SAFETY DATA SHEET (1907/2006)

R0717139

KI-3161 CONC; RS-9108

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ANNEX

Contents

1. General aspects

1.1 Worker exposure: General hazards

Amidoamines and Imidazolines are produced in indoor factories in a batch process in ventilated facilities. The maximum reaction temperature and pressure during production is 230°C at atmospheric pressure. The final product is transferred to a storage tank.

Cleaning of reactors is performed as a closed process, waste is directed to sewage.

Packaging of substance takes place in dedicated equipment to bulk containers, IBC or drums.

Quality control at laboratory may be performed by process operators or laboratory personnel.

The substance is corrosive and also a dermal sensitiser. To protect eyes and skin, Personal Protective Equipment (PPE) like goggles, chemical resistant gloves and protective clothing shall be worn.

1.2 Worker exposure: Skin

Skin sensitization:

Gloves: Implemented as an additional RMM. The following effectiveness values are assumed: Use of suitable gloves: 80%; Use of suitable gloves in combination with basic employee training: 90%; Use of suitable gloves in combination with specific activity training: 95%; Use of suitable gloves in combination with intensive management supervision controls: 99%

1.3 Environment: General considerations

AIR:
The substance is of low volatility and release to air is considered not to be relevant.

WATER:
The main release route is via waste water. All industrial surfaces should be hard surfaces, and run-off should be led to waste. Waste water should be treated by STP. Defaults for dilution and effluent flow are assumed.

SOIL:
No exposure to soil is expected. No application of STP sludge to soil is assumed.

Degradation rates in STP is from test results of simulation tests :

Fraction of emission directed to water by local STP	0.00001
Fraction of emission directed to sludge by local STP	0.00044
Fraction of emission degraded by local STP	0.99955

1.4 Consumer exposure

Not applicable..

1.5 Overview of exposure scenarios

Table 1 Short description of all exposure scenarios with their use descriptors and life cycle stage

Number (ES)	Short description of exposure scenario	Sector of use (SU)	Process category (PROC)	Article Category (AC)	Environmental release category (ERC)
1	Manufacturing of substance	3	3, 8b, 15	NA	1
2	Formulation	10	3, 8b, 15	NA	2
3	Use as an intermediate	3	3, 8b, 15	NA	6a

NA= Not Applicable

2. Exposure scenario: Manufacturing of substance (ES1)

2.1 Workers

Table 2: Description of ES 1 and its contributing scenarios

Reference number	ES 1	
Free short title	Industrial manufacture of chemical substances in chemical syntheses	
Systematic title based on use descriptor	Batch manufacture of a chemical where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling. (PROC 3, 8b)	
Processes, tasks, activities covered	1. PROC 3: Industrial manufacture of chemical substances, including cleaning of the equipment. 2. PROC 8b: Transfer of substance or preparation (charging) to vessels/large containers at dedicated facilities. 3. PROC 15: QC Laboratory	
Environment characteristic covered	ERC 1: Manufacture of substances	
Assessment Method	ECETOC TRA Worker v2.0 TGD Excel	
Name of contributing scenario	Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner	
Use descriptor covered	PROC 3	
Processes, tasks activities covered	1. Industrial manufacture of chemical substances 2. Sampling 3. Charging to storage tanks in enclosed system 4. Cleaning of the process equipment in closed systems.	
Product characteristic		
Physical state	The substance is a liquid at the process temperatures.	
Vapour pressure	Vapour pressure at 20°C is $8*10^{-8}$ Pa. The substance is regarded as a low volatility substance[1].	
Concentration of substance	100 %	
Amounts used		
Not relevant		
Frequency and duration of use/exposure		
Duration of exposure	>4	hours/day
Frequency of exposure	≤ 240	days/year
Human factors not influenced by risk management		
The work performed is of light character, resulting in a default respiration volume on $10m^3$/8h shift.		
Other given operational conditions affecting workers exposure		
Location	Indoors	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		
Enclosed transfers. Sampling with LEV. Spill containment at all input/output points.		
Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation required	No	

Organisational measures to prevent /limit releases, dispersion and exposure		
-		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection required	No	
Personal protective equipment	Yes	Chemical resistant gloves: 90% protective clothing, eye protection

