



AMMONIA LIQUOR TECHNICAL

WITH AMMONIUM CONTENT BELOW 25%

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH), as amended

Valid Issue: 10/12/2023 – version 7

Revision: 10/12/2023 – 7th issue
replaces: 10/11/2022 – 6th issue
issued on: 8/27/2007

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

- Trade name: AMMONIA LIQUOR TECHNICAL WITH AMMONIUM CONTENT BELOW 25%
- Chemical name: Ammonia, aqueous solution < 25%
- Registration number REACH: not relevant for mixtures
- UFI code: WH00-U0NS-800K-SNYH
- Index number: 007-001-01-2
- CAS number: not relevant for mixtures
- EC number: not relevant for mixtures

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Identified uses

Use of aqueous ammonia gas solutions in accordance with the registration documentation for ammonia gas.

An intermediate product for the production of chemical substances; component for preparing mixtures (mainly fertilizers, aqueous solution/ ammonia), or as a processing aid, non-processing aid and auxiliary agent (e.g. nitrogen oxides reduction, neutralization agent, etc.).

Specific identified uses are set forth in subsection 7.3. and section 16.

1.2.2. Non-recommended uses

There are no non-recommended uses stated in the registration. The product may not be used in any way other than that specified in point 1.2.1 or subsection 7.3.

1.3. Details of the supplier of the safety data sheet

producer: ORLEN Unipetrol RPA s.r.o., Záluží 1, 436 70 Litvínov, Czech Republic

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Other contacts:

- Director of the Monomers and Chemicals Unit: ☎: +48 242 566 615; e-mail: Dorota.Smolarek@orlen.pl
- Key Account Manager: ☎: +420 476 166 781, Lenka.Blazkova@orlenunipetrol.cz
- Head of Customer Service Department: ☎: +420 476 162 006; e-mail: Lucie.Markova@orlenunipetrol.cz
- Person professionally qualified to compile a SDS: e-mail: reach.unirpa@orlenunipetrol.cz

1.4. Emergency telephone number

- ORLEN Unipetrol RPA s.r.o. ☎: +420 476 163 111 (NON STOP)
- Toxicological Information Center (TIS) ☎: +420 224 919 293 (NON STOP)
Na bojišti 1, 120 00 Prague 2, Czech Republic ☎: +420 224 915 402 (NON STOP)
e-mail: tis@vfn.cz
- Transport Information & Accident System (TRINS) ☎: +420 476 163 111 (NON STOP)

Note: Emergency telephone numbers for EU countries are listed in section 16.

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to CLP Regulation (EC) No. 1272/2008 CLP:

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SKIN CORROSION / IRRITATION, CATEGORY 1B

ACUTE TOXICITY (INHAL), CATEGORY 4

SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE, CATEGORY 3

HAZARDOUS TO THE AQUATIC ENVIRONMENT, CATEGORY CHRONIC 3

Skin Corr. 1B, H 314


Acute Tox. 4, H 332

STOT SE 3, H 335

Aquatic Chronic 3, H 412

Note: The full text of the H-sentence and / or EUH-sentences is stated in Section 16.

2.2. Label elements

Product identifiers		<p>AMMONIA LIQUOR TECHNICAL AMMONIA, AQUEOUS SOLUTION MIN.25% Index number: 007-001-01-2</p>	
Warning hazard symbol			
Signal word		DANGER	
H-phrases (standard hazard phrases)	H314 H332 H335 H412	<p>Causes severe skin burns and eye damage. Harmful if inhaled. May cause respiratory irritation. Harmful to aquatic life with long lasting effects.</p>	
P-statements (precautionary statements)	P260 P271 P273 P280 P301+P330+P331 P303+P361+P353 P305+P351+P338 P310	<p>Do not breathe gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water (or shower). IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTRE or doctor if you feel unwell.</p>	
UFI code:		WH00-U0NS-800K-SNYH	
Additional information		EUH071: Corrosive to the respiratory tract.	
		<p>ORLEN Unipetrol RPA s.r.o. Záluží 1, 436 70 Litvínov, Czech Republic ☎: +420 476 161 111, +420 476 163 111</p>	

2.3. Other hazards

Vapours released from the product irritate airways and, at high concentrations, they may damage your eyes. Any stay at high concentrations of released ammonia, which is toxic if breathed, may cause suffocation that may be temporary but also fatal. Breathing of the gas result in swelling of your larynx or lungs (sometimes even delayed) and cause asphyxiation. Even though the product is not combustible, it may form explosive mixtures with air. Upon the product release, air can be contaminated in large distances from the sources. The product forms caustic mixtures even if very diluted with water.

Produkt does not meet the criteria for PBT (P-persistent, B-bioaccumulative, T-toxic) or vPvB (vP-very persistent, vB-very bioaccumulative) substances - see Subsection 12.5. ("Results of PBT and vPvB

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assessment").

Substances contained in the mixture are not included in the candidate list pursuant to Article 59 (Paragraph 1) of the REACH Directive (SVHC).

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Not applicable, the product is a mixture.

Ammonia water has assigned an index number: 007-001-01-2. Not subject to registration according to the REACH regulation.

On the basis of clarification provided by ECHA Helpdesk's in 2008-2009 Ammonia aqueous solution is considered as a mixture of Ammonia, anhydrous (CAS 7664-41-6) and water under Regulation EC/1907/2006 (therefor ammonia aqueous solution were not registered as substance as such).

3.2. Mixtures

Substances contained in the mixture:

NAME	REGISTRATION NUMBER INDEX NUMBER	CAS NUMBER ES NUMBER	CONTENT [%wt]	CLASSIFICATION according to Regulation (EC) No 1272/2008
Ammonia, anhydrous	01-2119488876-14-0060 007-001-00-5	7664-41-7 231-635-3	≤ 24,9	Flam. Gas 2, H 221 Press Gas, H 280 Acute Tox. 3, H 331 Skin Corr. 1B, H 314 Aquatic Acute 1, H 400 (<i>M</i> = 1) Aquatic Chronic 2, H 411 doplňková věta: EUH 071
Water	exempt from the registration no index number allotted	7732-18-5 231-791-2	> 75	it does not meet the criteria for the classification as a hazardous substance

Note: Specific concentration limits (SCL), M-factor (M-) and Acute toxicity estimate (ATE). The full text of the H-sentence and / or EUH-sentences and the meaning of the abbreviations of hazard classes are stated in Section 16.

Note: The substance is not or not contain a nanoform.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

4.1.1. General instructions

When providing first aid pay attention to self-protection.

Call emergency medical services (☎ 120 EU) and follow their instructions until their arrival. First aid must be always administered with the objective to preserve the basic bodily functions - should the victim become unconscious or should he/she stop breathing, start resuscitation immediately (chest compression and mouth-to-mouth resuscitation with the 30:2 ratio). When the victim is unconscious but is breathing NORMALLY, put him/her in the recovery position. The condition of the patient can change very quickly, so you need to watch him/her constantly and continuously monitor his/her consciousness status and breathing.

If the person is in unconscious or if he/she has spasms, do not put anything in his/her mouth, just put him/her into a stabilised position.

4.1.2. When inhaled

Taking care about your own safety, move the exposed person to fresh air and keep it in a position that facilitates breathing. Rinse the person's mouth and nose with water, keep the exposed person warm and at rest and get prompt medical assistance.

4.1.3. Skin contact

Wash the affected body parts with plenty of water and remove the contaminated clothes and footwear immediately. Wash the skin thoroughly with ample quantity of warm water but without greater



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mechanical irritation, best of all until the medical assistance arrival, although at least for 20 minutes. Burnt places cover with sterile dressing or clean cloth. Get prompt medical assistance.

4.1.4. Contact with eyes

Immediately start to rinse the eyes thoroughly with ample quantity of clean (lukewarm, if possible) water and continue with forcibly open eyelids from the inner to the outer eye corner until the medical assistance arrival. Check for contact lenses and remove them, if present Get prompt medical assistance.

4.1.5. When ingested

NEVER INDUCE VOMITING! Rinse the mouth with water immediately and let the exposed person drink 2 to 5 dl of cool water /if cool water is not available immediately, it is better to administer tap water instead of waiting for cooled water; carbonated water is not suitable). If the exposed person complains about sore throat or mouth, do not make him/her to drink, rinse the mouth only. DO NOT ADMINISTER ACTIVATED CARBON or any food. If the exposed person is unconscious or gets convulsions, do not administer anything by mouth. Seek immediate medical assistance.

4.2. Most important symptoms and effects, both acute and delayed

Breathing of released vapours causes burning and pain of burnt mucous membranes, persistent irritating cough and shortness of breath. Pulmonary oedema may develop even after a substantial delay. The burning manifests itself with itching, burning, pain and change in skin colouration or damaged tissue (necrosis). If ingested, the product causes alimentary tract pains, vomiting – very often with blood marks. The contact with eyes may cause loss of eyesight.

4.3. Indication of any immediate medical attention and special treatment needed

In all cases of exposure, the most immediate medical assistance is necessary.

The workplace must be equipped with an emergency shower and an eye-washing device.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

The product is non-flammable; suitable means should be chosen according to the neighbouring fire type.

5.2. Special hazards arising from the substance or mixture

At its thermal decomposition, the product releases gaseous ammonia and nitrogen oxides; at temperatures above 450°C highly flammable hydrogen gas is formed. Closed containers with the substance may explode due to the heat.

5.3. Advice for firefighters

Reduce to minimum any penetration of extinguishing liquids into sewers, surface/underground water and soil. Contaminated water forms a caustic solution.

Cool the vessels containing the product with water spray – they may explode due to the heat.

Released vapours should be precipitated with water.

Firemen protective equipment: complete protective clothing protecting also against the fire and chemicals plus a self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Seal the accident location and prevent access to the endangered area. Stay on the windward side. Remove any potential source of ignition. Do not smoke and/or handle naked flame. Prevent any contact with the product and its released vapours. In the liquidation of leaks, use suitable protective clothing and a self-contained breathing apparatus. In the liquidation of the accident impacts, use all recommended protective aids (see Subsection 8.2). In areas, where the released gaseous ammonia concentration is not known, or where it is above the exposure limits, use a self-contained breathing apparatus. In adjacent endangered buildings, provide for adequate measures against gas penetration (e.g. seal windows and doors, switch off/seal all air-intake elements). In large-scale accident evacuate all persons from the whole endangered area. For the protection of escaping persons against breathing the gas, use protective masks with filters effective against ammonia gas or, at least, wet towels or rags over their face.



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6.2. Environmental precautions

Prevent any further leaks of the product and contain the spillage. Reduce further ammonia penetrations into the neighbourhood by waters screens.

Do not allow to enter drains, underground water or watercourses and soil/subsoil by enclosing the affected area (damming, closing of gulleys, by covering the sewerage system inlets).

6.3. Methods and material for containment and cleaning up

Create a water screen reducing the penetrating vapours. Pump off the spilled product safely and transport the product away in closed containers for its disposal. Dispose the product in accordance with the current legislation for handling of waste (see Section 13). In the place of the product release, increase the ventilation intensity – particularly in cases of confined space - and monitor the released ammonia concentration in air. After the release liquidation, wash the affected areas with water.

6.4. Reference to other

For recommended personal protective aids – see Subsection 8.2. (“Exposure controls”).

For recommended manner of removing waste – see Section 13. (“Disposal considerations”).

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Handle the product and empty containers (that may contain product residues) in well ventilated areas and comply with all fire protection measures (no smoking, no open flame, removal of all possible ignition sources). Use the recommended personal protective equipment and observe all instructions issued with the aim to eliminate any possible contact with the skin and eyes and inhalation of the product. **Always enter all production areas and, if applicable, other areas where there is a risk of the presence of ammonia only with a protective mask in a ready-to-use position.**

General hygiene principle: Comply with the personal hygiene rules. Take off contaminated clothes immediately. Do not eat, drink or smoke at work! After the end of work and prior to eating or drinking, thoroughly wash your hands and uncovered parts of your body with soap and water and, if possible, apply a regenerating cream. Do not wear/bring polluted clothes, footwear and protective aids to eating areas.

7.2. Conditions for safe storage, including any incompatibilities

Storage areas must comply with the building fire safety requirements and electrical devices must comply with the current regulations. Store the product at a cool, well ventilated place (the recommended maximum storage temperature is 25°C) fitted with extract ventilation, away from heat and all ignition sources. Stored containers must be enclosed and duly labelled. Do not store the product in the proximity of incompatible materials, such as explosive materials or oxidation agents (oxygen, air, etc.).

7.3. Specific end use(s)

Use of aqueous ammonia gas solutions in accordance with the registration documentation for ammonia gas. Ammonia aqueous solutions are generally intended for industrial use as an intermediate (Exposure scenario 17), for distribution and formulation (Exposure scenario 8, 13, 30), as reactive or auxiliary agents in the industrial and professional sectors (Exposure scenario 5, 6, 11, 26, 27, 34), in cooling systems (Exposure scenario 9), when reducing emissions in flue gas (3, 24) and others. An overview of specific uses is given in section 16 of the body of the safety data sheet. All of these exposure scenarios are part of the annex to this Safety Data Sheet. The product shall not be used as part of amusement or decorative purposes, how define in point 3, annex XVII Regulation REACH, as amended.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Occupational exposure limit values

The following Permissible Exposure Limits (PELs) and Maximum Allowable Concentrations (NPK-P) of Chemicals in the Atmosphere of Workplaces within the Czech Republic are set by the Government Regulation No. 361/2007 Coll., determining conditions of occupational health protection, as amended:



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Name	CAS number	PEL [mg.m ⁻³]	NPK-P [mg.m ⁻³]	Note
Ammonia, anhydrous	7664-41-7	14	36	I - irritates mucous membranes (eyes, respiratory tract) or the skin.

Note 1: An explanation of the meaning of the PEL and NPK-P abbreviations is in section 16.

Note 2: Occupational exposure limit values for EU countries are listed in section 16.

8.1.2. DNEL/DMEL values

Toxicological information_aqueous ammonia...%

EXPOSURE OF WORKERS / EMPLOYEES				EXPOSURE OF THE GENERAL POPULATION / CONSUMERS			
EXPOSURE	IMPACTS	POINT OF ENTRY	DNEL	EXPOSURE	IMPACTS	POINT OF ENTRY	DNEL
acute	system	skin	6.8 mg/kg.bw/d	acute	system	skin	6.8 mg/kg.bw/d
acute	system	inhaling	47.6 mg.m ⁻³	acute	system	inhaling	23.8 mg.m ⁻³
/	/	/	/	acute	system	mouth	6.8 mg/kg.bw/d
acute	local	skin	not specified	acute	local	skin	not specified
acute	local	inhaling	36 mg.m ⁻³	acute	local	inhaling	7.2 mg.m ⁻³
long-term	system	skin	6.8 mg/kg.bw/d	long-term	system	skin	6.8 mg/kg.bw/d
long-term	system	inhaling	47.6 mg.m ⁻³	long-term	system	inhaling	23.8 mg.m ⁻³
/	/	/	/	long-term	system	mouth	6.8 mg/kg.bw/d
long-term	local	skin	not specified	long-term	local	skin	not specified
long-term	local	inhaling	14 mg.m ⁻³	long-term	local	inhaling	2.8 mg.m ⁻³
long-term	local	eye	not specified	long-term	local	eye	not specified

Note : An explanation of the meaning of the DNEL/DMEL abbreviations is in section 16.

8.1.3. PNEC values

ENVIRONMENTAL COMPONENT	PNEC	NOTE
Fresh water	0,00135 mg/l	Intermittent releases: 0.0083 mg/L Assessment factor: 10 Extrapolation method: assessment factor
Sea water	0,00135 mg/l	Assessment factor: 10 Extrapolation method: assessment factor
Sediment	not specified	Ammonia does not accumulate in sediments.
Soil	0,0221 mg/kg soil dw	Assessment factor: 10 Extrapolation method: assessment factor
Water treatment plant	not specified	Ammonia is used as a source of nitrogen for the bacteria. For soil bacteria, it was demonstrated that they are not sensitive at concentrations up to 34 mg NH ₃ /l.
Food chain	not specified	The n-octanol/water distribution coefficient (log Kow) for ammonia is smaller than 4.5 and no bio-accumulation of the product is thus expected (the log Kow value is 0.23).

Note: An explanation of the meaning of the PNEC abbreviation is in section 16.

8.1.4. Recommended monitoring of the concentration in the workplace

Spectrophotometry in accordance with the ČSN EN 689 and ČSN EN 482 technical standards.

8.2. Exposure control

8.2.1. Technical protective measures for limiting the exposure of people and the environment

Exposure control of unwanted exposure of humans and the environment shall be secured by keeping the substance under strict control using technical aids and procedural and control technologies, which



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reduce emissions and consequent exposure, with the objective to prevent releases of the substance vapors in the air, penetration of the substance to water and soil and possible exposure of people. Areas, where the substance is handled and stored, shall be furnished with impermeable floors and catchment basins for the cases of emergency leaks of the substance. It is necessary to secure general and local ventilation and an efficient exhaust system.

8.2.2. Individual protective measures

If there is an increased risk of exposure when handling the product, or shall the exposure increase as a result of, for example, an accident or extraordinary events, employees have to have personal protective aids (PPA) for the protection of their air passages, eyes, hands and skin available to them. These aids shall correspond to the character of the conducted activities. They shall be also equipped with a suitable protection of air passages whenever it is not possible to secure, by technical means, compliance with the exposure limits specified for the work environment or when it is not possible to guarantee that the health of people is protected as a result of exposure via air passages. Shall these aids be used permanently during uninterrupted work activities, safety breaks shall be included if the character of the used PPA requires it. All PPA shall be constantly maintained in usable conditions and damaged or polluted aids shall be immediately replaced. **Always enter all production areas and, if applicable, other areas where there is a risk of the presence of ammonia only with a protective mask in a ready-to-use position.**

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

(the specific type of protective equipment must be chosen according to the type of activity being carried out and the quantity and concentration of the dangerous substance / mixture at the workplace)

- *Respiratory protection:* Protective mask compliant with EN 140 with a filter that is suitable against ammonia, insulation breathing apparatus (use the mask in case of insufficient ventilation and / or local exhaustion and product leakage);
- *Eye/face protection:* Protective chemical goggles compliant with EN 166 or, in the case of an increased risk of burning, protective face shield;
- *Hand protection:* chemically resistant gloves tested according to EN 374, for example the following materials are suitable:

	<i>Glove material</i>	<i>Material thickness</i>	<i>Penetration time</i>
Regular work activities (staining risk)	nitrile	0.4 mm	240 minutes
Leak / accident liquidation	butyl	0.7 mm	480 minutes

- *Protection of other body parts:* Antistatic, inflammable protective clothes, protective footwear with antistatic modification, full anti-chemical clothes in the case of a leak;
- *Thermal risk:* Not relevant for the given manner of the use;
- *Other measures:* Workplaces shall be equipped with a safety shower and a device for rinsing eyes.

8.2.3. Environmental exposure controls

Avoid product leakage to the environment with all available means. See section 6.2.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

The information is taken from the registration dossier of substance - anhydrous ammonia (RD) unless otherwise stated.

CHARACTERISTIC	UNIT	VALUE	SOURCE	NOTE
Physical state		Liquid		at 20°C; 101,3 kPa
Colour		Colorless to yellowish		



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CHARACTERISTIC	UNIT	VALUE	SOURCE	NOTE
Odour		Very strong, pungent and irritant		
Odour threshold	[mg.m ⁻³]	0.0266	HSDB	anhydrous ammonia
Melting point/freezing point	[°C]	-44.5		24% aqueous solution at 101,3 kPa
Boiling point or Initial boiling point / boiling range	[°C]	35		25% aqueous solution at 101,3 kPa
Flammability (solid, gas, liquid)		non-flammable		25% aqueous solution
Upper flammability / explosive limits	[% obj]	25		anhydrous ammonia
Lower flammability / explosive limits	[% obj]	16		anhydrous ammonia
Flash point		Irrelevant		non-flammable
Auto-ignition temperature	[°C]	651		anhydrous ammonia at 101,3 kPa
Decomposition temperature		Does not decompose at normal usage temperatures		
pH value		11.6	HSDB	CSR does not state / 1 N aqueous solution (Dissociation constant pKa at 20°C: 4.767)
		13.4	own tests	25% aqueous solution
Kinematic viscosity		Not available		
Solubility in water	[g.l ⁻¹]	482		anhydrous ammonia at 25 °C
		531		at 20 °C The water solubility decreases with increasing temperature.
Partition coefficient: n-octanol/water	[log Kow]	0.23		anhydrous ammonia at 20°C, by calculate
Vapour pressure	[kPa]	41.69		25% aqueous solution at 19,9°C
Density	[kg.m ⁻³]	0.708		anhydrous ammonia by calculation
Relative density of gas		0.588		anhydrous ammonia by calculation
Particle characteristics		Irrelevant		Not applicable - this is a liquid.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

CHARACTERISTIC	UNIT	VALUE	SOURCE	NOTE
Explosive properties		Substance is not explosive	RD	
Oxidising properties		None	RD	

9.2.2. Other safety characteristics

CHARACTERISTIC	UNIT	VALUE	SOURCE	NOTE
Dynamic viscosity	[mPa]	0,255-0,475	RD	anhydrous ammonia, at -33.5 to -69°C

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

No risk is imminent provided the handling and storage conditions described in Section 7 are complied with. If the temperature exceeds 450°C, highly flammable hydrogen is formed.

