Formulation
Systematic title based on use descriptor	**ERC:** ERC 2 Formulation

[1] http://www.arche-consulting.be/content/documents/Eurometaux-2.2a-c.v2.1.pdf

2. Operational conditions and risk management measures	
2.1 Control of environmental exposure	
Environmental related free short title	Formulation
Systematic title based on use descriptor (environment)	ERC 2 Formulation
Processes, tasks, activities covered (environment)	Formulation
Environmental Assessment Method	Estimates based on monitoring data of emissions and default values are used for calculation of maximum tonnage that can be safely used without risk to the environment
Product characteristics Potassium dicyanoargentate as solid or aqueous solution. Environmental assessment is based on the modelled emission of Ag in waste-water discharge and total Ag emissions to air.	
Amounts used	
Maximum annual safe use at a site (Msafe)	27.7 tonnes $KAg(CN)_2$ (15 tonnes Ag metal equivalent)
Frequency and duration of use	
Pattern of release to the environment	300 days per year per site (sector data)
Environment factors not influenced by risk management	
Receiving surface water flow rate	STP: 2,000 m^3/d (default) Receiving water: 18,000 m^3/d (default)
Dilution capacity, freshwater	Env ES 2 Discharge to freshwater via STP: DF = 10 (default)
Dilution capacity, marine	Not applicable
Other given operational conditions affecting environmental exposure	
None	
Technical conditions and measures at process level (source) to prevent release	
Appropriate process control systems shall be implemented.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Waste water: ES 2 Discharge to STP: On-site wastewater treatment by chemical precipitation, sedimentation and/or filtration. Efficiency 99.9 % (50^{th} %) and off-site wastewater treatment plant, municipal STP Efficiency 80% (based on assessment of available monitoring data and literature) Release factor after on-site treatment: 200 g/T (SpERC for 'Formulation of metal compounds' adjusted for removal in WWTP. 99% treatment WWTP efficiency - applied to 2% RF before on-site treatment) **Air:** No measured data; release factor after on-site treatment: 10 g/T (SpERC RF for 'Formulation of metal compounds' adjusted to 10% for monetary value of Ag as detailed in section 9.02)	

Organizational measures to prevent/limit release from site	
Regular operator training.	
Conditions and measures related to municipal sewage treatment plant (if applicable)	
Municipal Sewage Treatment Plant (STP)	Yes
Discharge rate of the Municipal STP	2 000 m^3/d
Fate of the sludge from Municipal STP	Hazardous waste produced during the manufacture and downstream use is sent to a recycler only marginal amounts are sent to a landfill or an incinerator. Waste containing silver is recycled for almost 100%
Conditions and measures related to external treatment of waste for disposal	
$KAg(CN)_2$- and other Ag-containing waste is filled into containers and transported to licensed recycling facilities for recovery or disposed of at landfill.	
Conditions and measures related to external recovery of waste	
The focus of the silver industry is on the minimisation of waste by optimising the process and by utilizing residues and wastes as far as possible. The residues arising from different stages of the production process are therefore used as raw materials for other processes and an extensive network of metallurgical operators has been established for many years to increase the recovery of metals and eliminate the quantities of waste for disposal.	
3. Exposure and risk estimation	

Environment [based on total Ag emissions]

ERC 2

ES Formulation of $KAg(CN)_2$*

Compartment	Unit	PNEC	$PEC_{regional}$ [2]	C_{local}	PEC	RCR	Methods for calculation of environmental concentrations
Discharge to STP	mg Ag/L	0.025 mg/L	6.06 x10^{-6} mg/L	9.90 x 10^{-4} mg/L	9.90 x 10^{-4} mg/L	0.040	SpERC RFs applied to Msafe tonnage and dilution factor at municipal sewage works
Freshwater via STP	mg Ag/L	4.0 x10^{-5} mg/L	6.06 x10^{-6} mg/L	2.57 x10^{-5} mg/L	3.18 x10^{-5} mg/L	0.79	SpERC RFs applied to Msafe tonnage and Ag-specific values for STP removal efficiency and dilution in ultimate receiving water body
Freshwater sediment via STP	mg /kg w.w.	96.4 mg/kg	2.13 mg/kg	1.316 mg/kg	3.45 mg/kg	0.36	SpERC RFs applied to Msafe tonnage and Ag-specific values for STP removal efficiency and dilution in ultimate receiving water body

[2] Regional PEC is based on the measured background concentrations as detailed in the Silver CSR

Terrestrial (all scenarios)	mg/kg w.w.	1.24 mg/kg	0.086 mg/kg	3.0 $x10^{-6}$ mg/kg	8.60 $x10^{-2}$ mg/kg	0.069	Modelled increase in soil concentrations due to deposition from atmospheric emissions (i.e. assuming no application of sewage sludge to land)

* All concentrations reported as Ag equivalent due to the silver metal PNEC used for assessment.