Name of contributing scenario	Packaging of chemical substances into bulk transport, IBC containers or drums.	
Systematic title based on use descriptor	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities - PROC 8b	
Processes, tasks activities covered	1. Filling of bulk transport 2. Filling of IBC containers 3. Filling of drums	
Product characteristic		
Physical state	The substance is a liquid at the process temperatures.	
Vapour pressure	Vapour pressure at 20°C is $8*10^{-8}$ Pa. The substance is regarded as a low volatility substance[1].	
Concentration of substance	100 %	
Amounts used		
Not relevant		
Frequency and duration of use/exposure		
Duration of exposure	1.:15 -60 2. and 3.: > 4	min/day hours/day
Frequency of exposure	≤ 240	days/year
Human factors not influenced by risk management		
The work performed is of light character, resulting in a default respiration volume on $10m^3$/8h shift.		
Other given operational conditions affecting workers exposure		
Location	Outdoors/Indoors	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		
None		
Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation required	No	
Organisational measures to prevent /limit releases, dispersion and exposure		
-		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection required	No	
Personal protective equipment	Yes	Chemical resistant gloves: 90% protective clothing, face shield

Name of contributing scenario	Use of substances at small scale laboratory (< 1 l or 1 kg present at workplace). Larger laboratories and R+D installations should be treated as industrial processes
Use descriptor covered	PROC 15

Product characteristic		
Physical state	The substance is a liquid at the process temperatures.	
Vapour pressure	Vapour pressure at 20°C is $8*10^{-8}$ Pa. The substance is regarded as a low volatility substance[1].	
Concentration of substance	100 %	
Amounts used		
Not relevant		
Frequency and duration of use/exposure		
Duration of exposure	1-4	hours/day
Frequency of exposure	≤ 240	days/year
Human factors not influenced by risk management		
Other given operational conditions affecting workers exposure		
Location	Indoor	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		
None		
Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation required	No	
Organisational measures to prevent /limit releases, dispersion and exposure		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection required	No	
Personal protective equipment	Yes	protective gloves: 90% Protective clothing, eye protection

[1]According to "Guidance on Information requirements" R7a, p 269: "Some physico-chemical properties of the substance or mixture could be the basis for waiving testing. In particular, it should be considered for low volatility substances, which are defined as having Vp < 1*10-5 kPa (= 7,5*10-5 mmHg) for indoor use and Vp < 1*10-4 kPa (= 7,5*10-4 mmHg) for outdoor use."

2.2 Environment

Contributing Scenario controlling environmental exposure	ERC1
Amounts used	1000 tonnes per year
Release times per year	40 days
Environmental factors not influenced by risk management	River flow rate: 18000 m3/day
Other given operational conditions affecting environmental exposure	release to: air: 0.0001%, water: 0.03%, soil: 0.01%; fraction used at main source: 100%; fraction tonnage to region: 100%
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	spERC: Modified ESVOC 1.1.v1to use less manufacturing days. STP; No sludge to soil
Conditions and measures related to municipal sewage treatment plant	Sewage treatment plant discharge: 2000000 L/day

3. Exposure scenario: Formulation (ES2)

3.1 Workers

Formulation is carried out in a closed batch process.

Table 3: Description of ES 2 and its contributing scenarios

Reference number	ES 2	
Free short title	Industrial formulation	
Systematic title based on use descriptor	Batch wise formulation (PROC 3; PROC 8b; PROC 15)	
Processes, tasks, activities covered	1. Charging from storage tanks in enclosed system (PROC 3) 2. Charging from IBC containers (PROC 8b) 3. Industrial formulation of mixtures (PROC 3) 4. Sampling (PROC 3) 5. Packaging of formulation at dedicated facility (PROC 8b) 6. Cleaning of the process equipment in closed systems (PROC 3) 7. Disposal of waste product & used containers (PROC 8b) 8. QC laboratory (PROC 15)	
Environment characteristic covered	ERC 2: Formulation	
Assessment Method	ECETOC TRA Worker v2.0 TGD Excel	
Name of contributing scenario	Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner	
Use descriptor covered	PROC 3	
Processes, tasks activities covered	1. Charging from storage tanks in enclosed system 2. Industrial formulation of mixtures 3. Sampling 4. Cleaning of the process equipment in closed systems	
Product characteristic		
Physical state	The substance is a liquid at the process temperatures.	
Vapour pressure	Vapour pressure at 20°C is $8*10^{-8}$ Pa. The substance is regarded as a low volatility substance[1].	
Concentration of substance	100 %	
Amounts used		
Not relevant		
Frequency and duration of use/exposure		
Duration of exposure	>4	hours/day
Frequency of exposure	≤ 240	days/year
Human factors not influenced by risk management		
The work performed is of light character, resulting in a default respiration volume on $10m^3$/8h shift.		
Other given operational conditions affecting workers exposure		
Location	Indoors	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		