10.2. Chemical stability

If the handling and storage conditions described in Section 7 are complied with, the product is chemically stable.

10.3. Possibility of hazardous reactions

Ammonia (NH₃), which is released from the product, is a highly reactive and soluble alkaline gas. Dangerous reactions occur in contact with oxidation agents. Dangerous and explosive reactions may also occur in contact with other substances (e.g. alkali metals, copper, silver, cadmium, zinc and their alloys, mercury, tin, alcohols, aldehydes, azides, halogens, etc.). Strong neutralization reactions occur in contact with acids.

10.4. Conditions to avoid

High temperature.

10.5. Incompatible materials

Oxidation agents and a wide range of other substances – see Subsection 10.3.

10.6. Hazardous decomposition products

Thermal decomposition at high temperatures, e.g. in fire, may create nitrogen oxides, highly flammable hydrogen and nitrogen.

SECTION 11: TOXIKOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

11.1.1. Toxicological effects of the substance / mixture

The information is taken from the registration dossier of substance - anhydrous ammonia (RD), valid for aqueous ammonia...%, unless otherwise stated.

HAZARD CLASS	DATA FROM REGISTRATION DOCUMENTATION		EVALUATION
	DESCRIPTION	RESULT	
Acute toxicity	oral, dermal: inhal:	No relevant LC ₅₀ (1h) (rat)= 9 850 mg/m ³	Meets the classification criteria (H332)
Skin corrosion/irritation	Regarding corrosive effects, specific concentration limits have proposed for aqueous solutions of ammonia. Aqueous solutions ≥ 5% are classified as: Skin corrosion category 1B; H314: Causes severe burns and eye damage.		Meets the classification criteria (H314)
Serious eye damage/irritation		Included in corrosion	See skin corrosion
Sensitisation		There is no information currently available, which would demonstrate that the substance - anhydrous ammonia has the given characteristic.	Does not meet the classification criteria
Germ cell mutagenicity			
Carcinogenicity			
Reproductive toxicity			
STOT-single exposure	Regarding corrosive effects, specific concentration limits have proposed for aqueous solutions of ammonia.	It may irritate the respiratory tract; According annex VI of CLP, aqueous solutions of ammonia is classified H335 - May cause	Meets the classification criteria (H335)



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HAZARD CLASS	DATA FROM REGISTRATION DOCUMENTATION		EVALUATION
	DESCRIPTION	RESULT	
		respiratory irritation (C _≥ 5% STOT SE 3).	
STOT-repeated exposure		There is no information currently available, which would demonstrate that the substance - anhydrous ammonia has the given characteristic.	Does not meet the classification criteria
Aspiration hazard		The product does not form hydrocarbons with a kinematic viscosity ≤ 20,5 mm ² .s ⁻¹ at 40°C.	Does not meet the classification criteria

11.1.2. Information on likely routes of exposure

An important exposure route is inhaling of released ammonia gas. Ammonia is penetrates poorly through the skin and therefore in any dermal exposure with the product, local damage prevails – i.e. skin/eye irritation to burn.

11.1.3. Delayed and immediate effects as well as chronic effects from short and long-term exposure

Breathing of released vapours causes burning and pain of burnt mucous membranes, persistent irritating cough and shortness of breath. Pulmonary oedema may develop even after a substantial delay. Any stay at high concentrations of released ammonia, which is toxic if breathed, may cause suffocation that may be temporary but also fatal. Breathing of the gas result in swelling of your larynx or lungs (sometimes even delayed) and cause asphyxiation..

The burning manifests itself with itching, burning, pain and change in skin colouration or damaged tissue (necrosis). If ingested, the product causes alimentary tract pains, vomiting – very often with blood marks. The contact with eyes may cause loss of eyesight.

11.1.4. Interactive effects

If the substance is used according to the specified usage type, no interactions can occur.

11.1.5. Toxicokinetics

Data for ammonia gas released:

Bioaccumulation potential: no bioaccumulation potential

Absorption rate - inhal (%): 100 (Gaseous ammonia is quickly absorbed by lungs. It is metabolized into urea and excreted in urine.)

Absorption rate - oral (%): 100 (Ammonia is generated in the gastrointestinal tract by the bacterial flora and is readily absorbed.)

Absorption rate - dermal (%): 10 (Significant dermal absorption is not considered to be likely under exposure scenarios where the integrity of the skin barrier is maintained.)

11.2. Information on other hazards

Substances contained in the mixture are not included in the candidate list pursuant to Article 59 (Paragraph 1) of the REACH Directive (due to the characteristics that can compromise endocrine activities or due to any other reason).

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity (data for anhydrous ammonia)

Water environment	Fish	LC ₅₀ (96 h, fish) = 0,083 mg NH ₃ /l	short-term effects
		NOEC = 0,0135 mg NH ₃ /l	long-term effects
	Invertebrates (<i>Daphnia magna</i>)	LC ₅₀ (48 h, invertebrates) = 101 mg/l	short-term effects
		NOEC = 0,961 mg NH ₃ /l	long-term effects
		E ₅₀ (algae) = 3 283,2 mg NH ₃ /l	short-term effects



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	Algae (<i>Chlorella vulgaris</i>)	NOEC \geq 4,77 mg NH ₃ /l	long-term effects
Terrestrial environment	Soil macro-organisms	EC10/LC10 or NOEC = 52,42mg/kg soil dw EC10/LC10 or NOEC (arthropods): 140,36 mg/kg soil dw	long-term effects
	Plants	EC10/LC10 or NOEC = 0,221 mg/kg soil dw	long-term effects
	Soil micro-organisms	EC10/LC10 or NOEC = 4 420 mg/kg soil dw	long-term effects
Microbiological activity (STP)	Activated sludge	The test does not have to be conducted because ammonia is used as a source of nitrogen by present microorganisms and, at the same time, it is also produced by bacteria from other compounds that contain nitrogen.	
Secondary poisoning	Not determinate	The n-octanol/water distribution coefficient (log Kow) for ammonia is smaller than 4.5 and no bio-accumulation of the product is thus expected (the log Kow value is 0.23).	

Note: An explanation of the meaning of the abbreviations is in section 16.

The substance itself is gaseous - in the environment it will become associated with water or moisture and will therefore predominantly exist as aqueous ammonia.

The substance is classified as very toxic to the environment (H400) due to the effects on fish. In accordance with the rules of the CLP, the classification of ammonia anhydrous should also consider the long – terms effect on the aquatic compartment. Based on the lowest NOEC value for chronic toxicity to fish (0.0135 mg/L), the substance is also classified as Aquatic chronic 2 (H411).

12.2. Persistence and degradability (data for anhydrous ammonia)

Biologic degradability: ammonia is known to be readily biodegradable in water, soil and sediment under aerobic conditions.

Abiotic degradability:

- Hydrolysis as a pH function: the product is not subject to hydrolysis (in an aqueous solution, ammonia and ammonium ion are balanced);
- Photolysis: photolysis and reactions with radicals occurred as a result of the photolysis in the troposphere represent the main way of removing atmospheric ammonia (Ammonia reacts with ozone, hydroxyl radical, and atomic oxygen; a direct photolysis by sunlight at a certain wavelengths only).

Adsorpcce: Ammonia is strongly adsorbed on soil, sediment particles and colloids in water. Koc at 20°C: 100000
Based on its solubility, ammonia is not expected to adsorb to particulate matter to an appreciable degree.

12.3. Bioaccumulative potential

Ammonia is a product with regular metabolism. Since the n-octanol/water (log Kow) distribution coefficient is smaller than 4.5, bioaccumulation of the product is not expected (the log Kow value is 0.23).

12.4. Mobility in soil (data for anhydrous ammonia)

Bacteria quickly transform ammonia applied directly to the soil to other forms, which are used by plants and return to the atmosphere as a result of the denitrification process. That is why exposure of the soil microorganisms is not expected. Ammonia does not accumulate in sediments.

12.5. Results of PBT and vPvB assessment (data for anhydrous ammonia)

Ammonia is neither a PBT- or a vPvB substance (within the meaning of the Annex XIII of Directive (EC) No. 1907/2006 REACH.

Ammonium is readily converted by bacterial species to nitrate, via the process of nitrification. Therefore it is not considered to be persistent (P) or very persistent (vP).

Ammonia does not bioaccumulate and is a product of normal metabolism. Therefore it is not considered bioaccumulative (B) or very bioaccumulative (vB).

The substance is not classified as toxic based on the criteria outlined under REACH Annex XIII. The lowest

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NOEC for freshwater organisms is >0.01 mg/L. The substance is not classified as not classified as carcinogenic, mutagenic, or toxic for reproduction.

12.6. Endocrine disrupting properties

Substances contained in the mixture are not included in the candidate list pursuant to Article 59 (Paragraph 1) of the REACH Directive due to the characteristics that can compromise endocrine activities.

12.7. Other adverse effects

Pursuant to Appendix 1 of the Water Act No. 254/2001 Coll., the product is considered a hazardous and harmful substance.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

If the remainder of the product is to be disposed (eg unused or leaked product), the valid European Union and national legislature as well as locally valid regulations have to be complied with. Deliver the waste for disposal to a professionally qualified person /to facility with the appropriate authorization to manage waste.

Recommended waste classification pursuant to COMMISSION DECISION of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament and of the Council:

13.1.1. Catalogue number

06 02 03* Ammonium hydroxide.

13.1.2. Recommended waste removal method

Treat the product in a waste water treatment plant with a biological level.

13.1.3. Recommended method for removing polluted packages

This point is irrelevant. The product is transported by railway and road tankers and is thus not packaged.

13.1.4. Measures for limiting exposure when handling waste

Do not flush the released product (in accidents) into sewer systems. Proceed in compliance with the instructions stated in Section 6 (“Accidental release measures”) and Subsection 8.2. (“Exposure control”) and observe all valid legal regulations related to the protection of people, the air and water.

WARNING: The stated information is of a recommendation character. It is related to the delivered, still unused material. Pursuant to the Waste Act all responsibilities for managing the waste, including its assignment based on its type and category, are responsibilities of the waste originator.

SECTION 14: TRANSPORT INFORMATION

Ammonia liquor technical is delivered in road tank vehicles and in railway wagons.

The listed information applies to road transport (ADR) and rail (RID) transport of dangerous goods:

14.1. UN number or ID number	2672
14.2. UN proper shipping name	AMMONIA, SOLUTION, aqueous with more than 10% but not more than 35% ammonia
14.3. Transport hazard class(es)	8
14.4. Packing group	III
14.5. Environmental hazards	based on the criteria of the UN sample regulations, the product is not harmful to the environment
14.6. Special precautions for user	none
14.7. Maritime transport in bulk according to IMO instruments	the product is not designated for bulk transport pursuant to the International Maritime Organization (IMO) documents

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14.8. Other information

Hazard identification number: 80
 Classification code: C5
 Labels: 8



SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. European Union

Regulation of the European Parliament and Council (EC) No. 1907/2006 (REACH), as amended

REGISTRATION (TITLE II OF THE REACH REGULATION)

the product is a mixture which as such is not subject to registration; ammonia anhydrous was registered

AUTORISATION (TITLE VII OF THE REACH REGULATION)

none of the substances contained in the product is on the list stated in Annex XIV of Regulation (EC) No. 1907/2006 REACH, and is therefore not subject to the approval obligation

RESTRICTION (TITLE VIII OF THE REACH REGULATION)

the product shall not be used in aerosol dispensers for amusement and decorative purposes intended for sale to the public

Regulation of the European Parliament and Council (EC) No. 1272/2008 (CLP), as amended

the product has been classified in compliance with the stated regulation, packaging and labeling obligations of dangerous chemicals only apply to the product if it is marketed in packaging subject to its labelling according to CLP regulation

Regulation of the European Parliament and Council (EC) 2017/542 – Annex VIII. (CLP) – a harmonised information relating to emergency health response.

The required information about the hazardous mixture has been submitted by means of ECHA Submission portal – Poison centres (PCN)

Regulation of the European Parliament and Council (EC) No. 649/2012 on the export and import of dangerous chemicals, as amended

the product is not subject to special import or export restrictions

Commission decision 2014/955/EU of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament and of the Council

EP and Council Regulation (EC) No. 2019/1148 (explosives precursors), as amended

Annex I - PRECURSORS OF EXPLOSIVES SUBJECT TO RESTRICTIONS - *Substances contained in the mixture are not included.*

Annex II - NOTIFIABLE EXPLOSIVES PRECURSORS - *Substances contained in the mixture are not included.*

The Seveso III Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances – product not listed

15.1.2. Czech Republic

Act No. 350/2011 Coll. on Chemical Substances and Chemical Mixtures, as amended

Act No. 258/2000 Coll. on the Protection of Public Health, as amended

Act No. 254/2001 Coll., on Water, as amended

Act No. 201/2012 Coll., on Air Protection, as amended

Act No. 541/2020 Coll., on Waste, as amended

Regulation No. 8/2021 Coll., on the Waste Catalogue and on Assessing Waste Characteristics, as amended

Governmental decree no. 361/2007 Coll., laying down occupational health and safety conditions

one product component has exposure limits, the product is not subject to the obligation to establish a controlled zone

Act no. 224/2015 Coll., on prevention of serious accidents caused by selected dangerous chemical substances or mixtures



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15.2. Chemical safety assessment

The appropriate chemical safety assessment was conducted when ammonia anhydrous was registered, aqueous solutions of ammonia are included in the registration documentation for Ammonia, anhydrous. The substance fulfills the criteria for being classified as a hazardous substance pursuant to Directive (EC) No. 1272/2008 CLP. Exposure assessment and the consequent risk characterization procedure were executed.

Exposure scenarios according to Article 31 of Regulation (EC) No. 1907/2006 of the European Parliament and of the Council (REACH) are attached to the safety data sheet or are published on the manufacturer's website (due to the large scope of the document), address:

https://www.orlenunipetrolrpa.cz/en/OurProducts2/PetrochemicalProducts/Agrochemicals/Documents/ExpSc_Amoniak_anhydrous_Amoniak_aqueous_EN.pdf

SECTION 16: OTHER INFORMATION

Changes adopted as a part of the revision process

- 12/01/2009: Revision (2): Editing information in the sections 1, 2.1, 8.1, 15, 16 and the „Declaration“
- 08/01/2011: Revision (3): Complete revision of the document in relation to the updating of Annex II of Regulation (EC) No 1907/2006 REACH in accordance with Annex I of Commission Regulation (EU) No 453/2010
- 01/01/2012 / 3(1): Section 15.1.2 – updating legislation
- 01/06/2012 / 3(2): Section 1.1 - identifiers, Section 1.3 – update contact and Section 16 – abbreviations
- 08/01/2014: Revision (4): Editing information in the sections 2.1, 2.2 , 15.1 a 16
- 05/31/2015 / 4(1): Section 1 (contact information), Section 2, Section 15.1 (update of legal regulations) and 16 (text deletion)
- 01/11/2016 / 4(2): Section 1 (contact information), Section 14 and 15 (editing in accordance with Regulation (EC) no. 830/2015), Section 15 (legislation update)
- 02/01/2018: Revision (5): Unification of SDS format after the ČeR merger into UNIPETROL RPA, including the editing of data in sections 1, 8, 9, 11, 12, 13 15 and 16, classification update
- 03/01/2018 / 5(1): Section 14 (transport information)
- 01/06/2021 / 5(2): Section 1.1 (UFI code), Section 9.1. (pH), Section 15.1.
- 29/06/2022: Revision (6): – Overall modification of the document in relation to the update of Appendix II of Directive (EC) No. 1907/2006 REACH, by Directive of the Council (EC) No. 2020/878;
Data modification in Sections 13 and 15 - update of the legal regulations;
Data modification in Section 1 – change of the company name;
- 10.12.2023: Revision (7): Overall modification of the document in connection with the update of the Chemical Safety Report (CSR), change of classification in Sect. 2 and replacement of the appendix – Exposure scenarios;

Acronyms and abbreviations used in the text

ADR	Agreement concerning the International Carriage of Dangerous Goods by Road
CAS	Registration number assigned to the substance by the Chemical Abstracts Service of the American Chemical Society
CLP	EU Directive No. 1272/2008 on Classification, Labeling and Packaging of chemical substances and mixtures, which is implemented into the European legislature by the means of GHS (United Nations' Globally harmonized System) for classifying and labeling chemical substances
CMR	Carcinogenic, mutagenic or toxic for reproduction
ČSN EN (ISO)	European standard incorporated into the Czech technical standards
CSR	Chemical Safety Report
DMEL	Derived minimal effect level - an exposure level that corresponds to a low and possibly theoretical risk, which should be considered as an acceptable risk (for thresholdless effects, i.e. there is no exposure level without effect)



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DNEL	Derived no-effect level - level of exposure derived from toxicological data that does not produce any adverse effects on human health
DW	Data waiving
EC ₅₀	Effective concentration EC ₅₀ is the concentration of substance that causes immobilization of 50% of individuals
ErC ₅₀	Effective concentration EC ₅₀ is the concentration of substance that causes 50 % decrease of Algea growth
ECHA	European Chemicals Agency
ES	Official number of the chemical substance in the European Union: EINECS from the European Inventory of Existing Commercial Substances, or ELINCS from the European List of Notified Chemical Substances, or NLP from the No Longer Polymer list
HSDB	Hazardous Substances Data Bank
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
IC ₅₀	Inhibition concentration IC ₅₀ that causes inhibition of 50% of individuals
ICAO	International Civil Aviation Organization
ICE	"Intervention in Chemical Transport Emergencies" system providing both professional and practical assistance in dealing with emergency situations related to the transport and storage of hazardous chemicals
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organisation
ISO	International Organization for Standardization
LC ₅₀ /LD ₅₀	Lethal concentration/level is the concentration/level of substance that causes mortality of 50 % individuals
LOEC/LOEL	Lowest Observed Effect Concentration/Level
log Kow	Logarithm of distribution coefficient n-octanol/water
nf	Not feasible
NOAEC/NOAEL	No Observed Adverse Effect Concentration/No Observed Adverse Effect Level
NOEC/NOEL	No Observed Effect Concentration/No Observed Effect Level
NPK-P	The highest permitted concentration of the chemical substance in the air (the concentration of the substance that a worker may be exposed to for a maximum of 15 minutes but which must never be exceeded)
OECD	Organization for Economic Co-operation and Development
OOP	Recommended personal protective aids
OSN	United Nations
(Q)SAR	Quantitative Structure-Activity Relationship
PBT, vPvB	Persistent, bioaccumulative and toxic; high persistent and high bioaccumulative
PCN	Poison Centres Notification – international system for the notification of dangerous mixtures
PEL	Permitted exposure limit of the chemical substance in the air (the exposure value that an employee may be exposed to during the entire working shift (8 hours), without endangering his health during lifetime occupational exposure)
PNEC	Predicted No Effect Concentration
REACH	EU Directive No. 1907/2006 on Registration, Evaluation and Authorization of Chemicals
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
STP	Sewage treatment plant
su	Scientifically Unjustified
TRINS	Transport Information and Accident System of the Czech Republic, providing professional and practical assistance in dealing with emergency situations related to transport and storage of hazardous chemical substances, included in ICE



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UACRON	Chemical database (The University of Akron).
UFI code	Unique identifier of the composition of the product containing the dangerous mixture (s).
UN číslo	The four-digit identification number of the substance or object identifying hazardous material in international transport
UVCB	Substances of Unknown or Variable composition, Complex reaction products or Biological materials

Data sources used for preparing the material safety sheet

Annexes I, IV, VI, VII and VIII to Regulation (EC) No. 1272/2008 CLP, as amended;
Principles for providing first aid upon being exposed to chemical substances;
Substance registration documentation pursuant to Directive (EC) No. 1907/2006 REACH prepared for anhydrous ammonia;
Decision of the European Chemicals Agency (ECHA) No. SUB-D-2114168289-36-01/F on registration of anhydrous ammonia pursuant to Directive (EC) No. 1907/2006 REACH;
Research data sources (Hazardous Substances Data Bank HSDB, PubChem, University of Akron Chemical UAKRON)
International Chemical Safety Cards (ICSC) Aqua Ammonia Information Manual, Gestis Hygiene Limits);

Full text of H-/ EUH-sentences and abbreviations of hazard classes stated in Section 2 and/or 3

H 221	Flammable gas.
H 280	Contains gas under pressure; may explode if heated.
H 314	Causes severe skin burns and eye damage.
H 315	Causes skin irritation.
H 331	Toxic if inhaled.
H 332	Harmful if inhaled.
H 335	May cause respiratory irritation.
H 400	Very toxic to aquatic life.
H 410	Very toxic to aquatic life with long lasting effects.
H 411	Toxic to aquatic life with long lasting effects.
H 412	Harmful to aquatic life with long lasting effects.
EUH 071	Corrosive to the respiratory tract.
Acute Tox.	Acute toxicity
Aquatic Acute	Hazardous to the aquatic environment, category Acute toxicity
Aquatic Chronic	Hazardous to the aquatic environment, category Chronic toxicity
Flam. Gas	Flammable gas
Press Gas	Gases under pressure
Skin Irrit.	Skin irritation
Skin Corr.	Skin corrosion
STOT SE	Specific target organ toxicity — single exposure

Ammonia aqueous solution - calculated classification

Regulation EC/1272/2008 Annex VI includes separated entries for Ammonia, anhydrous CAS 7664-41-7 and for Ammonia, solution... % index number: 007-001-01-2, that is reported as a “Note B” substance with its own harmonized classification (STOT SE 3; H335: C ≥ 5 %).