4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Environment

Scaling tool: Metals EUSES IT tool (free download: http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool)

Scaling of the release to air and water environment includes:

- Refining of the release factor to air and waste water and/or and the efficiency of the air filter and wastewater treatment facility.
- Adjustment of the flow rate for the receiving water body and subsequent dilution factor.

9.2.1.3. Exposure and risks for man via the environment

Assessment of risks for man via the environment is based on inhalation exposure to airborne particulates containing silver released to the atmosphere during the manufacture of $KAg(CN)_2$ and other silver compounds[2].

Annual emission to air (kg Ag)	Emission days per year	Concentration in local air (mg Ag/m^3)	Annual average concentration in air (mg Ag/m^3)	DNEL (mg Ag/m^3)	RCR
0.2	300	1.4 $x10^{-7}$	1.1 $x10^{-7}$	0.04	3.48 $x10^{-6}$

9.2.2. Worker CS 2: Handling of medium dusty materials (PROC 26)

Task(s) covered with this contributing scenario: Transfer processes, packaging.

9.2.2.1. Conditions of use

Product (Article) characteristics
• Physical form of substance: Solid • Maximum emission potential of the substance: Medium *Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.* • Content in preparation: Not restricted [Effectiveness Inhalation: 0%, Dermal: 0%]
Amount used (or contained in articles), frequency and duration of use/exposure
• Maximum duration of exposure: > 240 min (not restricted) [Effectiveness Inhalation: 0%, Dermal: 0%]
Technical and organisational conditions and measures

• Exterior local exhaust ventilation: Lower confidence limit (industrial use) [Effectiveness Inhalation: 75%]
Conditions and measures related to personal protection, hygiene and health evaluation
• Respiratory protective equipment (RPE): RPE with minimum APF = 20 [Effectiveness Inhalation: 95%] *APF = assigned protection factor according to EN 529. At minimum any combination of particle filter class P3 with mask according to EN 140, EN 1827 or filtering half mask (FF P3) according to EN 149 or combination of P2 filter with face piece according to EN 12941 or EN 12942 or any RPE providing higher APFs according to EN 529 is required.* • Eye protection: Eye protection to be worn to protect from adverse effects to the eyes *Due to the adverse effects of the substance to the eyes, direct contact of the eyes with the substance is to be avoided including hand to eye transfer after touching contaminated surfaces. Suitable eye protection equipment (e.g. goggles or visors) must be worn.* • Gloves as precautionary measure: Gloves protecting from local effects to the skin (high hazard) *Due to the potential adverse effects of the substance to skin, protective gloves according to EN 374 have to be worn at all workplaces. Additionally, face protection is required to be worn as appropriate.*

9.2.2.2. Exposure and risks for workers

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

Table 9.12. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	50 µg/m³ (MEASE: 1.02.01)	RCR = 0.641
Combined routes, systemic, long-term		RCR = 0.641

Remarks on exposure data from external estimation tools:

MEASE 1.02.01

Risk characterisation

Further information on the risk characterisation for local effects or acute systemic effects via inhalation, for local dermal effects and local effects to the eyes is given in Section 9.0.4.2.
Under the prescribed conditions of use, exposure is below the DNEL and local effects are not expected. Therefore, risks are adequately controlled.

9.2.3. Worker CS 3: Handling of solutions (PROC 8b)

Task(s) covered with this contributing scenario: Transfer and filling processes.