Enclosed system. LEV at transfer points.		
Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation required	No	
Organisational measures to prevent /limit releases, dispersion and exposure		
-		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection required	No	
Personal protective equipment	Yes	Chemical resistant gloves: 90% protective clothing, goggles

Name of contributing scenario	Transfer of substance or preparation (charging) from vessels/large containers at dedicated facilities.	
Use descriptor covered	PROC 8b	
Processes, tasks activities covered	Charging from IBC containers Disposal of waste product & used containers. Filling of bulk transport Filling of IBC containers Filling of drums	
Assessment Method	ECETOC TRA Worker v2.0	
Product characteristic		
Physical state	The substance is a liquid at the process temperatures.	
Vapour pressure	Vapour pressure at 20°C is $8*10^{-8}$ Pa. The substance is regarded as a low volatility substance[1].	
Concentration of substance	100 %	
Amounts used		
Not relevant		
Frequency and duration of use/exposure		
Duration of exposure	>4	h/day
Frequency of exposure	≤ 240	days/year
Human factors not influenced by risk management		
The work performed is of light character, resulting in a default respiration volume on $10m^3$/8h shift.		
Other given operational conditions affecting workers exposure		
Location	Indoors/Outdoors	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		
None		
Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation required	No	
Organisational measures to prevent /limit releases, dispersion and exposure		
-		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection required	No	
Personal protective equipment	Yes	Chemical resistant gloves: 90% protective clothing, goggles

Name of contributing scenario	Use of substances at small scale laboratory (< 1 l or 1 kg present at workplace). Larger laboratories and R+D installations should be treated as industrial processes	
Use descriptor covered	PROC 15	
Assessment Method	ECETOC TRA Worker v2.0	
Product characteristic		
Physical state	The substance is a liquid at the process temperatures.	
Vapour pressure	Vapour pressure at 20°C is $8*10^{-8}$ Pa. The substance is regarded as a low volatility substance[1].	
Concentration of substance	100 %	
Amounts used		
Not relevant		
Frequency and duration of use/exposure		
Duration of exposure	1-4	hours/day
Frequency of exposure	≤ 240	days/year
Human factors not influenced by risk management		
Other given operational conditions affecting workers exposure		
Location	Indoor	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		
None		
Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation required	No	
Organisational measures to prevent /limit releases, dispersion and exposure		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection required	No	
Personal protective equipment	Yes	protective gloves: 90% Protective clothing

[1]According to "Guidance on Information requirements" R7a, p 269: "Some physico-chemical properties of the substance or mixture could be the basis for waiving testing. In particular, it should be considered for low volatility substances, which are defined as having Vp < $1*10^{-5}$ kPa (= $7,5*10^{-5}$ mmHg) for indoor use and Vp < $1*10^{-4}$ kPa (= $7,5*10^{-4}$ mmHg) for outdoor use."

3.2 Environment

Contributing Scenario controlling environmental exposure	ERC1
Amounts used	1000 tonnes per year
Release times per year	300 days
Environmental factors not influenced by risk management	River flow rate: 18000 m3/day
Other given operational conditions affecting environmental exposure	release to: air: 0.25%, water: 0.02%, soil: 0.01%; fraction used at main source: 100%; fraction tonnage to region: 100%

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	spERC: Modified ESVOC 2.2.v1 STP; No application of sludge to soil
Conditions and measures related to municipal sewage treatment plant	Sewage treatment plant discharge: 2000000 L/day