The classification of the mixture was carried out by a calculation method and on the basis of an agreed classification document prepared by the Lead Registrant, see below.

The classifications below reported have been calculated on the basis of CLP rules for classification of mixtures, with the solely purpose to clarify the consequences of additional hazards included in self-classification of Ammonia, solution...%:

- $c \geq 25,0\%$ Acute Tox. 4 (inhalation); H332
Skin Corr. 1B; H 314
STOT SE 3; H 335
Aquatic Acute 1; H 400
Aquatic Chronic 2; H 411
- $16,4 \leq c < 25,0\%$ Acute Tox. 4 (inhalation); H332
Skin Corr. 1B; H 314
STOT SE 3; H 335



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- $5,0 \leq c < 16,4\%$ Aquatic Chronic 3; H 412
Skin Corr. 1B; H 314
STOT SE 3; H 335
- $3,0 \leq c < 5,0\%$ Aquatic Chronic 3; H 412
Eye Damage 1; H318
Skin Irrit. 2; H 315
- $2,5 \leq c < 3,0\%$ Aquatic Chronic 3; H 412
Eye Irrit 2; H319
Skin Irrit. 2; H 315
- $1,0 \leq c < 2,5\%$ Aquatic Chronic 3; H 412
Skin Irrit. 2; H 315
Eye Irrit 2; H319

Multiplication factor (M-factor) specified for ammonia

M-factor is a multiplication coefficient, which is used for calculating classifications of mixtures that include a substance, which is highly toxic for water environments (i.e. acutely or chronically dangerous for water environments, category 1). For ammonia, M-factor = 1 was determined during the registration process.

Identified uses (Exposure scenarios)

- ES 3 Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (flue gas NO_x and SO_x reduction)
- ES 5 Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (processing, non-processing aids, auxiliary agent)
- ES 6 Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (reactive agent/processing aid and for general chemical applications, e.g., extraction, water treatment/septicity control, pH/neutralising agent)
- ES 8 Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (formulation o mixtures)
- ES 9 Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (heat transfer fluid, e.g., refrigeration, cooling/heating systems)
- ES 11 Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (reactive agent/processing aid, general chemical applications, e.g., pH/neutralising agent, water treatment)
- ES 13 Distribution and formulation of ammonia aqueous up to 25%
- ES 17 Industrial use of ammonia aqueous up to 25% as intermediate
- ES 24 Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (flue gas NO_x and SO_x reduction)
- ES 26 Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (processing, non-processing aids, auxiliary agent)
- ES 27 Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (reactive agent/processing aid and for general chemical applications, e.g., extraction, water treatment/septicity control, pH/neutralising agent)
- ES 30 Up to 25% aqueous: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (formulation of mixtures)
- ES 34 Up to 25% aqueous: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (reactive agent/processing aid, general chemical applications, e.g., pH/neutralising agent, water treatment)

Training instructions

Persons handling the product must be advised of the risks involved in handling the product and the health and environmental protection requirements (see applicable provisions of the Labor Code).

Access to information

Pursuant to Article 35 of Directive (EC) No. 1907/2006 REACH, every employer is obliged to allow access to the information stated on the given material safety sheet to all workers who use this product or are exposed to its impacts while working, and also to representatives of these workers.



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Occupational exposure limit values for EU countries (see point 8.1.1)

data for ammonia anhydrous (number CAS 7664-41-7)

	8-hour limit [mg.m ⁻³]	Short-term limit [mg.m ⁻³]
European Union (Regulation No. 2000/39/EC)	14	36
Italy	14	36
Hungary	14	36
Germany	14	28
Poland	14	28
Austria	14	36

8-hour limit: Measured or calculated in relation to the 8-hour reference period as a timely weighted average

Short-term limit: Exposure limit value, which shall not be exceeded and which corresponds to a 15-minute period

Emergency telephone number for EU countries (see subsection 1.4)

National Centers (PCCS)	TELEFON	LANGUAGE	Institution / website / email
Belgium	+32/70245245	French	http://www.centreantipoisons.be
	+32/70245245	Dutch	http://www.antigifcentrum.be
	+32/70245245	German	http://www.poisoncentre.be
Bulgaria	+359/29154411	Bulgarian	https://pirogov.eu/bg
Croatia	+385/12348342	Croatian	https://www.imi.hr/en/jedinica/poison-control-centre
Czech Republic	+420/224-919293; 915402	Czech	http://www.tis-cz.cz
Denmark	+45/82121212	Danish	https://www.bispebjerghospital.dk/giftlinien
Estonia	+372/7943794	Estonian	https://www.16662.ee
Finland	+358/9471977	Finnish	http://www.hus.fi/sairaanhoito/sairaanhoitopalvelut/myrkytystietokeskus/Sivut/default.aspx
France - Angers	+33/241482121	French	http://www.centres-antipoison.net/angers/index.html
France - Bordeaux	+33/556964080	French	http://www.centres-antipoison.net/bordeaux/index.html
France - Lille	+33/0800595959	French	http://www.centres-antipoison.net/lille/index.html
France - Lyon	+33/472116911	French	http://www.centres-antipoison.net/lyon/index.html
France - Marseille	+33/491752525	French	http://www.centres-antipoison.net/marseille/index.html
France - Nancy	+33/383225050	French	http://www.centres-antipoison.net/nancy/index.html
France - Paris	+33/140054848	French	http://www.centres-antipoison.net/paris/index.html
France - Strasbourg	+33/388373737	French	http://www.centres-antipoison.net/strasbourg/index.html
France - Toulouse	+33/561777447	French	http://www.centres-antipoison.net/toulouse/index.html
Ireland	+353/18092166	English	http://www.poisons.ie/Public
Italy - Bergamo	+39/800883300	Italian	http://www.asst-pg23.it/section/259/Tossicologia_-_Centro_antiveleni
Italy - Firenze	+39/557947819	Italian	http://www.antiveleni.altervista.org
Italy - Milano	+39/266101029	Italian	http://www.centroantiveleni.org
Italy - Pavia	+39/38224444	Italian	http://www-3.unipv.it/reumatologia-tossicologia/cav
Italy - Napoli	+39/817472870	Italian	
Italy - Foggia	+39/881732326	Italian	
Italy - Roma	+39/668593726, 39/649978000, 39/63054343	Italian	http://www.corso-primo-soccorso-roma.it/centriantiveleno-lazio.html
Cyprus	+357/22405611	Greek	http://www.mlsi.gov.cy/
Lithuania	+370/52362052	Lithuanian	http://www.apsinuodijau.lt
Latvia	+371/67000610	Latvian	https://www.aslimnica.lv/lv
Luxembourg	+49/80025500	German	http://www.poisoncentre.be



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		+352/80025500	French	http://www.centreantipoisons.be
Hungary		+36/680201199, 36/0614766464	Hungarian	http://www.okbi.hu/page.php?trid=1&dz=103
Malta		+356/23952000	English	https://mccaa.org.mt/
Germany - Berlin		+49/3019240	German	https://giftnotruf.charite.de
Germany - Bonn		+49/22819240	German	http://www.gizbonn.de/index.php?id=272
Germany - Erfurt		+49/361730730	German	https://www.ggiz-erfurt.de/home.html
Germany - Freiburg		+49/76119240	German	https://www.uniklinik-freiburg.de/giftberatung.html
Germany - Göttingen		+49/55119240	German	https://www.giz-nord.de/cms/index.php
Germany – Homburg/Saar		+49/684119240	German	http://www.uniklinikum-saarland.de/de/einrichtungen/kliniken_institute/kinder_und_jugendmedizin/informations_und_behandlungszentrum_fuer_vergiftungen_des_saarlandes
Germany – Mainz		+49/613119240	German	http://www.giftinfo.uni-mainz.de/index.php?id=24807
Germany - München		+49/8919240	German	http://www.toxinfo.med.tum.de
Netherlands		+31/31887558561	Dutch	http://www.productnotification.nl/
Poland - Kraków		+48/124119999	Polish	http://www.oit.cm.uj.edu.pl
Poland – Gdansk		+48/586820404	Polish	http://www.pctox.pl/news.php
Poland – Poznań		+48/618476946	Polish	http://www.raszeja.poznan.pl/oddzialy/oddzialt_okszykologiczny
Poland - Warszawa		+48/607218174	Polish	okzit@burdpi.pol.pl
Portugal		+351/808250143	Portuguese	http://www.inem.pt
Austria		+43/14064343	German	http://www.goeg.at/de/VIZ
Greece		+30/2132009000	Greek	http://www.aglaiakyriakou.gr/ http://0317.syzefxis.gov.gr
Romania		+40/213183606, 215992300, 265212111	Romanian	spital@urgentaflorasca.ro secretariat@spitjudms.ro infotox@insp.gov.ro
Slovakia		+421/254774166	Slovak	http://www.ntic.sk
Slovenia		+386/15221293	Slovenian	www.kclj.si
Sweden		+46/104566700	Swedish	https://giftinformation.se

Statement: The material safety sheet has been prepared in compliance with Directive (EC) No. 1907/2006 REACH. It includes data that are necessary for securing occupational health and safety and the protection of the environment. These data have been provided in good faith, correspond to the current state of knowledge and experience and are in accordance with our valid legal regulations. The data provided does not replace the quality specification and can not be considered as a guarantee of the suitability and usability of this product for a specific application. It is the responsibility of the product user to assess the accuracy of the information in a particular application where the product's properties can influence different factors. The consumer is responsible for compliance with the appropriate, regionally valid legal regulations.



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ANNEX OF MATERIAL SAFETY DATA SHEET

EXPOSURE SCENARIOS ACCORDING TO ARTICLE 31 OF REGULATION (EC) NO 1907/2006 (REACH) OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

The Annex contains exposure scenarios contained in Chapter 9 of the chemical safety report dated 24/01/2023 (numbering from it is maintained here below) for identified uses of the substance.

9. EXPOSURE ASSESSMENT

The quantitative risk characterisation for exposure scenarios have been calculated using EasyTRA 5.2.0. and complies with EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a for the environmental exposure

Exposure assessment in EasyTRA follows a tiered approach and offers the options to generate user defined spERCs, article and product categories as a first refinement in the exposure calculations, before switching to higher Tier tools.

Unless stated otherwise, Simple Treat 4.0 has been used for modelling the biological sewage treatment plant (STP) according to ECHA Guidance on information requirements and Chemical Safety Assessment, Chapter R.16: Environmental exposure assessment, Version 3.0.

Targeted Risk Assessment (TRA) for mixtures:

This Targeted Risk Assessment has been considered for a mixture. The risk assessment has been performed for each individual component using the ingredient fraction. The total RCR* has been derived depending on the setting for this mixture. In separate mode the worst case RCR* per route/compartiment from all components will be used. The additive mode uses the sum of all RCR*s per route/compartiment from all components in the same additive group.

Table 1. Mixture component information

NAME	CAS/EC number	Ingredient fraction
Anhydrous		
Ammonia NH ₄ /NH ₃ anhydrous	7664-41-7	100%
25% aqueous Ammonia		
Ammonia NH ₄ /NH ₃ aqua	7664-41-7	25%
35% aqueous Ammonia		
Ammonia NH ₄ /NH ₃ aqua	7664-41-7	35%

9.0.1 Risk characterisation for physico-chemical properties

The implementation of the chosen RMMS will ensure that the likelihood of an event occurring due to the hazard of the substance is negligible, and the risk is considered to be controlled to a level of no concern.

Prevention

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Storage

Store in a well-ventilated place. Protect from sunlight.

Response

Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Taking into consideration the precautionary statements all uses of the substance for all users can be considered safe.

9.0.2 Overview of exposure scenarios

A comprehensive EasyTRA report documenting all details on used algorithms, defaults and specific use or environmental conditions is attached to this CSR for all scenarios that have been generated using EasyTRA.

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ES	ES Code	Scenario name	Use descriptor	Page	Domain
3	ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 8b, ES-4 ERC 6b	Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (flue gas NOx and SOx reduction)	ERC 6B; PROC 1, 2, 3, 8B	24	industrial
5	ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 8b, ES-4 ERC 6b	Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (processing, non-processing aids, auxiliary agent)	ERC 6B; PROC 1, 2, 3, 4, 8B	38	industrial
6	ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 8b, ES-4 ERC 6b	Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (reactive agent/processing aid and for general chemical applications, e.g., extraction, water treatment/septicity control, pH/neutralising agent)	ERC 6B; PROC 1, 2, 3, 8B	56	industrial
8	ES-5 PROC 1, ES-5 PROC 15, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 5, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b	Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (formulation of mixtures)	ERC 8B; PROC 1, 15, 19, 2, 3, 5, 8B, 9	69	professional
9	ES-5 PROC 1, ES-5 PROC 15, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 20, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 9a, ES-5 ERC 9b	Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (heat transfer fluid, e.g., refrigeration, cooling/heating systems)	ERC 9A, 9B; PROC 1, 15, 19, 2, 20, 8B, 9	91	professional
11	ES-5 PROC 1, ES-5 PROC 10, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 4, ES-5 PROC 8a, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b, ES-5 ERC 8e	Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (reactive agent/processing aid, general chemical applications, e.g., pH/neutralising agent, water treatment)	ERC 8B, 8E; PROC 1, 10, 19, 2, 3, 4, 8A, 8B, 9	110	professional
13	ES-2 PROC 1, ES-2 PROC 15, ES-2 PROC 2, ES-2 PROC 3, ES-2 PROC 4, ES-2 PROC 8b, ES-2 PROC 9, ES-2	Distribution and formulation of ammonia aqueous up to 25%	ERC 2; PROC 1, 15, 2, 3, 4, 8B, 9	137	industrial
17	ES-3 PROC 1, ES-3 PROC 15, ES-3 PROC 2, ES-3 PROC 3, ES-3 PROC 4, ES-3 PROC 8b, ES-3 PROC 9, ES-3	Industrial use of ammonia aqueous up to 25% as intermediate	ERC 6A; PROC 1, 15, 2, 3, 4, 8B, 9	163	industrial
24	ES-4 PROC 1, ES-4 PROC 19, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 8b, ES-4 PROC 9, ES-4 ERC 6b	Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (flue gas NOx and SOx reduction)	ERC 6B; PROC 1, 19, 2, 3, 4, 8B, 9	187	industrial
26	ES-4 PROC 1, ES-4 PROC 10, ES-4 PROC 13, ES-4 PROC 19, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 5, ES-4 PROC 7, ES-4 PROC 8b, ES-4 PROC 9, ES-4 ERC 6b	Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (processing, non-processing aids, auxiliary agent)	ERC 6B; PROC 1, 10, 13, 19, 2, 3, 4, 5, 7, 8B, 9	205	industrial
27	ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 8b, ES-4 PROC 9, ES-4 ERC 6b	Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (reactive agent/processing aid and for general chemical applications, e.g., extraction, water treatment/septicity control, pH/neutralising agent)	ERC 6B; PROC 1, 2, 3, 4, 8B, 9	235	industrial
30	ES-5 PROC 1, ES-5 PROC 15, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 5, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b	Up to 25% aqueous: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (formulation of mixtures)	ERC 8B; PROC 1, 15, 19, 2, 3, 5, 8B, 9	251	professional



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34	ES-5 PROC 1, ES-5 PROC 10, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 4, ES-5 PROC 8a, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b, ES-5 ERC 8e	Up to 25% aqueous: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (reactive agent/processing aid, general chemical applications, e.g., pH/neutralising agent, water treatment)	ERC 8B, 8E; PROC 1, 10, 19, 2, 3, 4, 8A, 8B, 9	274	professional
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COVERING PAGE - information applicable to all ESs listed below

Conditions of use common to all contributing scenarios (CSs) for following ES: 3, 5, 6, 8, 9, 11, 13, 17

Name of contributing scenario	PROC relevant for CS
Exposure type	Inhalation: Long-term systemic; Dermal: Long-term systemic
Product characteristics	
Physical state	liquid
Concentration in substance	100%
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	high
Frequency and duration of use	
Duration of activity	according to CS
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	according to CS
Other given operational conditions affecting workers exposure	
Location	according to CS
Domain	Industrial (unless otherwise stated as Professional for ES 8, 9, 11, 30, 34,42,45)
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	according to CS
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	according to CS
Respiratory protection	according to CS

Note 1

Explanations for the RCR assessment (Risk characterization ratio), listed in the following tables for individual ECs (marked with *):

¹ Worst case result used for total RCR (Risk characterisation ratio), RCR <1 means safe use

² Part of additive RCR

³ Worst case value, as dermal and inhalation RCRs are coming from different substances

Note 2:

Information valid for all tables numbered 9.XX.XX.2 Exposure and risks for workers (XX – number of the given ES), (marked with **)

9.XX.XX.2 Exposure and risks for workers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalation route together with the total exposure of workers over all routes if applicable.

9.3 Scenario ES 3: Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (flue gas NO_x and SO_x reduction) (ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 8b, ES-4 ERC 6b)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (flue gas NO _x and SO _x reduction) (ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 8b, ES-4 ERC 6b)
Systematic title based on use descriptor	ERC 6B; PROC 1, 2, 3, 8B
Name of contributing environmental scenario and corresponding ERC	ERC 6b Industrial use of reactive processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities

9.3.1 Contributing Scenario (1) controlling environmental exposure for ERC 6B

9.3.1.1 Conditions of use

Operational conditions	
Annual tonnage	3.55E5 to/year
Daily amount used at site	41.642 kg/day
Release times per year	100 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.0001 %
Release fraction to wastewater from process	0.050 %
Release fraction to soil from process	0 %
Fraction tonnage to region	0.470 %
Fraction used at main source	0.249837 % (<i>Maximum tonnage biggest customer: 354631 tpa / 400 = 886 tpa</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: 100 % reduction of emission from sludge to soil. Rationale: Sludges of industrial firms will be incinerated or discharged according to national safety regulations.</i>)
SpERC	NH ₄ - 6b (spERC -6b – NH ₄) Release time per year: 100 [20, 100, 300]. Assumed number of production days per year. Fraction main source: 0.25% (Default 100%). The substance is industrially used by 400 companies indicating a fraction main source of 0.25%. Fraction tonnage to region: 0.47% (Default 100%). Ratio of total tonnage 354631 tpa to regional tonnage 25000 tpa. Release to air: 0.0001% (Default: 0.1%). Emissions of the substance to air from industrial processes are considered well controlled by industrial firm measures, i.e. ventilation of ambient air through filters (discharged after use), following national safety regulations. Release water: 0.05% (Default: 5%). During industrial and subsequent waste water treatment, the substance is completely biologically transformed into mineral nitrogen components, as a part of the nitrogen cycle in STPs. Hence release to environmental surface waters is 0%. 5/100 = 0.05% was set arbitrarily. Release to soil: 0% (Default: 0.025%). Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).