9.2.3.1. Conditions of use

Product (Article) characteristics
• Physical form of substance: Solution • Maximum emission potential of the substance: Very low *Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.* • Content in preparation: Not restricted [Effectiveness Inhalation: 0%, Dermal: 0%]
Amount used (or contained in articles), frequency and duration of use/exposure
• Maximum duration of exposure: > 240 min (not restricted) [Effectiveness Inhalation: 0%, Dermal: 0%]
Conditions and measures related to personal protection, hygiene and health evaluation
• Respiratory protective equipment (RPE) as precautionary measure: RPE protecting from local effects via inhalation *Due to potential adverse effects of the substance to the respiratory tract, RPE (minimum assigned protection factor of 10) is prescribed on a precautionary basis for all workplaces unless inhalation*

exposure to the substance can be excluded.
• Eye protection: Eye protection to be worn to protect from adverse effects to the eyes
Due to the adverse effects of the substance to the eyes, direct contact of the eyes with the substance is to be avoided including hand to eye transfer after touching contaminated surfaces. Suitable eye protection equipment (e.g. goggles or visors) must be worn.
• Gloves as precautionary measure: Gloves protecting from local effects to the skin (high hazard)
Due to the potential adverse effects of the substance to skin, protective gloves according to EN 374 have to be worn at all workplaces. Additionally, face protection is required to be worn as appropriate.

9.2.3.2. Exposure and risks for workers

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

Table 9.13. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	10 µg/m³ (MEASE: 1.02.01)	RCR = 0.128
Combined routes, systemic, long-term		RCR = 0.128

Remarks on exposure data from external estimation tools:

MEASE 1.02.01

Risk characterisation

Further information on the risk characterisation for local effects or acute systemic effects via inhalation, for local dermal effects and local effects to the eyes is given in Section 9.0.4.2.
Under the prescribed conditions of use, exposure is below the DNEL and local effects are not expected. Therefore, risks are adequately controlled.

9.2.4. Worker CS 4: Small scale handling of solutions (PROC 9)

Task(s) covered with this contributing scenario: Transfer and filling processes.

9.2.4.1. Conditions of use

Product (Article) characteristics
• Physical form of substance: Solution • Maximum emission potential of the substance: Very low *Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.* • Content in preparation: Not restricted [Effectiveness Inhalation: 0%, Dermal: 0%]
Amount used (or contained in articles), frequency and duration of use/exposure
• Maximum duration of exposure: > 240 min (not restricted) [Effectiveness Inhalation: 0%, Dermal: 0%]
Conditions and measures related to personal protection, hygiene and health evaluation
• Respiratory protective equipment (RPE) as precautionary measure: RPE protecting from local effects via inhalation *Due to potential adverse effects of the substance to the respiratory tract, RPE (minimum assigned protection factor of 10) is prescribed on a precautionary basis for all workplaces unless inhalation exposure to the substance can be excluded.* • Eye protection: Eye protection to be worn to protect from adverse effects to the eyes *Due to the adverse effects of the substance to the eyes, direct contact of the eyes with the substance is to be avoided including hand to eye transfer after touching contaminated surfaces. Suitable eye protection equipment (e.g. goggles or visors) must be worn.* • Gloves as precautionary measure: Gloves protecting from local effects to the skin (high hazard) *Due to the potential adverse effects of the substance to skin, protective gloves according to EN 374 have to be worn at all workplaces. Additionally, face protection is required to be worn as appropriate.*

9.2.4.2. Exposure and risks for workers

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

Table 9.14. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	10 µg/m³ (MEASE: 1.02.01)	RCR = 0.128
Combined routes, systemic, long-term		RCR = 0.128

Remarks on exposure data from external estimation tools:

MEASE 1.02.01

Risk characterisation

Further information on the risk characterisation for local effects or acute systemic effects via inhalation, for local dermal effects and local effects to the eyes is given in Section 9.0.4.2.
Under the prescribed conditions of use, exposure is below the DNEL and local effects are not expected. Therefore, risks are adequately controlled.

9.2.5. Worker CS 5: Batch process involving solutions (PROC 4)

Task(s) covered with this contributing scenario: Mixing, formulation.

9.2.5.1. Conditions of use

Product (Article) characteristics
• Physical form of substance: Solution • Maximum emission potential of the substance: Very low *Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.* • Content in preparation: Not restricted [Effectiveness Inhalation: 0%, Dermal: 0%]
Amount used (or contained in articles), frequency and duration of use/exposure
• Maximum duration of exposure: > 240 min (not restricted) [Effectiveness Inhalation: 0%, Dermal: 0%]
Conditions and measures related to personal protection, hygiene and health evaluation
• Respiratory protective equipment (RPE) as precautionary measure: RPE protecting from local effects via inhalation *Due to potential adverse effects of the substance to the respiratory tract, RPE (minimum assigned protection factor of 10) is prescribed on a precautionary basis for all workplaces unless inhalation exposure to the substance can be excluded.* • Eye protection: Eye protection to be worn to protect from adverse effects to the eyes *Due to the adverse effects of the substance to the eyes, direct contact of the eyes with the substance is to be avoided including hand to eye transfer after touching contaminated surfaces. Suitable eye protection equipment (e.g. goggles or visors) must be worn.* • Gloves as precautionary measure: Gloves protecting from local effects to the skin (high hazard) *Due to the potential adverse effects of the substance to skin, protective gloves according to EN 374 have to be worn at all workplaces. Additionally, face protection is required to be worn as appropriate.*