4. Exposure scenario: Use as an intermediate (ES3)

4.1 Workers

Table 4: Description of ES 3

Reference number	ES 3	
Free short title	Use of intermediates	
Systematic title based on use descriptor	Batch manufacture of a chemical where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling. (PROC 3, 8b, 15)	
Processes, tasks, activities covered	1. PROC 3: Industrial manufacture of chemical substances, including cleaning of the equipment. 2. PROC 8b: Transfer of substance or preparation (charging) to vessels/large containers at dedicated facilities. 3. PROC 15: QC Laboratory	
Environment characteristic covered	ERC6a Industrial use resulting in manufacture of another substance (use of intermediates)	
Name of contributing scenario	Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner	
Use descriptor covered	PROC 3	
Processes, tasks activities covered	1. Industrial manufacture of chemical substances 2. Sampling 3. Charging to storage tanks in enclosed system 4. Cleaning of the process equipment in closed systems.	
Product characteristic		
Physical state	The substance is a liquid at the process temperatures.	
Vapour pressure	Vapour pressure at 20°C is $8*10^{-8}$ Pa. The substance is regarded as a low volatility substance[1].	
Concentration of substance	100 %	
Amounts used		
Not relevant		
Frequency and duration of use/exposure		
Duration of exposure	>4	hours/day
Frequency of exposure	≤ 240	days/year
Human factors not influenced by risk management		
The work performed is of light character, resulting in a default respiration volume on $10m^3$/8h shift.		
Other given operational conditions affecting workers exposure		
Location	Indoors	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		
Enclosed transfers. Sampling with LEV. Spill containment at all input/output points.		

Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation required	No	
Organisational measures to prevent /limit releases, dispersion and exposure		
-		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection required	No	
Personal protective equipment	Yes	Chemical resistant gloves: 90% protective clothing, eye protection

Name of contributing scenario	Packaging of chemical substances into bulk transport, IBC containers or drums.	
Use descriptor covered	PROC 8b	
Processes, tasks activities covered	Charging from IBC containers Disposal of waste product & used containers. Filling of bulk transport Filling of IBC containers Filling of drums	
Product characteristic		
Physical state	The substance is a liquid at the process temperatures.	
Vapour pressure	Vapour pressure at 20°C is $8*10^{-8}$ Pa. The substance is regarded as a low volatility substance[1].	
Concentration of substance	100 %	
Amounts used		
Not relevant		
Frequency and duration of use/exposure		
Duration of exposure	>4	h/day
Frequency of exposure	≤ 240	days/year
Human factors not influenced by risk management		
The work performed is of light character, resulting in a default respiration volume on $10m^3$/8h shift.		
Other given operational conditions affecting workers exposure		
Location	Indoors/Outdoors	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		
None		
Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation required	No	
Organisational measures to prevent /limit releases, dispersion and exposure		
-		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection required	No	
Personal protective equipment	Yes	Chemical resistant gloves: 90% protective clothing, goggles

Name of contributing scenario	Use of substances at small scale laboratory (< 1 l or 1 kg present at workplace). Larger laboratories and R+D installations should be treated as industrial processes
Use descriptor covered	PROC 15
Assessment Method	ECETOC TRA Worker v2.0

Product characteristic		
Physical state	The substance is a liquid at the process temperatures.	
Vapour pressure	Vapour pressure at 20°C is $8*10^{-8}$ Pa. The substance is regarded as a low volatility substance[1].	
Concentration of substance	100 %	
Amounts used		
Not relevant		
Frequency and duration of use/exposure		
Duration of exposure	1-4	hours/day
Frequency of exposure	≤ 240	days/year
Human factors not influenced by risk management		
Other given operational conditions affecting workers exposure		
Location	Indoor	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		
None		
Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation required	No	
Organisational measures to prevent /limit releases, dispersion and exposure		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection required	No	
Personal protective equipment	Yes	protective gloves: 90% Protective clothing, eye protection

[1]According to "Guidance on Information requirements" R7a, p 269: "Some physico-chemical properties of the substance or mixture could be the basis for waiving testing. In particular, it should be considered for low volatility substances, which are defined as having Vp < $1*10^{-5}$ kPa (= $7,5*10^{-5}$ mmHg) for indoor use and Vp < $1*10^{-4}$ kPa (= $7,5*10^{-4}$ mmHg) for outdoor use."

4.2 Environment

Amounts used	1000 tonnes per year
Release times per year	300 days
Environmental factors not influenced by risk management	River flow rate: 18000 m3/day
Other given operational conditions affecting environmental exposure	release to: air: 0.0000%, water: 0.03%, soil: 0.1%; fraction used at main source: 100%; fraction tonnage to region: 100%
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	spERC: ESVOC 6.1a.v1 STP; No sludge to soil
Conditions and measures related to municipal sewage treatment plant	Sewage treatment plant discharge: 2000000 L/day