9.3.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.3.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Freshwater	0.00003 mg/L	0.00135 mg/L	0.022412 ¹	1,858.049
Marine water	2.99E-6 mg/L	0.00135 mg/L	0.002216 ¹	1.88E4
Total result				
Freshwater	0.00003 mg/L	-	0.022412	1,858.049
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	2.99E-6 mg/L	-	0.002216	1.88E4
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.3.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Agricultural soil	0.000168 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.007591 ¹	5,485.57
Total result				
Agricultural soil	0.000168 mg/kg _{dwt}	-	-	5,485.57

9.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1 (PC 0)

9.3.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.2.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.00298 mg/m ³	47.6 mg/m ³	0.000063 ¹
Combined routes	0.020997 mg/kg _{bw} /day	-	0.003088
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000063



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	- mg/kg _{bw} /day	-	0.003088

9.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 1 (PC 0)

9.3.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.3.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 1 (PC 0)

9.3.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.3.4.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 1 (PC 0)

9.3.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.5.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.004967 mg/m ³	47.6 mg/m ³	0.000104 ¹
Combined routes	0.034995 mg/kg _{bw} /day	-	0.005146
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.000104
Combined routes	- mg/kg _{bw} /day	-	0.005146

9.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 1 (PC 0)

9.3.6.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.6.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.007096 mg/m ³	47.6 mg/m ³	0.000149 ¹
Combined routes	0.035299 mg/kg _{bw} /day	-	0.005191
Total result			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.005042
inhalation	-	-	0.000149
Combined routes	- mg/kg _{bw} /day	-	0.005191

9.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 1 (PC 0)

9.3.7.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.3.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.007096 mg/m ³	47.6 mg/m ³	0.000149 ¹
Combined routes	0.035299 mg/kg _{bw} /day	-	0.005191
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.000149
Combined routes	- mg/kg _{bw} /day	-	0.005191

9.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 2

9.3.8.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.8.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹
Combined routes	3.906 mg/kg _{bw} /day	-	0.574383



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.574383

9.3.9 Contributing Scenario (9) controlling industrial worker exposure for PROC 2

9.3.9.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.9.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572

9.3.10 Contributing Scenario (10) controlling industrial worker exposure for PROC 2

9.3.10.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.10.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.3.11 Contributing Scenario (11) controlling industrial worker exposure for PROC 2

9.3.11.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.11.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.3.12 Contributing Scenario (12) controlling industrial worker exposure for PROC 2

9.3.12.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.3.12.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.137143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.020168 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	1.774 mg/m ³	47.6 mg/m ³	0.03727 ¹
Combined routes	0.39058 mg/kg _{bw} /day	-	0.057438
Total result			
dermal	-	-	0.020168
inhalation	-	-	0.03727
Combined routes	- mg/kg _{bw} /day	-	0.057438

9.3.13 Contributing Scenario (13) controlling industrial worker exposure for PROC 2

9.3.13.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.3.13.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	1.064 mg/m ³	47.6 mg/m ³	0.022362 ¹
Combined routes	0.234348 mg/kg _{bw} /day	-	0.034463
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.022362
Combined routes	- mg/kg _{bw} /day	-	0.034463

9.3.14 Contributing Scenario (14) controlling industrial worker exposure for PROC 3

9.3.14.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.14.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	5.754 mg/kg _{bw} /day	-	0.846245
Total result			
dermal	-	-	0.10084
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.846245

9.3.15 Contributing Scenario (15) controlling industrial worker exposure for PROC 3

9.3.15.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.15.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.234 mg/kg _{bw} /day	-	0.622623
Total result			
dermal	-	-	0.10084
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.622623

9.3.16 Contributing Scenario (16) controlling industrial worker exposure for PROC 3

9.3.16.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.16.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.453 mg/kg _{bw} /day	-	0.507747
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.507747

9.3.17 Contributing Scenario (17) controlling industrial worker exposure for PROC 3

9.3.17.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.3.17.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.54 mg/kg _{bw} /day	-	0.373574
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.373574

9.3.18 Contributing Scenario (18) controlling industrial worker exposure for PROC 3

9.3.18.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.3.18.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.068571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.010084 ¹
inhalation, long-term systemic	3.548 mg/m ³	47.6 mg/m ³	0.07454 ¹
Combined routes	0.575446 mg/kg _{bw} /day	-	0.084624
Total result			
dermal	-	-	0.010084
inhalation	-	-	0.07454
Combined routes	- mg/kg _{bw} /day	-	0.084624

9.3.19 Contributing Scenario (19) controlling industrial worker exposure for PROC 3

9.3.19.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.3.19.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.041143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.00605 ¹
inhalation, long-term systemic	2.129 mg/m ³	47.6 mg/m ³	0.044724 ¹
Combined routes	0.345268 mg/kg _{bw} /day	-	0.050775
Total result			
dermal	-	-	0.00605
inhalation	-	-	0.044724
Combined routes	- mg/kg _{bw} /day	-	0.050775

9.3.20 Contributing Scenario (20) controlling industrial worker exposure for PROC 8B

9.3.20.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.3.20.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	4.263 mg/kg _{bw} /day	-	0.626983
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.626983

9.3.21 Contributing Scenario (21) controlling industrial worker exposure for PROC 8B

9.3.21.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.3.21.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	3.807 mg/kg _{bw} /day	-	0.559896
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.559896

9.3.22 Contributing Scenario (22) controlling industrial worker exposure for PROC 8B

9.3.22.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.3.22.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	2.558 mg/kg _{bw} /day	-	0.37619
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.37619

9.3.23 Contributing Scenario (23) controlling industrial worker exposure for PROC 8B

9.3.23.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.3.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.137143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.020168 ¹
inhalation, long-term systemic	5.322 mg/m ³	47.6 mg/m ³	0.111811 ¹
Combined routes	0.897455 mg/kg _{bw} /day	-	0.131979
Total result			
dermal	-	-	0.020168
inhalation	-	-	0.111811
Combined routes	- mg/kg _{bw} /day	-	0.131979

9.3.24 Contributing Scenario (24) controlling industrial worker exposure for PROC 8B

9.3.24.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %



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9.3.24.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	2.284 mg/kg _{bw} /day	-	0.335938
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.335938

9.3.25 Contributing Scenario (25) controlling industrial worker exposure for PROC 8B

9.3.25.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.3.25.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	3.193 mg/m ³	47.6 mg/m ³	0.067086 ¹
Combined routes	0.538473 mg/kg _{bw} /day	-	0.079187
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.067086
Combined routes	- mg/kg _{bw} /day	-	0.079187

9.5 Scenario ES 5: Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (processing, non-processing aids, auxiliary agent) (ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 8b, ES-4 ERC 6b)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (processing, non-processing aids, auxiliary agent) (ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 8b, ES-4 ERC 6b)
Systematic title based on use descriptor	ERC 6B; PROC 1, 2, 3, 4, 8B
Name of contributing environmental scenario and corresponding ERC	ERC 6b Industrial use of reactive processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities

9.5.1 Contributing Scenario (1) controlling environmental exposure for ERC 6B

9.5.1.1 Conditions of use

Operational conditions	
Annual tonnage	3.55E5 to/year
Daily amount used at site	41.642 kg/day
Release times per year	100 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.0001 %
Release fraction to wastewater from process	0.050 %
Release fraction to soil from process	0 %
Fraction tonnage to region	0.470 %
Fraction used at main source	0.249837 % (<i>Maximum tonnage biggest customer: 354631 tpa / 400 = 886 tpa</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: 100 % reduction of emission from sludge to soil. Rationale: Sludges of industrial firms will be incinerated or discharged according to national safety regulations.</i>)
SpERC	NH-4 - 6b (spERC -6b – NH4 Release time per year: 100 [20, 100, 300]. Assumed number of production days per year. Fraction main source: 0.25% (Default 100%). The substance is industrially used by 400 companies indicating a fraction main source of 0.25%. Fraction tonnage to region: 0.47% (Default 100%). Ratio of total tonnage 354631 tpa to regional tonnage 25000 tpa. Release to air: 0.0001% (Default: 0.1%). Emissions of the substance to air from industrial processes are considered well controlled by industrial firm measures, i.e. ventilation of ambient air through filters (discharged after use), following national safety regulations. Release water: 0.05% (Default: 5%). During industrial and subsequent waste water treatment, the substance is completely biologically transformed into mineral nitrogen components, as a part of the nitrogen cycle in STPs. Hence release to environmental surface waters is 0%. 5/100 = 0.05% was set arbitrarily.

Release to soil: 0% (Default: 0.025%). Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).

9.5.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.5.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Freshwater	0.00003 mg/L	0.00135 mg/L	0.022412 ¹	1,858.049
Marine water	2.99E-6 mg/L	0.00135 mg/L	0.002216 ¹	1.88E4
Total result				
Freshwater	0.00003 mg/L	-	0.022412	1,858.049
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	2.99E-6 mg/L	-	0.002216	1.88E4
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.5.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Agricultural soil	0.000168 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.007591 ¹	5,485.57
Total result				
Agricultural soil	0.000168 mg/kg _{dwt}	-	-	5,485.57

9.5.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1

9.5.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.2.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.00298 mg/m ³	47.6 mg/m ³	0.000063 ¹
Combined routes	0.020997 mg/kg _{bw} /day	-	0.003088
Total result			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.003025
inhalation	-	-	0.000063
Combined routes	- mg/kg _{bw} /day	-	0.003088

9.5.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 1

9.5.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.3.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.5.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 1

9.5.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.5.4.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.5.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 1

9.5.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.5.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.004967 mg/m ³	47.6 mg/m ³	0.000104 ¹
Combined routes	0.034995 mg/kg _{bw} /day	-	0.005146
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.000104
Combined routes	- mg/kg _{bw} /day	-	0.005146

9.5.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 1

9.5.6.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.6.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.007096 mg/m ³	47.6 mg/m ³	0.000149 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	0.035299 mg/kg _{bw} /day	-	0.005191
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.000149
Combined routes	- mg/kg _{bw} /day	-	0.005191

9.5.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 1

9.5.7.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.5.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.007096 mg/m ³	47.6 mg/m ³	0.000149 ¹
Combined routes	0.035299 mg/kg _{bw} /day	-	0.005191
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.000149
Combined routes	- mg/kg _{bw} /day	-	0.005191

9.5.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 2

9.5.8.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.8.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹
Combined routes	3.906 mg/kg _{bw} /day	-	0.574383
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.574383

9.5.9 Contributing Scenario (9) controlling industrial worker exposure for PROC 2

9.5.9.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.9.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.5.10 Contributing Scenario (10) controlling industrial worker exposure for PROC 2

9.5.10.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.5.10.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.137143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.020168 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	1.774 mg/m ³	47.6 mg/m ³	0.03727 ¹
Combined routes	0.39058 mg/kg _{bw} /day	-	0.057438
Total result			
dermal	-	-	0.020168
inhalation	-	-	0.03727
Combined routes	- mg/kg _{bw} /day	-	0.057438

9.5.11 Contributing Scenario (11) controlling industrial worker exposure for PROC 2

9.5.11.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.5.11.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	1.064 mg/m ³	47.6 mg/m ³	0.022362 ¹
Combined routes	0.234348 mg/kg _{bw} /day	-	0.034463
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.022362
Combined routes	- mg/kg _{bw} /day	-	0.034463

9.5.12 Contributing Scenario (12) controlling industrial worker exposure for PROC 2

9.5.12.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.12.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572

9.5.13 Contributing Scenario (13) controlling industrial worker exposure for PROC 2

9.5.13.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.13.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.5.14 Contributing Scenario (14) controlling industrial worker exposure for PROC 3

9.5.14.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.14.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	5.754 mg/kg _{bw} /day	-	0.846245
Total result			
dermal	-	-	0.10084
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.846245

9.5.15 Contributing Scenario (15) controlling industrial worker exposure for PROC 3

9.5.15.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.15.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.453 mg/kg _{bw} /day	-	0.507747
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.507747

9.5.16 Contributing Scenario (16) controlling industrial worker exposure for PROC 3

9.5.16.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.5.16.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.068571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.010084 ¹
inhalation, long-term systemic	3.548 mg/m ³	47.6 mg/m ³	0.07454 ¹
Combined routes	0.575446 mg/kg _{bw} /day	-	0.084624
Total result			
dermal	-	-	0.010084
inhalation	-	-	0.07454
Combined routes	- mg/kg _{bw} /day	-	0.084624

9.5.17 Contributing Scenario (17) controlling industrial worker exposure for PROC 3

9.5.17.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.5.17.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.041143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.00605 ¹
inhalation, long-term systemic	2.129 mg/m ³	47.6 mg/m ³	0.044724 ¹
Combined routes	0.345268 mg/kg _{bw} /day	-	0.050775
Total result			
dermal	-	-	0.00605
inhalation	-	-	0.044724
Combined routes	- mg/kg _{bw} /day	-	0.050775

9.5.18 Contributing Scenario (18) controlling industrial worker exposure for PROC 3

9.5.18.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.18.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.234 mg/kg _{bw} /day	-	0.622623
Total result			
dermal	-	-	0.10084
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.622623

9.5.19 Contributing Scenario (19) controlling industrial worker exposure for PROC 3

9.5.19.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.5.19.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.54 mg/kg _{bw} /day	-	0.373574
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.373574

9.5.20 Contributing Scenario (20) controlling industrial worker exposure for PROC 4

9.5.20.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.5.20.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	7.096 mg/m ³	47.6 mg/m ³	0.149081 ¹
Combined routes	2.385 mg/kg _{bw} /day	-	0.350762
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.149081
Combined routes	- mg/kg _{bw} /day	-	0.350762

9.5.21 Contributing Scenario (21) controlling industrial worker exposure for PROC 4

9.5.21.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.5.21.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹
Combined routes	1.431 mg/kg _{bw} /day	-	0.210457
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.210457

9.5.22 Contributing Scenario (22) controlling industrial worker exposure for PROC 4

9.5.22.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.5.22.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.137143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.020168 ¹
inhalation, long-term systemic	7.096 mg/m ³	47.6 mg/m ³	0.149081 ¹
Combined routes	1.151 mg/kg _{bw} /day	-	0.169249
Total result			
dermal	-	-	0.020168
inhalation	-	-	0.149081
Combined routes	- mg/kg _{bw} /day	-	0.169249

9.5.23 Contributing Scenario (23) controlling industrial worker exposure for PROC 4

9.5.23.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.5.23.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹
Combined routes	0.690536 mg/kg _{bw} /day	-	0.101549
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.101549

9.5.24 Contributing Scenario (24) controlling industrial worker exposure for PROC 4

9.5.24.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.5.24.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	4.967 mg/m ³	47.6 mg/m ³	0.104357 ¹
Combined routes	2.081 mg/kg _{bw} /day	-	0.306037
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.104357
Combined routes	- mg/kg _{bw} /day	-	0.306037

9.5.25 Contributing Scenario (25) controlling industrial worker exposure for PROC 4

9.5.25.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.5.25.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	2.98 mg/m ³	47.6 mg/m ³	0.062614 ¹
Combined routes	1.249 mg/kg _{bw} /day	-	0.183622
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.062614
Combined routes	- mg/kg _{bw} /day	-	0.183622

9.5.26 Contributing Scenario (26) controlling industrial worker exposure for PROC 8B

9.5.26.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.5.26.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	4.263 mg/kg _{bw} /day	-	0.626983
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.626983

9.5.27 Contributing Scenario (27) controlling industrial worker exposure for PROC 8B

9.5.27.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.5.27.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	2.558 mg/kg _{bw} /day	-	0.37619
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.37619

9.5.28 Contributing Scenario (28) controlling industrial worker exposure for PROC 8B

9.5.28.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.5.28.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.137143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.020168 ¹
inhalation, long-term systemic	5.322 mg/m ³	47.6 mg/m ³	0.111811 ¹
Combined routes	0.897455 mg/kg _{bw} /day	-	0.131979
Total result			
dermal	-	-	0.020168
inhalation	-	-	0.111811
Combined routes	- mg/kg _{bw} /day	-	0.131979

9.5.29 Contributing Scenario (29) controlling industrial worker exposure for PROC 8B

9.5.29.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.5.29.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	3.193 mg/m ³	47.6 mg/m ³	0.067086 ¹
Combined routes	0.538473 mg/kg _{bw} /day	-	0.079187
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.067086
Combined routes	- mg/kg _{bw} /day	-	0.079187

9.5.30 Contributing Scenario (30) controlling industrial worker exposure for PROC 8B

9.5.30.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %



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9.5.30.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	3.807 mg/kg _{bw} /day	-	0.559896
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.559896

9.5.31 Contributing Scenario (31) controlling industrial worker exposure for PROC 8B

9.5.31.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.5.31.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	2.284 mg/kg _{bw} /day	-	0.335938
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.335938

9.6 Scenario ES 6: Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (reactive agent/processing aid and for general chemical applications, e.g., extraction, water treatment/septicity control, pH/neutralising agent) (ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 8b, ES-4 ERC 6b)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Anhydrous form: Industrial end-use of anhydrous and aqueous ammonia (reactive agent/processing aid and for general chemical applications, e.g., extraction, water treatment/septicity control, pH/neutralising agent) (ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 8b, ES-4 ERC 6b)
Systematic title based on use descriptor	ERC 6B; PROC 1, 2, 3, 8B
Name of contributing environmental scenario and corresponding ERC	ERC 6b Industrial use of reactive processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities

9.6.1 Contributing Scenario (1) controlling environmental exposure for ERC 6B

9.6.1.1 Conditions of use

Operational conditions	
Annual tonnage	3.55E5 to/year
Daily amount used at site	41.642 kg/day
Release times per year	100 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.0001 %
Release fraction to wastewater from process	0.050 %
Release fraction to soil from process	0 %
Fraction tonnage to region	0.470 %
Fraction used at main source	0.249837 % (<i>Maximum tonnage biggest customer: 354631 tpa / 400 = 886 tpa</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: 100 % reduction of emission from sludge to soil. Rationale: Sludges of industrial firms will be incinerated or discharged according to national safety regulations.</i>)
SpERC	NH-4 - 6b (spERC -6b – NH4 Release time per year: 100 [20, 100, 300]. Assumed number of production days per year. Fraction main source: 0.25% (Default 100%). The substance is industrially used by 400 companies indicating a fraction main source of 0.25%. Fraction tonnage to region: 0.47% (Default 100%). Ratio of total tonnage 354631 tpa to regional tonnage 25000 tpa. Release to air: 0.0001% (Default: 0.1%). Emissions of the substance to air from industrial processes are considered well controlled by industrial firm measures, i.e. ventilation of ambient air through filters (discharged after use), following national safety regulations. Release water: 0.05% (Default: 5%). During industrial and subsequent waste water treatment, the substance is completely biologically transformed into mineral nitrogen components, as a part of the nitrogen cycle in STPs. Hence release to environmental surface waters is 0%. 5/100 = 0.05% was set arbitrarily.

Release to soil: 0% (Default: 0.025%). Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).