9.2.5.2. Exposure and risks for workers

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

Table 9.15. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	50 µg/m³ (MEASE: 1.02.01)	RCR = 0.641

Route of exposure and type of effects	Exposure concentration	Risk quantification
Combined routes, systemic, long-term		RCR = 0.641

Remarks on exposure data from external estimation tools:

MEASE 1.02.01

Risk characterisation

Further information on the risk characterisation for local effects or acute systemic effects via inhalation, for local dermal effects and local effects to the eyes is given in Section 9.0.4.2.
Under the prescribed conditions of use, exposure is below the DNEL and local effects are not expected. Therefore, risks are adequately controlled.

9.2.6. Worker CS 6: Batch process involving solids (PROC 4)

Task(s) covered with this contributing scenario: Mixing, formulation.

9.2.6.1. Conditions of use

Product (Article) characteristics
• Physical form of substance: Solid • Maximum emission potential of the substance: Medium *Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.* • Content in preparation: Not restricted [Effectiveness Inhalation: 0%, Dermal: 0%]
Amount used (or contained in articles), frequency and duration of use/exposure
• Maximum duration of exposure: > 240 min (not restricted) [Effectiveness Inhalation: 0%, Dermal: 0%]
Technical and organisational conditions and measures
• Exterior local exhaust ventilation: Lower confidence limit (industrial use) [Effectiveness Inhalation: 75%]
Conditions and measures related to personal protection, hygiene and health evaluation
• Respiratory protective equipment (RPE): RPE with minimum APF = 20 [Effectiveness Inhalation: 95%] *APF = assigned protection factor according to EN 529. At minimum any combination of particle filter class P3 with mask according to EN 140, EN 1827 or filtering half mask (FF P3) according to EN 149 or combination of P2 filter with face piece according to EN 12941 or EN 12942 or any RPE providing higher APFs according to EN 529 is required.* • Eye protection: Eye protection to be worn to protect from adverse effects to the eyes *Due to the adverse effects of the substance to the eyes, direct contact of the eyes with the substance is to be avoided including hand to eye transfer after touching contaminated surfaces. Suitable eye protection equipment (e.g. goggles or visors) must be worn.* • Gloves as precautionary measure: Gloves protecting from local effects to the skin (high hazard) *Due to the potential adverse effects of the substance to skin, protective gloves according to EN 374 have to be worn at all workplaces. Additionally, face protection is required to be worn as appropriate.*

9.2.6.2. Exposure and risks for workers

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

Table 9.16. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	63 µg/m³ (MEASE: 1.02.01)	RCR = 0.808
Combined routes, systemic, long-term		RCR = 0.808

Remarks on exposure data from external estimation tools:

MEASE 1.02.01

Risk characterisation

Further information on the risk characterisation for local effects or acute systemic effects via inhalation, for local dermal effects and local effects to the eyes is given in Section 9.0.4.2.
Under the prescribed conditions of use, exposure is below the DNEL and local effects are not expected. Therefore, risks are adequately controlled.

9.2.7. Worker CS 7: Wet cleaning (PROC 28)

9.2.7.1. Conditions of use

Product (Article) characteristics
• Physical form of substance: Solution, suspension • Maximum emission potential of the substance: Very low *Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.* • Content in preparation: Not restricted [Effectiveness Inhalation: 0%, Dermal: 0%]
Amount used (or contained in articles), frequency and duration of use/exposure
• Maximum duration of exposure: > 240 min (not restricted) [Effectiveness Inhalation: 0%, Dermal: 0%]
Conditions and measures related to personal protection, hygiene and health evaluation
• Respiratory protective equipment (RPE) as precautionary measure: RPE protecting from local effects via inhalation *Due to potential adverse effects of the substance to the respiratory tract, RPE (minimum assigned protection factor of 10) is prescribed on a precautionary basis for all workplaces unless inhalation exposure to the substance can be excluded.* • Eye protection: Eye protection to be worn to protect from adverse effects to the eyes *Due to the adverse effects of the substance to the eyes, direct contact of the eyes with the substance is to be avoided including hand to eye transfer after touching contaminated surfaces. Suitable eye protection equipment (e.g. goggles or visors) must be worn.* • Gloves as precautionary measure: Gloves protecting from local effects to the skin (high hazard) *Due to the potential adverse effects of the substance to skin, protective gloves according to EN 374 have to be worn at all workplaces. Additionally, face protection is required to be worn as appropriate.*