9.6.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.6.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Freshwater	0.00003 mg/L	0.00135 mg/L	0.022412 ¹	1,858.049
Marine water	2.99E-6 mg/L	0.00135 mg/L	0.002216 ¹	1.88E4
Total result				
Freshwater	0.00003 mg/L	-	0.022412	1,858.049
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	2.99E-6 mg/L	-	0.002216	1.88E4
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.6.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Agricultural soil	0.000168 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.007591 ¹	5,485.57
Total result				
Agricultural soil	0.000168 mg/kg _{dwt}	-	-	5,485.57

9.6.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.6.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.2.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.00298 mg/m ³	47.6 mg/m ³	0.000063 ¹
Combined routes	0.020997 mg/kg _{bw} /day	-	0.003088
Total result			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.003025
inhalation	-	-	0.000063
Combined routes	- mg/kg _{bw} /day	-	0.003088

9.6.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.6.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.3.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.6.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.6.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.6.4.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.6.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.6.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.5.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.004967 mg/m ³	47.6 mg/m ³	0.000104 ¹
Combined routes	0.034995 mg/kg _{bw} /day	-	0.005146
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.000104
Combined routes	- mg/kg _{bw} /day	-	0.005146

9.6.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.6.6.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.6.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.007096 mg/m ³	47.6 mg/m ³	0.000149 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	0.035299 mg/kg _{bw} /day	-	0.005191
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.000149
Combined routes	- mg/kg _{bw} /day	-	0.005191

9.6.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.6.7.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.6.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.007096 mg/m ³	47.6 mg/m ³	0.000149 ¹
Combined routes	0.035299 mg/kg _{bw} /day	-	0.005191
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.000149
Combined routes	- mg/kg _{bw} /day	-	0.005191

9.6.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.6.8.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.8.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹
Combined routes	3.906 mg/kg _{bw} /day	-	0.574383
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.574383

9.6.9 Contributing Scenario (9) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.6.9.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.9.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.6.10 Contributing Scenario (10) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.6.10.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.6.10.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.137143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.020168 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	1.774 mg/m ³	47.6 mg/m ³	0.03727 ¹
Combined routes	0.39058 mg/kg _{bw} /day	-	0.057438
Total result			
dermal	-	-	0.020168
inhalation	-	-	0.03727
Combined routes	- mg/kg _{bw} /day	-	0.057438

9.6.11 Contributing Scenario (11) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.6.11.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.6.11.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	1.064 mg/m ³	47.6 mg/m ³	0.022362 ¹
Combined routes	0.234348 mg/kg _{bw} /day	-	0.034463
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.022362
Combined routes	- mg/kg _{bw} /day	-	0.034463

9.6.12 Contributing Scenario (12) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.6.12.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.12.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572

9.6.13 Contributing Scenario (13) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.6.13.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.13.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.6.14 Contributing Scenario (14) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.6.14.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.14.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	5.754 mg/kg _{bw} /day	-	0.846245
Total result			
dermal	-	-	0.10084
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.846245

9.6.15 Contributing Scenario (15) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.6.15.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.15.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.453 mg/kg _{bw} /day	-	0.507747
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.507747

9.6.16 Contributing Scenario (16) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.6.16.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.6.16.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.068571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.010084 ¹
inhalation, long-term systemic	3.548 mg/m ³	47.6 mg/m ³	0.07454 ¹
Combined routes	0.575446 mg/kg _{bw} /day	-	0.084624
Total result			
dermal	-	-	0.010084
inhalation	-	-	0.07454
Combined routes	- mg/kg _{bw} /day	-	0.084624

9.6.17 Contributing Scenario (17) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.6.17.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.6.17.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.041143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.00605 ¹
inhalation, long-term systemic	2.129 mg/m ³	47.6 mg/m ³	0.044724 ¹
Combined routes	0.345268 mg/kg _{bw} /day	-	0.050775
Total result			
dermal	-	-	0.00605
inhalation	-	-	0.044724
Combined routes	- mg/kg _{bw} /day	-	0.050775

9.6.18 Contributing Scenario (18) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.6.18.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.18.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.234 mg/kg _{bw} /day	-	0.622623
Total result			
dermal	-	-	0.10084
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.622623

9.6.19 Contributing Scenario (19) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.6.19.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.6.19.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.54 mg/kg _{bw} /day	-	0.373574
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.373574

9.6.20 Contributing Scenario (20) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.6.20.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.6.20.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	4.263 mg/kg _{bw} /day	-	0.626983
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.626983

9.6.21 Contributing Scenario (21) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.6.21.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.6.21.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	2.558 mg/kg _{bw} /day	-	0.37619
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.37619

9.6.22 Contributing Scenario (22) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.6.22.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.6.22.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.137143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.020168 ¹
inhalation, long-term systemic	5.322 mg/m ³	47.6 mg/m ³	0.111811 ¹
Combined routes	0.897455 mg/kg _{bw} /day	-	0.131979
Total result			
dermal	-	-	0.020168
inhalation	-	-	0.111811
Combined routes	- mg/kg _{bw} /day	-	0.131979

9.6.23 Contributing Scenario (23) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.6.23.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.6.23.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	3.193 mg/m ³	47.6 mg/m ³	0.067086 ¹
Combined routes	0.538473 mg/kg _{bw} /day	-	0.079187
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.067086
Combined routes	- mg/kg _{bw} /day	-	0.079187

9.6.24 Contributing Scenario (24) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.6.24.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %



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9.6.24.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	3.807 mg/kg _{bw} /day	-	0.559896
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.559896

9.6.25 Contributing Scenario (25) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.6.25.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.6.25.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	2.284 mg/kg _{bw} /day	-	0.335938
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.335938

9.8 Scenario ES 8: Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (formulation o mixtures) (ES-5 PROC 1, ES-5 PROC 15, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 5, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (formulation o mixtures) (ES-5 PROC 1, ES-5 PROC 15, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 5, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b)
Systematic title based on use descriptor	ERC 8B; PROC 1, 15, 19, 2, 3, 5, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 8b Wide dispersive indoor use of reactive substances in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 15 - Use of laboratory reagents in small scale laboratories PROC 19 - Hand-mixing with intimate contact (only PPE available) PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.8.1 Contributing Scenario (1) controlling environmental exposure for ERC 8B

9.8.1.1 Conditions of use

Operational conditions	
Annual tonnage	2.50E4 to/year
Daily amount used at site	242.74 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.100 %
Release fraction to wastewater from process	2 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	3.544 % (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: Sludges will be oxidized or discharged according to national safety regulations. Hence there will be no released to soil (0%).</i>)
No direct discharge to freshwater compartment (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental</i>)	

exposure for wide dispersive uses has therefore not been performed.

9.8.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.8.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Freshwater	5.62E-6 mg/L	0.00135 mg/L	0.004162 ¹	5.83E4
Marine water	0.000575 mg/L	0.00135 mg/L	0.425925 ¹	569.911
Total result				
Freshwater	5.62E-6 mg/L	-	0.004162	5.83E4
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	0.000575 mg/L	-	0.425925	569.911
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.8.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Agricultural soil	0.000268 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012141 ¹	2.00E4
Total result				
Agricultural soil	0.000268 mg/kg _{dwt}	-	-	2.00E4

9.8.2 Contributing Scenario (2) controlling professional worker exposure for PROC 1 (PC 20, PC 21, PC 40)

9.8.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.2.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.029804 mg/m ³	47.6 mg/m ³	0.000626 ¹
Combined routes	0.024829 mg/kg _{bw} /day	-	0.003651
Total result			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.003025
inhalation	-	-	0.000626
Combined routes	- mg/kg _{bw} /day	-	0.003651

9.8.3 Contributing Scenario (3) controlling professional worker exposure for PROC 1 (PC 20, PC 21, PC 40)

9.8.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.3.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.042578 mg/m ³	47.6 mg/m ³	0.000894 ¹
Combined routes	0.026654 mg/kg _{bw} /day	-	0.00392
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000894
Combined routes	- mg/kg _{bw} /day	-	0.00392

9.8.4 Contributing Scenario (4) controlling professional worker exposure for PROC 1 (PC 20, PC 21, PC 40)

9.8.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.4.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.049674 mg/m ³	47.6 mg/m ³	0.001044 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	0.041382 mg/kg _{bw} /day	-	0.006086
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.001044
Combined routes	- mg/kg _{bw} /day	-	0.006086

9.8.5 Contributing Scenario (5) controlling professional worker exposure for PROC 1 (PC 20, PC 21, PC 40)

9.8.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.5.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.070963 mg/m ³	47.6 mg/m ³	0.001491 ¹
Combined routes	0.044423 mg/kg _{bw} /day	-	0.006533
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.001491
Combined routes	- mg/kg _{bw} /day	-	0.006533

9.8.6 Contributing Scenario (6) controlling professional worker exposure for PROC 15 (PC 20, PC 21, PC 40)

9.8.6.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.6.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.205714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.030252 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.247 mg/kg _{bw} /day	-	0.477495
Total result			
dermal	-	-	0.030252
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.477495

9.8.7 Contributing Scenario (7) controlling professional worker exposure for PROC 15 (PC 20, PC 21, PC 40)

9.8.7.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.205714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.030252 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.335 mg/kg _{bw} /day	-	0.343322
Total result			
dermal	-	-	0.030252
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.343322

9.8.8 Contributing Scenario (8) controlling professional worker exposure for PROC 15 (PC 20, PC 21, PC 40)

9.8.8.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.8.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.342857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.05042 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	3.891 mg/kg _{bw} /day	-	0.572203
Total result			
dermal	-	-	0.05042
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.572203

9.8.9 Contributing Scenario (9) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.8.9.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.8.9.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.89 mg/kg _{bw} /day	-	0.572033
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.572033

9.8.10 Contributing Scenario (10) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)



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Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.8.10.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.761 mg/kg _{bw} /day	-	0.258963
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.258963

9.8.11 Contributing Scenario (11) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.8.11.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.8.11.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.977 mg/kg _{bw} /day	-	0.43786
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.43786

9.8.12 Contributing Scenario (12) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.8.12.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors

Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.8.12.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.414 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.207983 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	6.483 mg/kg _{bw} /day	-	0.953388
Total result			
dermal	-	-	0.207983
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.953388

9.8.13 Contributing Scenario (13) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.8.13.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (inhalation 80 %; dermal 0 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.8.13.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.414 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.207983 ¹
inhalation, long-term systemic	7.096 mg/m ³	47.6 mg/m ³	0.149081 ¹
Combined routes	2.428 mg/kg _{bw} /day	-	0.357064
Total result			
dermal	-	-	0.207983
inhalation	-	-	0.149081
Combined routes	- mg/kg _{bw} /day	-	0.357064

9.8.14 Contributing Scenario (14) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.8.14.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²

Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.8.14.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.414 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.207983 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.962 mg/kg _{bw} /day	-	0.729766
Total result			
dermal	-	-	0.207983
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.729766

9.8.15 Contributing Scenario (15) controlling professional worker exposure for PROC 2 (PC 20, PC 21, PC 40)

9.8.15.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.15.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.864 mg/kg _{bw} /day	-	0.568251
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.568251

9.8.16 Contributing Scenario (16) controlling professional worker exposure for PROC 2 (PC 20, PC 21, PC 40)

9.8.16.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours

Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.16.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.952 mg/kg _{bw} /day	-	0.434078
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.434078

9.8.17 Contributing Scenario (17) controlling professional worker exposure for PROC 2 (PC 20, PC 21, PC 40)

9.8.17.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.17.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	6.44 mg/kg _{bw} /day	-	0.947085
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.947085

9.8.18 Contributing Scenario (18) controlling professional worker exposure for PROC 2 (PC 20, PC 21, PC 40)

9.8.18.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.18.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.92 mg/kg _{bw} /day	-	0.723464
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.723464

9.8.19 Contributing Scenario (19) controlling professional worker exposure for PROC 3 (PC 20, PC 21, PC 40)

9.8.19.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.19.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	42.578 mg/m ³	47.6 mg/m ³	0.894485 ¹
Combined routes	6.494 mg/kg _{bw} /day	-	0.95499
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.894485
Combined routes	- mg/kg _{bw} /day	-	0.95499



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9.8.20 Contributing Scenario (20) controlling professional worker exposure for PROC 3 (PC 20, PC 21, PC 40)

9.8.20.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.20.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	29.804 mg/m ³	47.6 mg/m ³	0.62614 ¹
Combined routes	4.669 mg/kg _{bw} /day	-	0.686644
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.62614
Combined routes	- mg/kg _{bw} /day	-	0.686644

9.8.21 Contributing Scenario (21) controlling professional worker exposure for PROC 3 (PC 20, PC 21, PC 40)

9.8.21.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.8.21.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.727 mg/kg _{bw} /day	-	0.548083
Total result			
dermal	-	-	0.10084



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.548083

9.8.22 Contributing Scenario (22) controlling professional worker exposure for PROC 3 (PC 20, PC 21, PC 40)

9.8.22.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	90 %

9.8.22.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	4.967 mg/m ³	47.6 mg/m ³	0.104357 ¹
Combined routes	1.395 mg/kg _{bw} /day	-	0.205197
Total result			
dermal	-	-	0.10084
inhalation	-	-	0.104357
Combined routes	- mg/kg _{bw} /day	-	0.205197

9.8.23 Contributing Scenario (23) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.8.23.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	good (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.8.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.952 mg/kg _{bw} /day	-	0.434078
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.434078

9.8.24 Contributing Scenario (24) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.8.24.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (inhalation 80 %; dermal 80 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.8.24.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.164571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.024202 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹
Combined routes	0.772821 mg/kg _{bw} /day	-	0.11365
Total result			
dermal	-	-	0.024202
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.11365

9.8.25 Contributing Scenario (25) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.8.25.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.8.25.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.952 mg/kg _{bw} /day	-	0.434078
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.434078

9.8.26 Contributing Scenario (26) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.8.26.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.8.26.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	6.44 mg/kg _{bw} /day	-	0.947085
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.947085

9.8.27 Contributing Scenario (27) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.8.27.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)

Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.8.27.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.892 mg/kg _{bw} /day	-	0.425302
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.425302

9.8.28 Contributing Scenario (28) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.8.28.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.8.28.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.92 mg/kg _{bw} /day	-	0.723464
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.723464

9.8.29 Contributing Scenario (29) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.8.29.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors

Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.8.29.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	6.208 mg/kg _{bw} /day	-	0.912881
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.912881

9.8.30 Contributing Scenario (30) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.8.30.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.8.30.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	2.71 mg/kg _{bw} /day	-	0.398552
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.398552

9.8.31 Contributing Scenario (31) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.8.31.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
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Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.8.31.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹
Combined routes	5.277 mg/kg _{bw} /day	-	0.776064
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.776064

9.8.32 Contributing Scenario (32) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.8.32.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	good (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.8.32.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	4.517 mg/kg _{bw} /day	-	0.664253
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.664253

9.8.33 Contributing Scenario (33) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.8.33.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.8.33.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	4.517 mg/kg _{bw} /day	-	0.664253
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.664253

9.8.34 Contributing Scenario (34) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.8.34.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.8.34.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	5.385 mg/kg _{bw} /day	-	0.791872
Total result			
dermal	-	-	0.121008



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.791872

9.8.35 Contributing Scenario (35) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.8.35.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.8.35.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.8.36 Contributing Scenario (36) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.8.36.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.8.36.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	3.906 mg/kg _{bw} /day	-	0.574383
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.574383

9.8.37 Contributing Scenario (37) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.8.37.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	good (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.8.37.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572

9.8.38 Contributing Scenario (38) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.8.38.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %



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9.8.38.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572

9.9 Scenario ES 9: Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (heat transfer fluid, e.g., refrigeration, cooling/heating systems) (ES-5 PROC 1, ES-5 PROC 15, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 20, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 9a, ES-5 ERC 9b)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (heat transfer fluid, e.g., refrigeration, cooling/heating systems) (ES-5 PROC 1, ES-5 PROC 15, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 20, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 9a, ES-5 ERC 9b)
Systematic title based on use descriptor	ERC 9A, 9B; PROC 1, 15, 19, 2, 20, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 9a Wide dispersive indoor use of substances in closed systems ERC 9b Wide dispersive outdoor use of substances in closed systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 15 - Use of laboratory reagents in small scale laboratories PROC 19 - Hand-mixing with intimate contact (only PPE available) PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 20 - Heat and pressure transfer fluids (closed systems) in dispersive use PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.9.1 Contributing Scenario (1) controlling environmental exposure for ERC 9A

9.9.1.1 Conditions of use

Operational conditions	
Annual tonnage	2.50E4 to/year
Daily amount used at site	242.74 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	5 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	3.544 % (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: Sludges will be oxidized or discharged according to national safety regulations. Hence there will be no released to soil (0%).</i>)
No direct discharge to freshwater compartment (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to</i>	



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add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.
Use of substance as cooling agent. During normal operation of machinery containing substance, release of gaseous ammonia can be excluded. Should any release happen, release is to air only.

9.9.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.9.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Freshwater	5.62E-6 mg/L	0.00135 mg/L	0.004162 ¹	5.83E4
Marine water	5.28E-7 mg/L	0.00135 mg/L	0.000391 ¹	6.21E5
Total result				
Freshwater	5.62E-6 mg/L	-	0.004162	5.83E4
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	5.28E-7 mg/L	-	0.000391	6.21E5
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.9.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Agricultural soil	0.000168 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.007584 ¹	3.20E4
Total result				
Agricultural soil	0.000168 mg/kg _{dwt}	-	-	3.20E4

9.9.2 Contributing Scenario (2) controlling environmental exposure for ERC 9B

9.9.2.1 Conditions of use

Operational conditions	
Annual tonnage	2.50E4 to/year
Daily amount used at site	242.74 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	5 %
Release fraction to wastewater from process	5 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	3.544 % (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already</i>

Fraction used at main source	<i>present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: Sludges will be oxidized or discharged according to national safety regulations. Hence there will be no released to soil (0%).</i>)
<p>No direct discharge to freshwater compartment (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter.</i>) <i>Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i></p> <p><i>Use of substance as cooling agent. During normal operation of machinery containing substance, release of gaseous ammonia can be excluded. Should any release happen, release is to air only.</i></p>	

9.9.2.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.9.2.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Freshwater	5.62E-6 mg/L	0.00135 mg/L	0.004162 ¹	5.83E4
Marine water	0.001437 mg/L	0.00135 mg/L	1.064 ¹	228.09
Total result				
Freshwater	5.62E-6 mg/L	-	0.004162	5.83E4
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	0.001437 mg/L	-	1.064	228.09
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.9.2.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Agricultural soil	0.000419 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.018975 ¹	1.28E4
Total result				
Agricultural soil	0.000419 mg/kg _{dwt}	-	-	1.28E4

9.9.3 Contributing Scenario (3) controlling professional worker exposure for PROC 1 (PC 16)

9.9.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours



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Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.3.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.029804 mg/m ³	47.6 mg/m ³	0.000626 ¹
Combined routes	0.024829 mg/kg _{bw} /day	-	0.003651
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000626
Combined routes	- mg/kg _{bw} /day	-	0.003651

9.9.4 Contributing Scenario (4) controlling professional worker exposure for PROC 1 (PC 16)

9.9.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.4.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.042578 mg/m ³	47.6 mg/m ³	0.000894 ¹
Combined routes	0.026654 mg/kg _{bw} /day	-	0.00392
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000894
Combined routes	- mg/kg _{bw} /day	-	0.00392

9.9.5 Contributing Scenario (5) controlling professional worker exposure for PROC 1 (PC 16)

9.9.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
-------------------------------	---

Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.5.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.049674 mg/m ³	47.6 mg/m ³	0.001044 ¹
Combined routes	0.041382 mg/kg _{bw} /day	-	0.006086
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.001044
Combined routes	- mg/kg _{bw} /day	-	0.006086

9.9.6 Contributing Scenario (6) controlling professional worker exposure for PROC 1 (PC 16)

9.9.6.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.6.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.070963 mg/m ³	47.6 mg/m ³	0.001491 ¹
Combined routes	0.044423 mg/kg _{bw} /day	-	0.006533
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.001491
Combined routes	- mg/kg _{bw} /day	-	0.006533

9.9.7 Contributing Scenario (7) controlling professional worker exposure for PROC 15 (PC 16)

9.9.7.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.342857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.05042 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	3.891 mg/kg _{bw} /day	-	0.572203
Total result			
dermal	-	-	0.05042
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.572203

9.9.8 Contributing Scenario (8) controlling professional worker exposure for PROC 19 (PC 16)

9.9.8.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (justification: Minimum protection limit.)
Respiratory protection	90 %

9.9.8.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.89 mg/kg _{bw} /day	-	0.572033
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.572033

9.9.9 Contributing Scenario (9) controlling professional worker exposure for PROC 19 (PC 16)

9.9.9.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.9.9.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.761 mg/kg _{bw} /day	-	0.258963
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.258963

9.9.10 Contributing Scenario (10) controlling professional worker exposure for PROC 19 (PC 16)

9.9.10.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.9.10.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.977 mg/kg _{bw} /day	-	0.43786
Total result			
dermal	-	-	0.12479



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.43786

9.9.11 Contributing Scenario (11) controlling professional worker exposure for PROC 19 (PC 16)

9.9.11.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (justification: Minimum protection limit.)
Respiratory protection	90 %

9.9.11.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.414 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.207983 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	6.483 mg/kg _{bw} /day	-	0.953388
Total result			
dermal	-	-	0.207983
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.953388

9.9.12 Contributing Scenario (12) controlling professional worker exposure for PROC 19 (PC 16)

9.9.12.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (inhalation 80 %; dermal 0 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (justification: Minimum protection limit.)
Respiratory protection	90 %

9.9.12.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.414 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.207983 ¹
inhalation, long-term systemic	7.096 mg/m ³	47.6 mg/m ³	0.149081 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	2.428 mg/kg _{bw} /day	-	0.357064
Total result			
dermal	-	-	0.207983
inhalation	-	-	0.149081
Combined routes	- mg/kg _{bw} /day	-	0.357064

9.9.13 Contributing Scenario (13) controlling professional worker exposure for PROC 19 (PC 16)

9.9.13.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.9.13.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.414 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.207983 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.962 mg/kg _{bw} /day	-	0.729766
Total result			
dermal	-	-	0.207983
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.729766

9.9.14 Contributing Scenario (14) controlling professional worker exposure for PROC 2 (PC 16)

9.9.14.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.14.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.864 mg/kg _{bw} /day	-	0.568251
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.568251

9.9.15 Contributing Scenario (15) controlling professional worker exposure for PROC 2 (PC 16)

9.9.15.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.15.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.952 mg/kg _{bw} /day	-	0.434078
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.434078

9.9.16 Contributing Scenario (16) controlling professional worker exposure for PROC 2 (PC 16)

9.9.16.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No

Respiratory protection	no
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9.9.16.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	6.44 mg/kg _{bw} /day	-	0.947085
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.947085

9.9.17 Contributing Scenario (17) controlling professional worker exposure for PROC 2 (PC 16)

9.9.17.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.17.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.92 mg/kg _{bw} /day	-	0.723464
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.723464

9.9.18 Contributing Scenario (18) controlling professional worker exposure for PROC 20 (PC 16)

9.9.18.1 Conditions of use

Name of contributing scenario	PROC 20 Heat and pressure transfer fluids in dispersive, professional use but closed systems
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional

Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.18.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.029 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.15126 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	4.07 mg/kg _{bw} /day	-	0.598503
Total result			
dermal	-	-	0.15126
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.598503

9.9.19 Contributing Scenario (19) controlling professional worker exposure for PROC 20 (PC 16)

9.9.19.1 Conditions of use

Name of contributing scenario	PROC 20 Heat and pressure transfer fluids in dispersive, professional use but closed systems
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.19.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.029 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.15126 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	3.157 mg/kg _{bw} /day	-	0.46433
Total result			
dermal	-	-	0.15126
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.46433

9.9.20 Contributing Scenario (20) controlling professional worker exposure for PROC 20 (PC 16)

9.9.20.1 Conditions of use

Name of contributing scenario	PROC 20 Heat and pressure transfer fluids in dispersive, professional use but closed systems
Duration of activity	> 4 hours (default)

Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.20.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.252101 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	6.783 mg/kg _{bw} /day	-	0.997505
Total result			
dermal	-	-	0.252101
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.997505

9.9.21 Contributing Scenario (21) controlling professional worker exposure for PROC 20 (PC 16)

9.9.21.1 Conditions of use

Name of contributing scenario	PROC 20 Heat and pressure transfer fluids in dispersive, professional use but closed systems
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.9.21.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.252101 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	5.262 mg/kg _{bw} /day	-	0.773884
Total result			
dermal	-	-	0.252101
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.773884

9.9.22 Contributing Scenario (22) controlling professional worker exposure for PROC 8B (PC 16)

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
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Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.9.22.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	6.208 mg/kg _{bw} /day	-	0.912881
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.912881

9.9.23 Contributing Scenario (23) controlling professional worker exposure for PROC 8B (PC 16)

9.9.23.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.9.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	2.71 mg/kg _{bw} /day	-	0.398552
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.398552

9.9.24 Contributing Scenario (24) controlling professional worker exposure for PROC 8B (PC 16)

9.9.24.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.9.24.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹
Combined routes	5.277 mg/kg _{bw} /day	-	0.776064
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.776064

9.9.25 Contributing Scenario (25) controlling professional worker exposure for PROC 8B (PC 16)

9.9.25.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	good (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.9.25.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	4.517 mg/kg _{bw} /day	-	0.664253
Total result			
dermal	-	-	0.403361



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.664253

9.9.26 Contributing Scenario (26) controlling professional worker exposure for PROC 8B (PC 16)

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.9.26.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	4.517 mg/kg _{bw} /day	-	0.664253
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.664253

9.9.27 Contributing Scenario (27) controlling professional worker exposure for PROC 9 (PC 16)

9.9.27.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.9.27.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	5.385 mg/kg _{bw} /day	-	0.791872
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.791872

9.9.28 Contributing Scenario (28) controlling professional worker exposure for PROC 9 (PC 16)

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.9.28.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.9.29 Contributing Scenario (29) controlling professional worker exposure for PROC 9 (PC 16)

9.9.29.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.9.29.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹
Combined routes	3.906 mg/kg _{bw} /day	-	0.574383
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.574383

9.9.30 Contributing Scenario (30) controlling professional worker exposure for PROC 9 (PC 16)

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	good (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.9.30.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572

9.9.31 Contributing Scenario (31) controlling professional worker exposure for PROC 9 (PC 16)

9.9.31.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %



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9.9.31.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572



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9.11 Scenario ES 11: Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (reactive agent/processing aid, general chemical applications, e.g., pH/neutralising agent, water treatment) (ES-5 PROC 1, ES-5 PROC 10, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 4, ES-5 PROC 8a, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b, ES-5 ERC 8e)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Anhydrous form: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (reactive agent/processing aid, general chemical applications, e.g., pH/neutralising agent, water treatment) (ES-5 PROC 1, ES-5 PROC 10, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 4, ES-5 PROC 8a, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b, ES-5 ERC 8e)
Systematic title based on use descriptor	ERC 8B, 8E; PROC 1, 10, 19, 2, 3, 4, 8A, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 8b Wide dispersive indoor use of reactive substances in open systems ERC 8e Wide dispersive outdoor use of reactive substances in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 10 - Roller application or brushing PROC 19 - Hand-mixing with intimate contact (only PPE available) PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.11.1 Contributing Scenario (1) controlling environmental exposure for ERC 8B

9.11.1.1 Conditions of use

Operational conditions	
Annual tonnage	2.50E4 to/year
Daily amount used at site	242.74 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.100 %
Release fraction to wastewater from process	2 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	3.544 % (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day



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Risk management measures

Reduction of sludge to soil | 100 % (*justification: Sludges will be oxidized or discharged according to national safety regulations. Hence there will be no released to soil (0%).*)

No direct discharge to freshwater compartment (*justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter.*
Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.

9.11.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.11.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Freshwater	5.62E-6 mg/L	0.00135 mg/L	0.004162 ¹	5.83E4
Marine water	0.000575 mg/L	0.00135 mg/L	0.425925 ¹	569.911
Total result				
Freshwater	5.62E-6 mg/L	-	0.004162	5.83E4
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	0.000575 mg/L	-	0.425925	569.911
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.11.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Agricultural soil	0.000268 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012141 ¹	2.00E4
Total result				
Agricultural soil	0.000268 mg/kg _{dwt}	-	-	2.00E4

9.11.2 Contributing Scenario (2) controlling environmental exposure for ERC 8E

9.11.2.1 Conditions of use

Operational conditions	
Annual tonnage	2.50E4 to/year
Daily amount used at site	242.74 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.100 %
Release fraction to wastewater from process	2 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %



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Fraction used at main source	3.544 % (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: Sludges will be oxidized or discharged according to national safety regulations. Hence there will be no released to soil (0%).</i>)
No direct discharge to freshwater compartment (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>)	

9.11.2.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.11.2.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Freshwater	5.62E-6 mg/L	0.00135 mg/L	0.004162 ¹	5.83E4
Marine water	0.000575 mg/L	0.00135 mg/L	0.425925 ¹	569.911
Total result				
Freshwater	5.62E-6 mg/L	-	0.004162	5.83E4
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	0.000575 mg/L	-	0.425925	569.911
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.11.2.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
Anhydrous (Ammonia NH₄/NH₃ anhydrous)				
Agricultural soil	0.000268 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012141 ¹	2.00E4
Total result				
Agricultural soil	0.000268 mg/kg _{dwt}	-	-	2.00E4

9.11.3 Contributing Scenario (3) controlling professional worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.11.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours



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Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.3.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.029804 mg/m ³	47.6 mg/m ³	0.000626 ¹
Combined routes	0.024829 mg/kg _{bw} /day	-	0.003651
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000626
Combined routes	- mg/kg _{bw} /day	-	0.003651

9.11.4 Contributing Scenario (4) controlling professional worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.11.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.4.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.042578 mg/m ³	47.6 mg/m ³	0.000894 ¹
Combined routes	0.026654 mg/kg _{bw} /day	-	0.00392
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000894
Combined routes	- mg/kg _{bw} /day	-	0.00392

9.11.5 Contributing Scenario (5) controlling professional worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.11.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
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Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.5.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.049674 mg/m ³	47.6 mg/m ³	0.001044 ¹
Combined routes	0.041382 mg/kg _{bw} /day	-	0.006086
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.001044
Combined routes	- mg/kg _{bw} /day	-	0.006086

9.11.6 Contributing Scenario (6) controlling professional worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.11.6.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.6.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.034286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.005042 ¹
inhalation, long-term systemic	0.070963 mg/m ³	47.6 mg/m ³	0.001491 ¹
Combined routes	0.044423 mg/kg _{bw} /day	-	0.006533
Total result			
dermal	-	-	0.005042
inhalation	-	-	0.001491
Combined routes	- mg/kg _{bw} /day	-	0.006533

9.11.7 Contributing Scenario (7) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.11.7.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.11.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	4.687 mg/kg _{bw} /day	-	0.689259
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.689259

9.11.8 Contributing Scenario (8) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.11.8.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	good (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.11.8.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	3.775 mg/kg _{bw} /day	-	0.555087
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.31307



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	- mg/kg _{bw} /day	-	0.555087

9.11.9 Contributing Scenario (9) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.11.9.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.11.9.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	3.775 mg/kg _{bw} /day	-	0.555087
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.555087

9.11.10 Contributing Scenario (10) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

Name of contributing scenario	PROC 10 Roller application or brushing
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.11.10.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	4.263 mg/kg _{bw} /day	-	0.626983



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.626983

9.11.11 Contributing Scenario (11) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.11.11.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.11.11.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	4.263 mg/kg _{bw} /day	-	0.626983
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.626983

9.11.12 Contributing Scenario (12) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.11.12.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.11.12.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	6.291 mg/kg _{bw} /day	-	0.925144
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.925144

9.11.13 Contributing Scenario (13) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.11.13.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.11.13.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.89 mg/kg _{bw} /day	-	0.572033
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.572033

9.11.14 Contributing Scenario (14) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.11.14.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)

Respiratory protection	90 %
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9.11.14.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.761 mg/kg _{bw} /day	-	0.258963
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.258963

9.11.15 Contributing Scenario (15) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.11.15.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (justification: Minimum protection limit.)
Respiratory protection	90 %

9.11.15.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.977 mg/kg _{bw} /day	-	0.43786
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.43786

9.11.16 Contributing Scenario (16) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.11.16.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional

Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.11.16.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.414 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.207983 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	6.483 mg/kg _{bw} /day	-	0.953388
Total result			
dermal	-	-	0.207983
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.953388

9.11.17 Contributing Scenario (17) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.11.17.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (inhalation 80 %; dermal 0 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.11.17.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.414 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.207983 ¹
inhalation, long-term systemic	7.096 mg/m ³	47.6 mg/m ³	0.149081 ¹
Combined routes	2.428 mg/kg _{bw} /day	-	0.357064
Total result			
dermal	-	-	0.207983
inhalation	-	-	0.149081
Combined routes	- mg/kg _{bw} /day	-	0.357064

9.11.18 Contributing Scenario (18) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.11.18.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)

Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (justification: Minimum protection limit.)
Respiratory protection	90 %

9.11.18.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.414 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.207983 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.962 mg/kg _{bw} /day	-	0.729766
Total result			
dermal	-	-	0.207983
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.729766

9.11.19 Contributing Scenario (19) controlling professional worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.11.19.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.19.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.864 mg/kg _{bw} /day	-	0.568251
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.568251

9.11.20 Contributing Scenario (20) controlling professional worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.11.20.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.20.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH4/NH3 anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.952 mg/kg _{bw} /day	-	0.434078
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.434078

9.11.21 Contributing Scenario (21) controlling professional worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.11.21.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.21.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH4/NH3 anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	35.481 mg/m ³	47.6 mg/m ³	0.745404 ¹
Combined routes	6.44 mg/kg _{bw} /day	-	0.947085
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.745404
Combined routes	- mg/kg _{bw} /day	-	0.947085

9.11.22 Contributing Scenario (22) controlling professional worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.11.22.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)

Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.22.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	4.92 mg/kg _{bw} /day	-	0.723464
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.723464

9.11.23 Contributing Scenario (23) controlling professional worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.11.23.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	42.578 mg/m ³	47.6 mg/m ³	0.894485 ¹
Combined routes	6.494 mg/kg _{bw} /day	-	0.95499
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.894485
Combined routes	- mg/kg _{bw} /day	-	0.95499

9.11.24 Contributing Scenario (24) controlling professional worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.11.24.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
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Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.24.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	29.804 mg/m ³	47.6 mg/m ³	0.62614 ¹
Combined routes	4.669 mg/kg _{bw} /day	-	0.686644
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.62614
Combined routes	- mg/kg _{bw} /day	-	0.686644

9.11.25 Contributing Scenario (25) controlling professional worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.11.25.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.11.25.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.727 mg/kg _{bw} /day	-	0.548083
Total result			
dermal	-	-	0.10084
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.548083

9.11.26 Contributing Scenario (26) controlling professional worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.11.26.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	90 %

9.11.26.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.685714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.10084 ¹
inhalation, long-term systemic	4.967 mg/m ³	47.6 mg/m ³	0.104357 ¹
Combined routes	1.395 mg/kg _{bw} /day	-	0.205197
Total result			
dermal	-	-	0.10084
inhalation	-	-	0.104357
Combined routes	- mg/kg _{bw} /day	-	0.205197

9.11.27 Contributing Scenario (27) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.11.27.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.11.27.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	5.385 mg/kg _{bw} /day	-	0.791872
Total result			
dermal	-	-	0.121008



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.791872

9.11.28 Contributing Scenario (28) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.11.28.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.28.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.11.29 Contributing Scenario (29) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.11.29.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.29.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	3.906 mg/kg _{bw} /day	-	0.574383
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.574383

9.11.30 Contributing Scenario (30) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.11.30.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.30.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	5.322 mg/m ³	47.6 mg/m ³	0.111811 ¹
Combined routes	2.132 mg/kg _{bw} /day	-	0.313491
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.111811
Combined routes	- mg/kg _{bw} /day	-	0.313491

9.11.31 Contributing Scenario (31) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.11.31.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.31.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572

9.11.32 Contributing Scenario (32) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.11.32.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.32.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	4.687 mg/kg _{bw} /day	-	0.689259
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.689259

9.11.33 Contributing Scenario (33) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.11.33.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	good (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)



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Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.33.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	3.775 mg/kg _{bw} /day	-	0.555087
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.555087

9.11.34 Contributing Scenario (34) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.11.34.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.34.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	3.775 mg/kg _{bw} /day	-	0.555087
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.555087

9.11.35 Contributing Scenario (35) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.11.35.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors

Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.35.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH4/NH3 anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	4.263 mg/kg _{bw} /day	-	0.626983
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.626983

9.11.36 Contributing Scenario (36) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.11.36.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.36.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH4/NH3 anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	4.263 mg/kg _{bw} /day	-	0.626983
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.626983

9.11.37 Contributing Scenario (37) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.11.37.1 Conditions of use

Name of contributing scenario	:
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.37.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	24.837 mg/m ³	47.6 mg/m ³	0.521783 ¹
Combined routes	6.291 mg/kg _{bw} /day	-	0.925144
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.521783
Combined routes	- mg/kg _{bw} /day	-	0.925144

9.11.38 Contributing Scenario (38) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.11.38.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.11.38.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	6.208 mg/kg _{bw} /day	-	0.912881
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.670864



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	- mg/kg _{bw} /day	-	0.912881

9.11.39 Contributing Scenario (39) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.11.39.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.39.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	2.71 mg/kg _{bw} /day	-	0.398552
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.398552

9.11.40 Contributing Scenario (40) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.11.40.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.40.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹
Combined routes	5.277 mg/kg _{bw} /day	-	0.776064



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.776064

9.11.41 Contributing Scenario (41) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.11.41.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	good (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.41.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	4.517 mg/kg _{bw} /day	-	0.664253
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.664253

9.11.42 Contributing Scenario (42) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.11.42.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.42.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	2.743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.403361 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	4.517 mg/kg _{bw} /day	-	0.664253
Total result			
dermal	-	-	0.403361
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.664253

9.11.43 Contributing Scenario (43) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.11.43.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.11.43.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	5.385 mg/kg _{bw} /day	-	0.791872
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.791872

9.11.44 Contributing Scenario (44) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.11.44.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)

Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.44.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.11.45 Contributing Scenario (45) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.11.45.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.45.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	17.741 mg/m ³	47.6 mg/m ³	0.372702 ¹
Combined routes	3.906 mg/kg _{bw} /day	-	0.574383
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.372702
Combined routes	- mg/kg _{bw} /day	-	0.574383

9.11.46 Contributing Scenario (46) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	good (30%)



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Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.46.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572

9.11.47 Contributing Scenario (47) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.11.47.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Anhydrous (Ammonia NH₄/NH₃ anhydrous)			
dermal, long-term systemic	1.371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.201681 ¹
inhalation, long-term systemic	12.418 mg/m ³	47.6 mg/m ³	0.260892 ¹
Combined routes	3.145 mg/kg _{bw} /day	-	0.462572
Total result			
dermal	-	-	0.201681
inhalation	-	-	0.260892
Combined routes	- mg/kg _{bw} /day	-	0.462572



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9.13 Scenario ES 13: Distribution and formulation of ammonia aqueous up to 25% (ES-2 PROC 1, ES-2 PROC 15, ES-2 PROC 2, ES-2 PROC 3, ES-2 PROC 4, ES-2 PROC 8b, ES-2 PROC 9, ES-2)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Distribution and formulation of ammonia aqueous up to 25% (ES-2 PROC 1, ES-2 PROC 15, ES-2 PROC 2, ES-2 PROC 3, ES-2 PROC 4, ES-2 PROC 8b, ES-2 PROC 9, ES-2)
Systematic title based on use descriptor	ERC 2; PROC 1, 15, 2, 3, 4, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 2 Formulation of preparations
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 15 - Use of laboratory reagents in small scale laboratories PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.13.1 Contributing Scenario (1) controlling environmental exposure for ERC 2

9.13.1.1 Conditions of use

Operational conditions	
Annual tonnage	3.83E6 to/year
Daily amount used at site	1,819.155 kg/day
Release times per year	100 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.0025 %
Release fraction to wastewater from process	0.002 %
Release fraction to soil from process	0 %
Fraction tonnage to region	3.8 %
Fraction used at main source	0.49998 % (Max. tonnage biggest customer: 3829950 tpa / 200 = 19149)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (justification: 100 % reduction of emission from sludge to soil. Rationale: Sludges of industrial firms will be incinerated or discharged according to national safety regulations.)
SpERC	NH4 - 2 (spERC -2 – NH4 Release time per year: 100 [20, 100, 300]. Assumed number of production days per year. Fraction main source: 0.5% (Default 100%). The substance is formulated by 200 companies indicating a fraction main source of 0.5%. Fraction tonnage to region: 3.8% (Default 100%). Ratio of total tonnage 382'9950 tpa to regional tonnage 1'000'000 tpa. Release to air: 0.0025% (Default: 2.5%). Emissions of the substance to air from industrial processes are considered well controlled by industrial firm measures, i.e. ventilation of ambient air through filters (discharged after use), following national safety regulations. Release water: 0.02% (Default: 2%). During industrial and subsequent waste water treatment, the substance is