9.2.7.2. Exposure and risks for workers

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

Table 9.17. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	50 µg/m³ (MEASE: 1.02.01)	RCR = 0.641
Combined routes, systemic, long-term		RCR = 0.641

Remarks on exposure data from external estimation tools:

MEASE 1.02.01
Explanations: According to ECHA Guidance R. 12 (Version 3.0, December 2015) PROC 28 should be used for cleaning and maintenance. In MEASE, Version 1.02.01, no PROC 28 is available and PROC 8a was used as surrogate in MEASE for the exposure calculation. PROC 8a is used for cleaning and maintenance, when solutions of the substance are handled.

Risk characterisation

Further information on the risk characterisation for local effects or acute systemic effects via inhalation, for local dermal effects and local effects to the eyes is given in Section 9.0.4.2.

Under the prescribed conditions of use, exposure is below the DNEL and local effects are not expected. Therefore, risks are adequately controlled.

9.2.8. Worker CS 8: Vacuum cleaning (PROC 28)

9.2.8.1. Conditions of use

Product (Article) characteristics
• Physical form of substance: Solid, powder / dust • Maximum emission potential of the substance: High *Only the highest emission potential (EP) is reported. Lower EPs (e.g. if materials of lower dustiness are being handled in parallel) are thus automatically covered in this assessment.* • Content in preparation: Not restricted [Effectiveness Inhalation: 0%, Dermal: 0%]
Amount used (or contained in articles), frequency and duration of use/exposure
• Maximum duration of exposure: > 240 min (not restricted) [Effectiveness Inhalation: 0%, Dermal: 0%]
Technical and organisational conditions and measures
• Integrated local exhaust ventilation: Lower confidence limit (industrial use) [Effectiveness Inhalation: 84%] *Surrogate exposure determinant used to reflect the efficiency of a vacuum cleaner.*
Conditions and measures related to personal protection, hygiene and health evaluation
• Respiratory protective equipment (RPE): RPE with minimum APF = 40 [Effectiveness Inhalation: 97.5%] *APF = assigned protection factor according to EN 529. At minimum combination of particle filter class P3 with face piece according to EN 136, EN 12941 or EN 12942 or any RPE providing higher APFs according to EN 529 is required.* • Eye protection: Eye protection to be worn to protect from adverse effects to the eyes *Due to the adverse effects of the substance to the eyes, direct contact of the eyes with the substance is to be avoided including hand to eye transfer after touching contaminated surfaces. Suitable eye protection equipment (e.g. goggles or visors) must be worn.* • Gloves as precautionary measure: Gloves protecting from local effects to the skin (high hazard) *Due to the potential adverse effects of the substance to skin, protective gloves according to EN 374 have to be worn at all workplaces. Additionally, face protection is required to be worn as appropriate.*

9.2.8.2. Exposure and risks for workers

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

Table 9.18. Exposure concentrations and risks for workers

Route of exposure and type of effects	Exposure concentration	Risk quantification
Inhalation, systemic, long term	40 µg/m³ (MEASE: 1.02.01)	RCR = 0.513
Combined routes, systemic, long-term		RCR = 0.513

Remarks on exposure data from external estimation tools:

MEASE 1.02.01
Explanations: According to ECHA Guidance R. 12 (Version 3.0, December 2015) PROC 28 should be used for cleaning and maintenance. In MEASE, Version 1.02.01, no PROC 28 is available and PROC 26 was used as surrogate in MEASE for the exposure calculation. PROC 26 is used for cleaning and maintenance, when powder/dust of the substance is handled.

Risk characterisation

Further information on the risk characterisation for local effects or acute systemic effects via inhalation, for local dermal effects and local effects to the eyes is given in Section 9.0.4.2.
Under the prescribed conditions of use, exposure is below the DNEL and local effects are not expected. Therefore, risks are adequately controlled.