SpERC	completely biologically transformed into mineral nitrogen components, as a part of the nitrogen cycle in STPs. Hence release to environmental surface waters is 0%. 2/100 was used arbitrarily. Release to soil: 0% (Default: 0.01%). Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).
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9.13.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.13.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Freshwater	0.000057 mg/L	0.00135 mg/L	0.042038 ¹	4.33E4
Marine water	5.72E-6 mg/L	0.00135 mg/L	0.004238 ¹	4.29E5
Total result				
Freshwater	0.000057 mg/L	-	0.042038	4.33E4
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	5.72E-6 mg/L	-	0.004238	4.29E5
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.13.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Agricultural soil	0.000317 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.014354 ¹	1.27E5
Total result				
Agricultural soil	0.000317 mg/kg _{dwt}	-	-	1.27E5

9.13.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1

9.13.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.2.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.001788 mg/m ³	47.6 mg/m ³	0.000038 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	0.012598 mg/kg _{bw} /day	-	0.001853
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000038
Combined routes	- mg/kg _{bw} /day	-	0.001853

9.13.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 1

9.13.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.3.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.002555 mg/m ³	47.6 mg/m ³	0.000054 ¹
Combined routes	0.012708 mg/kg _{bw} /day	-	0.001869
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000054
Combined routes	- mg/kg _{bw} /day	-	0.001869

9.13.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 1

9.13.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.13.4.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	0.002555 mg/m ³	47.6 mg/m ³	0.000054 ¹
Combined routes	0.012708 mg/kg _{bw} /day	-	0.001869
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000054
Combined routes	- mg/kg _{bw} /day	-	0.001869

9.13.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 1

9.13.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.5.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.00298 mg/m ³	47.6 mg/m ³	0.000063 ¹
Combined routes	0.020997 mg/kg _{bw} /day	-	0.003088
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000063
Combined routes	- mg/kg _{bw} /day	-	0.003088

9.13.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 1

9.13.6.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.6.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.13.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 1

9.13.7.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.13.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.13.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 15

9.13.8.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.8.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.123429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.018151 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	1.948 mg/kg _{bw} /day	-	0.286497
Total result			
dermal	-	-	0.018151
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.286497

9.13.9 Contributing Scenario (9) controlling industrial worker exposure for PROC 15

9.13.9.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.9.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.205714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.030252 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.247 mg/kg _{bw} /day	-	0.477495
Total result			
dermal	-	-	0.030252
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.477495

9.13.10 Contributing Scenario (10) controlling industrial worker exposure for PROC 15

9.13.10.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.13.10.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	1.277 mg/m ³	47.6 mg/m ³	0.026835 ¹
Combined routes	0.194818 mg/kg _{bw} /day	-	0.02865
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.026835
Combined routes	- mg/kg _{bw} /day	-	0.02865

9.13.11 Contributing Scenario (11) controlling industrial worker exposure for PROC 15

9.13.11.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.13.11.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	2.129 mg/m ³	47.6 mg/m ³	0.044724 ¹
Combined routes	0.324696 mg/kg _{bw} /day	-	0.047749
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.044724
Combined routes	- mg/kg _{bw} /day	-	0.047749

9.13.12 Contributing Scenario (12) controlling industrial worker exposure for PROC 15

9.13.12.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.12.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.123429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.018151 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.401 mg/kg _{bw} /day	-	0.205993
Total result			
dermal	-	-	0.018151
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.205993

9.13.13 Contributing Scenario (13) controlling industrial worker exposure for PROC 15

9.13.13.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.13.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.205714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.030252 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.335 mg/kg _{bw} /day	-	0.343322
Total result			
dermal	-	-	0.030252
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.343322

9.13.14 Contributing Scenario (14) controlling industrial worker exposure for PROC 2

9.13.14.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.14.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.406 mg/kg _{bw} /day	-	0.206778
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.206778

9.13.15 Contributing Scenario (15) controlling industrial worker exposure for PROC 2

9.13.15.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.15.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.13.16 Contributing Scenario (16) controlling industrial worker exposure for PROC 2

9.13.16.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.13.16.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	0.638663 mg/m ³	47.6 mg/m ³	0.013417 ¹
Combined routes	0.140609 mg/kg _{bw} /day	-	0.020678
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.013417
Combined routes	- mg/kg _{bw} /day	-	0.020678

9.13.17 Contributing Scenario (17) controlling industrial worker exposure for PROC 2

9.13.17.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.13.17.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
25% aqueous Ammonia			
Ammonia NH₄/NH₃ aqua			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	1.064 mg/m ³	47.6 mg/m ³	0.022362 ¹
Combined routes	0.234348 mg/kg _{bw} /day	-	0.034463
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.022362
Combined routes	- mg/kg _{bw} /day	-	0.034463

9.13.18 Contributing Scenario (18) controlling industrial worker exposure for PROC 2

9.13.18.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No



AMMONIA LIQUOR TECHNICAL
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Respiratory protection	no
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9.13.18.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.132 mg/kg _{bw} /day	-	0.166526
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.166526

9.13.19 Contributing Scenario (19) controlling industrial worker exposure for PROC 2

9.13.19.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.19.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.13.20 Contributing Scenario (20) controlling industrial worker exposure for PROC 3

9.13.20.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)



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Protective gloves	No
Respiratory protection	no

9.13.20.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.072 mg/kg _{bw} /day	-	0.304648
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.304648

9.13.21 Contributing Scenario (21) controlling industrial worker exposure for PROC 3

9.13.21.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.21.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.453 mg/kg _{bw} /day	-	0.507747
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.507747

9.13.22 Contributing Scenario (22) controlling industrial worker exposure for PROC 3

9.13.22.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors

Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.13.22.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.024686 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.00363 ¹
inhalation, long-term systemic	1.277 mg/m ³	47.6 mg/m ³	0.026835 ¹
Combined routes	0.207161 mg/kg _{bw} /day	-	0.030465
Total result			
dermal	-	-	0.00363
inhalation	-	-	0.026835
Combined routes	- mg/kg _{bw} /day	-	0.030465

9.13.23 Contributing Scenario (23) controlling industrial worker exposure for PROC 3

9.13.23.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.13.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.041143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.00605 ¹
inhalation, long-term systemic	2.129 mg/m ³	47.6 mg/m ³	0.044724 ¹
Combined routes	0.345268 mg/kg _{bw} /day	-	0.050775
Total result			
dermal	-	-	0.00605
inhalation	-	-	0.044724
Combined routes	- mg/kg _{bw} /day	-	0.050775

9.13.24 Contributing Scenario (24) controlling industrial worker exposure for PROC 3

9.13.24.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²

Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.24.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.524 mg/kg _{bw} /day	-	0.224144
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.224144

9.13.25 Contributing Scenario (25) controlling industrial worker exposure for PROC 3

9.13.25.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.13.25.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.54 mg/kg _{bw} /day	-	0.373574
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.373574

9.13.26 Contributing Scenario (26) controlling industrial worker exposure for PROC 4

9.13.26.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.13.26.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	2.555 mg/m ³	47.6 mg/m ³	0.053669 ¹
Combined routes	0.611807 mg/kg _{bw} /day	-	0.089972
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.053669
Combined routes	- mg/kg _{bw} /day	-	0.089972

9.13.27 Contributing Scenario (27) controlling industrial worker exposure for PROC 4

9.13.27.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.13.27.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹
Combined routes	1.02 mg/kg _{bw} /day	-	0.149953
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.149953

9.13.28 Contributing Scenario (28) controlling industrial worker exposure for PROC 4

9.13.28.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no

9.13.28.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.024686 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.00363 ¹
inhalation, long-term systemic	2.555 mg/m ³	47.6 mg/m ³	0.053669 ¹
Combined routes	0.389636 mg/kg _{bw} /day	-	0.057299
Total result			
dermal	-	-	0.00363
inhalation	-	-	0.053669
Combined routes	- mg/kg _{bw} /day	-	0.057299

9.13.29 Contributing Scenario (29) controlling industrial worker exposure for PROC 4

9.13.29.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no

9.13.29.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.041143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.00605 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹
Combined routes	0.649393 mg/kg _{bw} /day	-	0.095499
Total result			
dermal	-	-	0.00605
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.095499

9.13.30 Contributing Scenario (30) controlling industrial worker exposure for PROC 4

9.13.30.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.13.30.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	1.788 mg/m ³	47.6 mg/m ³	0.037568 ¹
Combined routes	0.502322 mg/kg _{bw} /day	-	0.073871
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.037568
Combined routes	- mg/kg _{bw} /day	-	0.073871

9.13.31 Contributing Scenario (31) controlling industrial worker exposure for PROC 4

9.13.31.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.13.31.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	2.98 mg/m ³	47.6 mg/m ³	0.062614 ¹
Combined routes	0.837204 mg/kg _{bw} /day	-	0.123118
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.062614
Combined routes	- mg/kg _{bw} /day	-	0.123118

9.13.32 Contributing Scenario (32) controlling industrial worker exposure for PROC 8B

9.13.32.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²

Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.32.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	3.832 mg/m ³	47.6 mg/m ³	0.080504 ¹
Combined routes	1.535 mg/kg _{bw} /day	-	0.225714
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.080504
Combined routes	- mg/kg _{bw} /day	-	0.225714

9.13.33 Contributing Scenario (33) controlling industrial worker exposure for PROC 8B

9.13.33.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.33.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	2.558 mg/kg _{bw} /day	-	0.37619
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.37619

9.13.34 Contributing Scenario (34) controlling industrial worker exposure for PROC 8B

9.13.34.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²

Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.13.34.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	1.916 mg/m ³	47.6 mg/m ³	0.040252 ¹
Combined routes	0.323084 mg/kg _{bw} /day	-	0.047512
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.040252
Combined routes	- mg/kg _{bw} /day	-	0.047512

9.13.35 Contributing Scenario (35) controlling industrial worker exposure for PROC 8B

9.13.35.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.13.35.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	3.193 mg/m ³	47.6 mg/m ³	0.067086 ¹
Combined routes	0.538473 mg/kg _{bw} /day	-	0.079187
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.067086
Combined routes	- mg/kg _{bw} /day	-	0.079187

9.13.36 Contributing Scenario (36) controlling industrial worker exposure for PROC 8B

9.13.36.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²

Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.36.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	2.682 mg/m ³	47.6 mg/m ³	0.056353 ¹
Combined routes	1.371 mg/kg _{bw} /day	-	0.201563
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.056353
Combined routes	- mg/kg _{bw} /day	-	0.201563

9.13.37 Contributing Scenario (37) controlling industrial worker exposure for PROC 8B

9.13.37.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.37.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	2.284 mg/kg _{bw} /day	-	0.335938
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.335938

9.13.38 Contributing Scenario (38) controlling industrial worker exposure for PROC 9

9.13.38.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.38.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	5.109 mg/m ³	47.6 mg/m ³	0.107338 ¹
Combined routes	1.224 mg/kg _{bw} /day	-	0.179943
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.107338
Combined routes	- mg/kg _{bw} /day	-	0.179943

9.13.39 Contributing Scenario (39) controlling industrial worker exposure for PROC 9

9.13.39.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.39.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	2.039 mg/kg _{bw} /day	-	0.299905
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.299905

9.13.40 Contributing Scenario (40) controlling industrial worker exposure for PROC 9

9.13.40.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.13.40.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	5.109 mg/m ³	47.6 mg/m ³	0.107338 ¹
Combined routes	0.779271 mg/kg _{bw} /day	-	0.114599
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.107338
Combined routes	- mg/kg _{bw} /day	-	0.114599

9.13.41 Contributing Scenario (41) controlling industrial worker exposure for PROC 9

9.13.41.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.13.41.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	1.299 mg/kg _{bw} /day	-	0.190998
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.190998

9.13.42 Contributing Scenario (42) controlling industrial worker exposure for PROC 9

9.13.42.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.42.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	3.577 mg/m ³	47.6 mg/m ³	0.075137 ¹
Combined routes	1.005 mg/kg _{bw} /day	-	0.147742
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.075137
Combined routes	- mg/kg _{bw} /day	-	0.147742

9.13.43 Contributing Scenario (43) controlling industrial worker exposure for PROC 9

9.13.43.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.43.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	5.961 mg/m ³	47.6 mg/m ³	0.125228 ¹
Combined routes	1.674 mg/kg _{bw} /day	-	0.246236
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.125228
Combined routes	- mg/kg _{bw} /day	-	0.246236

9.13.44 Contributing Scenario (44) controlling industrial worker exposure for PROC 9

9.13.44.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.44.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	5.109 mg/m ³	47.6 mg/m ³	0.107338 ¹
Combined routes	1.224 mg/kg _{bw} /day	-	0.179943
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.107338
Combined routes	- mg/kg _{bw} /day	-	0.179943

9.13.45 Contributing Scenario (45) controlling industrial worker exposure for PROC 9

9.13.45.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.45.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	2.039 mg/kg _{bw} /day	-	0.299905
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.299905

9.13.46 Contributing Scenario (46) controlling industrial worker exposure for PROC 9

9.13.46.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.13.46.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	5.109 mg/m ³	47.6 mg/m ³	0.107338 ¹
Combined routes	0.779271 mg/kg _{bw} /day	-	0.114599
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.107338
Combined routes	- mg/kg _{bw} /day	-	0.114599

9.13.47 Contributing Scenario (47) controlling industrial worker exposure for PROC 9

9.13.47.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.13.47.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	1.299 mg/kg _{bw} /day	-	0.190998
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.190998

9.13.48 Contributing Scenario (48) controlling industrial worker exposure for PROC 9

9.13.48.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²

Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.48.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	3.577 mg/m ³	47.6 mg/m ³	0.075137 ¹
Combined routes	1.005 mg/kg _{bw} /day	-	0.147742
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.075137
Combined routes	- mg/kg _{bw} /day	-	0.147742

9.13.49 Contributing Scenario (49) controlling industrial worker exposure for PROC 9

9.13.49.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.13.49.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	5.961 mg/m ³	47.6 mg/m ³	0.125228 ¹
Combined routes	1.674 mg/kg _{bw} /day	-	0.246236
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.125228
Combined routes	- mg/kg _{bw} /day	-	0.246236

9.17 Scenario ES 17: Industrial use of ammonia aqueous up to 25% as intermediate (ES-3 PROC 1, ES-3 PROC 15, ES-3 PROC 2, ES-3 PROC 3, ES-3 PROC 4, ES-3 PROC 8b, ES-3 PROC 9, ES-3)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Industrial use of ammonia aqueous up to 25% as intermediate (ES-3 PROC 1, ES-3 PROC 15, ES-3 PROC 2, ES-3 PROC 3, ES-3 PROC 4, ES-3 PROC 8b, ES-3 PROC 9, ES-3)
Systematic title based on use descriptor	ERC 6A; PROC 1, 15, 2, 3, 4, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 6a Industrial use of intermediates
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 15 - Use of laboratory reagents in small scale laboratories PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.17.1 Contributing Scenario (1) controlling environmental exposure for ERC 6A

9.17.1.1 Conditions of use

Operational conditions	
Annual tonnage	3.83E6 to/year
Daily amount used at site	225.001 kg/day
Release times per year	100 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.005 %
Release fraction to wastewater from process	0.020 %
Release fraction to soil from process	0 %
Fraction tonnage to region	0.470 %
Fraction used at main source	0.500039 % (<i>Maximum tonnage biggest customer: 3829950 tpa / 200 = 19149</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: 100 % reduction of emission from sludge to soil. Rationale: Sludges of industrial firms will be incinerated or discharged according to national safety regulations.</i>)
SpERC	NH ₄ - 6a (spERC -6a – NH ₄) Release time per year: 100 [20, 100, 300]. Assumed number of production days per year. Fraction main source: 0.5% (Default 100%). The substance is industrially used by 200 companies indicating a fraction main source of 0.5%. Fraction tonnage to region: 0.47% (Default 100%). Ratio of total tonnage 3829950 tpa to regional tonnage 800000 tpa. Release to air: 0.005% (Default: 5%). Emissions of the substance to air from industrial processes are considered well controlled by industrial firm measures, i.e. ventilation of ambient air through filters (discharged after use), following national safety regulations. Release water: 0.02% (Default: 2%). During industrial and subsequent waste water treatment, the substance is completely biologically transformed into mineral nitrogen components, as a part of the nitrogen cycle in STPs. Hence



AMMONIA LIQUOR TECHNICAL
WITH AMMONIUM CONTENT BELOW 25%
SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH), as amended

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issued on: 8/27/2007

release to environmental surface waters is 0%. 2/100 was used arbitrarily.
Release to soil: 0% (Default: 0.1%). Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).

9.17.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a

9.17.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Freshwater	0.000067 mg/L	0.00135 mg/L	0.049929 ¹	4,506.384
Marine water	6.79E-6 mg/L	0.00135 mg/L	0.005027 ¹	4.48E4
Total result				
Freshwater	0.000067 mg/L	-	0.049929	4,506.384
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	6.79E-6 mg/L	-	0.005027	4.48E4
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.17.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Agricultural soil	0.000287 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012987 ¹	1.73E4
Total result				
Agricultural soil	0.000287 mg/kg _{dwt}	-	-	1.73E4

9.17.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1 (PC 19)

9.17.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.2.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.002555 mg/m ³	47.6 mg/m ³	0.000054 ¹
Combined routes	0.012708 mg/kg _{bw} /day	-	0.001869

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000054
Combined routes	- mg/kg _{bw} /day	-	0.001869

9.17.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 1 (PC 19)

9.17.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.17.3.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.002555 mg/m ³	47.6 mg/m ³	0.000054 ¹
Combined routes	0.012708 mg/kg _{bw} /day	-	0.001869
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000054
Combined routes	- mg/kg _{bw} /day	-	0.001869

9.17.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 1 (PC 19)

9.17.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.4.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.00298 mg/m ³	47.6 mg/m ³	0.000063 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	0.020997 mg/kg _{bw} /day	-	0.003088
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000063
Combined routes	- mg/kg _{bw} /day	-	0.003088

9.17.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 1 (PC 19)

9.17.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.5.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.00298 mg/m ³	47.6 mg/m ³	0.000063 ¹
Combined routes	0.020997 mg/kg _{bw} /day	-	0.003088
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000063
Combined routes	- mg/kg _{bw} /day	-	0.003088

9.17.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 1 (PC 19)

9.17.6.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.6.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.17.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 1 (PC 19)

9.17.7.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 0 %)
Protective gloves	No
Respiratory protection	no

9.17.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.17.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 15 (PC 19)

9.17.8.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.8.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.123429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.018151 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	1.948 mg/kg _{bw} /day	-	0.286497
Total result			
dermal	-	-	0.018151
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.286497

9.17.9 Contributing Scenario (9) controlling industrial worker exposure for PROC 15 (PC 19)

9.17.9.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.9.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.205714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.030252 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.247 mg/kg _{bw} /day	-	0.477495
Total result			
dermal	-	-	0.030252
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.477495

9.17.10 Contributing Scenario (10) controlling industrial worker exposure for PROC 15 (PC 19)

9.17.10.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.17.10.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	1.277 mg/m ³	47.6 mg/m ³	0.026835 ¹
Combined routes	0.194818 mg/kg _{bw} /day	-	0.02865
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.026835
Combined routes	- mg/kg _{bw} /day	-	0.02865

9.17.11 Contributing Scenario (11) controlling industrial worker exposure for PROC 15 (PC 19)

9.17.11.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.17.11.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	2.129 mg/m ³	47.6 mg/m ³	0.044724 ¹
Combined routes	0.324696 mg/kg _{bw} /day	-	0.047749
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.044724
Combined routes	- mg/kg _{bw} /day	-	0.047749

9.17.12 Contributing Scenario (12) controlling industrial worker exposure for PROC 15 (PC 19)

9.17.12.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.12.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.123429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.018151 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.401 mg/kg _{bw} /day	-	0.205993
Total result			
dermal	-	-	0.018151
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.205993

9.17.13 Contributing Scenario (13) controlling industrial worker exposure for PROC 15 (PC 19)

9.17.13.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.13.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.205714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.030252 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.335 mg/kg _{bw} /day	-	0.343322
Total result			
dermal	-	-	0.030252
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.343322

9.17.14 Contributing Scenario (14) controlling industrial worker exposure for PROC 2 (PC 19)

9.17.14.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.14.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.406 mg/kg _{bw} /day	-	0.206778
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.206778

9.17.15 Contributing Scenario (15) controlling industrial worker exposure for PROC 2 (PC 19)

9.17.15.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.15.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.17.16 Contributing Scenario (16) controlling industrial worker exposure for PROC 2 (PC 19)

9.17.16.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.17.16.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	0.638663 mg/m ³	47.6 mg/m ³	0.013417 ¹
Combined routes	0.140609 mg/kg _{bw} /day	-	0.020678
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.013417
Combined routes	- mg/kg _{bw} /day	-	0.020678

9.17.17 Contributing Scenario (17) controlling industrial worker exposure for PROC 2 (PC 19)

9.17.17.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.17.17.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	1.064 mg/m ³	47.6 mg/m ³	0.022362 ¹
Combined routes	0.234348 mg/kg _{bw} /day	-	0.034463
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.022362
Combined routes	- mg/kg _{bw} /day	-	0.034463

9.17.18 Contributing Scenario (18) controlling industrial worker exposure for PROC 2 (PC 19)

9.17.18.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.18.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.132 mg/kg _{bw} /day	-	0.166526
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.166526

9.17.19 Contributing Scenario (19) controlling industrial worker exposure for PROC 2 (PC 19)

9.17.19.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.19.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.17.20 Contributing Scenario (20) controlling industrial worker exposure for PROC 3 (PC 19)

9.17.20.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.20.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.072 mg/kg _{bw} /day	-	0.304648
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.304648

9.17.21 Contributing Scenario (21) controlling industrial worker exposure for PROC 3 (PC 19)

9.17.21.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.21.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.453 mg/kg _{bw} /day	-	0.507747
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.507747

9.17.22 Contributing Scenario (22) controlling industrial worker exposure for PROC 3 (PC 19)

9.17.22.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.17.22.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.024686 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.00363 ¹
inhalation, long-term systemic	1.277 mg/m ³	47.6 mg/m ³	0.026835 ¹
Combined routes	0.207161 mg/kg _{bw} /day	-	0.030465
Total result			
dermal	-	-	0.00363
inhalation	-	-	0.026835
Combined routes	- mg/kg _{bw} /day	-	0.030465

9.17.23 Contributing Scenario (23) controlling industrial worker exposure for PROC 3 (PC 19)

9.17.23.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	No
Respiratory protection	no

9.17.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.041143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.00605 ¹
inhalation, long-term systemic	2.129 mg/m ³	47.6 mg/m ³	0.044724 ¹
Combined routes	0.345268 mg/kg _{bw} /day	-	0.050775
Total result			
dermal	-	-	0.00605
inhalation	-	-	0.044724
Combined routes	- mg/kg _{bw} /day	-	0.050775

9.17.24 Contributing Scenario (24) controlling industrial worker exposure for PROC 3 (PC 19)

9.17.24.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.24.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.524 mg/kg _{bw} /day	-	0.224144
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.224144

9.17.25 Contributing Scenario (25) controlling industrial worker exposure for PROC 3 (PC 19)

9.17.25.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.17.25.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.54 mg/kg _{bw} /day	-	0.373574
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.373574

9.17.26 Contributing Scenario (26) controlling industrial worker exposure for PROC 4 (PC 19)

9.17.26.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.26.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	2.555 mg/m ³	47.6 mg/m ³	0.053669 ¹
Combined routes	0.858664 mg/kg _{bw} /day	-	0.126274
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.053669
Combined routes	- mg/kg _{bw} /day	-	0.126274

9.17.27 Contributing Scenario (27) controlling industrial worker exposure for PROC 4 (PC 19)

9.17.27.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.27.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹
Combined routes	1.431 mg/kg _{bw} /day	-	0.210457
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.210457

9.17.28 Contributing Scenario (28) controlling industrial worker exposure for PROC 4 (PC 19)

9.17.28.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.17.28.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	2.555 mg/m ³	47.6 mg/m ³	0.053669 ¹
Combined routes	0.414321 mg/kg _{bw} /day	-	0.06093
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.053669
Combined routes	- mg/kg _{bw} /day	-	0.06093

9.17.29 Contributing Scenario (29) controlling industrial worker exposure for PROC 4 (PC 19)

9.17.29.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.17.29.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹
Combined routes	0.690536 mg/kg _{bw} /day	-	0.101549
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.101549

9.17.30 Contributing Scenario (30) controlling industrial worker exposure for PROC 4 (PC 19)

9.17.30.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.30.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	1.788 mg/m ³	47.6 mg/m ³	0.037568 ¹
Combined routes	0.749179 mg/kg _{bw} /day	-	0.110173
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.037568
Combined routes	- mg/kg _{bw} /day	-	0.110173

9.17.31 Contributing Scenario (31) controlling industrial worker exposure for PROC 4 (PC 19)

9.17.31.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.31.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	2.98 mg/m ³	47.6 mg/m ³	0.062614 ¹
Combined routes	1.249 mg/kg _{bw} /day	-	0.183622
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.062614
Combined routes	- mg/kg _{bw} /day	-	0.183622

9.17.32 Contributing Scenario (32) controlling industrial worker exposure for PROC 8B (PC 19)

9.17.32.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.32.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	3.832 mg/m ³	47.6 mg/m ³	0.080504 ¹
Combined routes	1.535 mg/kg _{bw} /day	-	0.225714
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.080504
Combined routes	- mg/kg _{bw} /day	-	0.225714

9.17.33 Contributing Scenario (33) controlling industrial worker exposure for PROC 8B (PC 19)

9.17.33.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.33.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	2.558 mg/kg _{bw} /day	-	0.37619
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.37619

9.17.34 Contributing Scenario (34) controlling industrial worker exposure for PROC 8B (PC 19)

9.17.34.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.17.34.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	1.916 mg/m ³	47.6 mg/m ³	0.040252 ¹
Combined routes	0.323084 mg/kg _{bw} /day	-	0.047512
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.040252
Combined routes	- mg/kg _{bw} /day	-	0.047512

9.17.35 Contributing Scenario (35) controlling industrial worker exposure for PROC 8B (PC 19)

9.17.35.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.17.35.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	3.193 mg/m ³	47.6 mg/m ³	0.067086 ¹
Combined routes	0.538473 mg/kg _{bw} /day	-	0.079187
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.067086
Combined routes	- mg/kg _{bw} /day	-	0.079187

9.17.36 Contributing Scenario (36) controlling industrial worker exposure for PROC 8B (PC 19)

9.17.36.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.36.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	2.682 mg/m ³	47.6 mg/m ³	0.056353 ¹
Combined routes	1.371 mg/kg _{bw} /day	-	0.201563
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.056353
Combined routes	- mg/kg _{bw} /day	-	0.201563

9.17.37 Contributing Scenario (37) controlling industrial worker exposure for PROC 8B (PC 19)

9.17.37.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.37.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	2.284 mg/kg _{bw} /day	-	0.335938
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.335938

9.17.38 Contributing Scenario (38) controlling industrial worker exposure for PROC 9 (PC 19)

9.17.38.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.38.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	5.109 mg/m ³	47.6 mg/m ³	0.107338 ¹
Combined routes	1.224 mg/kg _{bw} /day	-	0.179943
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.107338
Combined routes	- mg/kg _{bw} /day	-	0.179943

9.17.39 Contributing Scenario (39) controlling industrial worker exposure for PROC 9 (PC 19)

9.17.39.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.39.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	2.039 mg/kg _{bw} /day	-	0.299905
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.299905

9.17.40 Contributing Scenario (40) controlling industrial worker exposure for PROC 9 (PC 19)

9.17.40.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.17.40.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	5.109 mg/m ³	47.6 mg/m ³	0.107338 ¹
Combined routes	0.779271 mg/kg _{bw} /day	-	0.114599
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.107338
Combined routes	- mg/kg _{bw} /day	-	0.114599

9.17.41 Contributing Scenario (41) controlling industrial worker exposure for PROC 9 (PC 19)

9.17.41.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.17.41.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	1.299 mg/kg _{bw} /day	-	0.190998
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.190998

9.17.42 Contributing Scenario (42) controlling industrial worker exposure for PROC 9 (PC 19)

9.17.42.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.42.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	3.577 mg/m ³	47.6 mg/m ³	0.075137 ¹
Combined routes	1.005 mg/kg _{bw} /day	-	0.147742
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.075137
Combined routes	- mg/kg _{bw} /day	-	0.147742

9.17.43 Contributing Scenario (43) controlling industrial worker exposure for PROC 9 (PC 19)

9.17.43.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.17.43.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	5.961 mg/m ³	47.6 mg/m ³	0.125228 ¹
Combined routes	1.674 mg/kg _{bw} /day	-	0.246236
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.125228
Combined routes	- mg/kg _{bw} /day	-	0.246236



AMMONIA LIQUOR TECHNICAL
WITH AMMONIUM CONTENT BELOW 25%
SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH), as amended

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issued on: 8/27/2007

COVERING PAGE - information applicable to all ESs listed below

Conditions of use common to all contributing scenarios (CSs) for following ES: 24, 26, 27, 30, 34

Name of contributing scenario	PROC relevant for CS
Exposure type	Inhalation: Long-term systemic; Dermal: Long-term systemic
Product characteristics	
Physical state	liquid
Concentration in substance	>5-25%
Max. conc. (ECETOC)	>25%
Fugacity / Dustiness	high
Frequency and duration of use	
Duration of activity	according to CS
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	according to CS
Other given operational conditions affecting workers exposure	
Location	according to CS
Domain	Industrial (unless otherwise stated as Professional for ES 8, 9, 11, 30, 34,42,45)
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	according to CS
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	according to CS
Respiratory protection	according to CS

Note 1

Explanations for the RCR assessment (Risk characterization ratio), listed in the following tables for individual ECs (marked with *):

¹ Worst case result used for total RCR (Risk characterisation ratio), RCR <1 means safe use

² Part of additive RCR

³ Worst case value, as dermal and inhalation RCRs are coming from different substances

Note 2:

Information valid for all tables numbered 9.XX.XX.2 Exposure and risks for workers (XX – number of the given ES), (marked with **)

9.XX.XX.2 Exposure and risks for workers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalation route together with the total exposure of workers over all routes if applicable.

9.24 Scenario 24: Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (flue gas NO_x and SO_x reduction) (ES-4 PROC 1, ES-4 PROC 19, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 8b, ES-4 PROC 9, ES-4 ERC 6b)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (flue gas NO _x and SO _x reduction) (ES-4 PROC 1, ES-4 PROC 19, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 8b, ES-4 PROC 9, ES-4 ERC 6b)
Systematic title based on use descriptor	ERC 6B; PROC 1, 19, 2, 3, 4, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 6b Industrial use of reactive processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 19 - Hand-mixing with intimate contact (only PPE available) PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.24.1 Contributing Scenario (1) controlling environmental exposure for ERC 6B

9.24.1.1 Conditions of use

Operational conditions	
Annual tonnage	3.55E5 to/year
Daily amount used at site	10.41 kg/day
Release times per year	100 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.0001 %
Release fraction to wastewater from process	0.050 %
Release fraction to soil from process	0 %
Fraction tonnage to region	0.470 %
Fraction used at main source	0.249837 % (<i>justification: Maximum tonnage used for calculation of regional/continental PEC: 25000 tpa worst case</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).</i>)
SpERC	NH ₄ - 6b (spERC -6b – NH ₄ Release time per year: 100 [20, 100, 300]. Assumed number of production days per year. Fraction main source: 0.25% (Default 100%). The substance is industrially used by 400 companies indicating a fraction main source of 0.25%. Fraction tonnage to region: 0.47% (Default 100%). Ratio of total tonnage 354631 tpa to regional tonnage 25000 tpa. Release to air: 0.0001% (Default: 0.1%). Emissions of the substance to air from industrial processes are



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considered well controlled by industrial firm measures, i.e. ventilation of ambient air through filters (discharged after use), following national safety regulations. Release water: 0.05% (Default: 5%). During industrial and subsequent waste water treatment, the substance is completely biologically transformed into mineral nitrogen components, as a part of the nitrogen cycle in STPs. Hence release to environmental surface waters is 0%. $5/100 = 0.05\%$ was set arbitrarily. Release to soil: 0% (Default: 0.025%). Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).
--

9.24.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.24.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Freshwater	0.000018 mg/L	0.00135 mg/L	0.013485 ¹	772
Marine water	1.87E-6 mg/L	0.00135 mg/L	0.001383 ¹	7,527.218
Total result				
Freshwater	0.000018 mg/L	-	0.013485	772
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	1.87E-6 mg/L	-	0.001383	7,527.218
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.24.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Agricultural soil	0.000277 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012538 ¹	830.298
Total result				
Agricultural soil	0.000277 mg/kg _{dwt}	-	-	830.298

9.24.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1 (PC 0)

9.24.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.2.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.001788 mg/m ³	47.6 mg/m ³	0.000038 ¹
Combined routes	0.012598 mg/kg _{bw} /day	-	0.001853
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000038
Combined routes	- mg/kg _{bw} /day	-	0.001853

9.24.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 1 (PC 0)

9.24.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.3.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.002555 mg/m ³	47.6 mg/m ³	0.000054 ¹
Combined routes	0.012708 mg/kg _{bw} /day	-	0.001869
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000054
Combined routes	- mg/kg _{bw} /day	-	0.001869

9.24.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 1 (PC 0)

9.24.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.4.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.00298 mg/m ³	47.6 mg/m ³	0.000063 ¹
Combined routes	0.020997 mg/kg _{bw} /day	-	0.003088
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000063
Combined routes	- mg/kg _{bw} /day	-	0.003088

9.24.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 1 (PC 0)

9.24.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.5.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.24.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 19

9.24.6.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (justification: Minimum protection limit.)

Respiratory protection	90 %
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9.24.6.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.369 mg/kg _{bw} /day	-	0.348411
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.348411

9.24.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 19

9.24.7.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 0 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (justification: Minimum protection limit.
Respiratory protection	no

9.24.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.369 mg/kg _{bw} /day	-	0.348411
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.348411

9.24.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 19

9.24.8.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)

Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	90 %

9.24.8.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.913 mg/kg _{bw} /day	-	0.281325
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.281325

9.24.9 Contributing Scenario (9) controlling industrial worker exposure for PROC 19

9.24.9.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 0 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	no

9.24.9.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.422 mg/kg _{bw} /day	-	0.209047
Total result			
dermal	-	-	0.074874
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.209047

9.24.10 Contributing Scenario (10) controlling industrial worker exposure for PROC 19

9.24.10.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours

Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	95 %

9.24.10.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹
inhalation, long-term systemic	2.235 mg/m ³	47.6 mg/m ³	0.04696 ¹
Combined routes	0.828474 mg/kg _{bw} /day	-	0.121834
Total result			
dermal	-	-	0.074874
inhalation	-	-	0.04696
Combined routes	- mg/kg _{bw} /day	-	0.121834

9.24.11 Contributing Scenario (11) controlling industrial worker exposure for PROC 2

9.24.11.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.11.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.24.12 Contributing Scenario (12) controlling industrial worker exposure for PROC 2

9.24.12.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%

Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.12.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.24.13 Contributing Scenario (13) controlling industrial worker exposure for PROC 2

9.24.13.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.13.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.406 mg/kg _{bw} /day	-	0.206778
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.206778

9.24.14 Contributing Scenario (14) controlling industrial worker exposure for PROC 2

9.24.14.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.14.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.132 mg/kg _{bw} /day	-	0.166526
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.166526

9.24.15 Contributing Scenario (15) controlling industrial worker exposure for PROC 3

9.24.15.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.15.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.453 mg/kg _{bw} /day	-	0.507747
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.507747

9.24.16 Contributing Scenario (16) controlling industrial worker exposure for PROC 3

9.24.16.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.16.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.54 mg/kg _{bw} /day	-	0.373574
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.373574

9.24.17 Contributing Scenario (17) controlling industrial worker exposure for PROC 3

9.24.17.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.17.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.072 mg/kg _{bw} /day	-	0.304648
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.268346



AMMONIA LIQUOR TECHNICAL
WITH AMMONIUM CONTENT BELOW 25%
SAFETY DATA SHEET

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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	- mg/kg _{bw} /day	-	0.304648

9.24.18 Contributing Scenario (18) controlling industrial worker exposure for PROC 3

9.24.18.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.24.18.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.524 mg/kg _{bw} /day	-	0.224144
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.224144

9.24.19 Contributing Scenario (19) controlling industrial worker exposure for PROC 4

9.24.19.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.19.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	29.804 mg/m ³	47.6 mg/m ³	0.62614 ¹
Combined routes	5.081 mg/kg _{bw} /day	-	0.747148



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.62614
Combined routes	- mg/kg _{bw} /day	-	0.747148

9.24.20 Contributing Scenario (20) controlling industrial worker exposure for PROC 4

9.24.20.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.20.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	25.547 mg/m ³	47.6 mg/m ³	0.536691 ¹
Combined routes	4.143 mg/kg _{bw} /day	-	0.609296
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.536691
Combined routes	- mg/kg _{bw} /day	-	0.609296

9.24.21 Contributing Scenario (21) controlling industrial worker exposure for PROC 4

9.24.21.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.21.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	17.883 mg/m ³	47.6 mg/m ³	0.375684 ¹
Combined routes	3.048 mg/kg _{bw} /day	-	0.448289
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.375684
Combined routes	- mg/kg _{bw} /day	-	0.448289

9.24.22 Contributing Scenario (22) controlling industrial worker exposure for PROC 4

9.24.22.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.22.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹
Combined routes	0.690536 mg/kg _{bw} /day	-	0.101549
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.101549

9.24.23 Contributing Scenario (23) controlling industrial worker exposure for PROC 8B

9.24.23.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	38.32 mg/m ³	47.6 mg/m ³	0.805037 ¹
Combined routes	6.462 mg/kg _{bw} /day	-	0.950247
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.805037
Combined routes	- mg/kg _{bw} /day	-	0.950247

9.24.24 Contributing Scenario (24) controlling industrial worker exposure for PROC 8B

9.24.24.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.24.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	26.824 mg/m ³	47.6 mg/m ³	0.563526 ¹
Combined routes	4.819 mg/kg _{bw} /day	-	0.708736
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.563526
Combined routes	- mg/kg _{bw} /day	-	0.708736

9.24.25 Contributing Scenario (25) controlling industrial worker exposure for PROC 8B

9.24.25.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %



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Respiratory protection	90 %
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9.24.25.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	2.558 mg/kg _{bw} /day	-	0.37619
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.37619

9.24.26 Contributing Scenario (26) controlling industrial worker exposure for PROC 8B

9.24.26.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.24.26.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	2.284 mg/kg _{bw} /day	-	0.335938
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.335938

9.24.27 Contributing Scenario (27) controlling industrial worker exposure for PROC 8B

9.24.27.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors

Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.27.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	3.193 mg/m ³	47.6 mg/m ³	0.067086 ¹
Combined routes	0.538473 mg/kg _{bw} /day	-	0.079187
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.067086
Combined routes	- mg/kg _{bw} /day	-	0.079187

9.24.28 Contributing Scenario (28) controlling industrial worker exposure for PROC 9

9.24.28.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.28.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	35.765 mg/m ³	47.6 mg/m ³	0.751368 ¹
Combined routes	5.603 mg/kg _{bw} /day	-	0.823973
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.751368
Combined routes	- mg/kg _{bw} /day	-	0.823973

9.24.29 Contributing Scenario (29) controlling industrial worker exposure for PROC 9

9.24.29.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)

Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.24.29.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	2.039 mg/kg _{bw} /day	-	0.299905
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.299905

9.24.30 Contributing Scenario (30) controlling industrial worker exposure for PROC 9

9.24.30.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.30.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	1.299 mg/kg _{bw} /day	-	0.190998
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.190998

9.24.31 Contributing Scenario (31) controlling industrial worker exposure for PROC 9

9.24.31.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
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Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.24.31.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	5.961 mg/m ³	47.6 mg/m ³	0.125228 ¹
Combined routes	1.674 mg/kg _{bw} /day	-	0.246236
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.125228
Combined routes	- mg/kg _{bw} /day	-	0.246236

9.24.32 Contributing Scenario (32) controlling industrial worker exposure for PROC 9

9.24.32.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.24.32.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	5.109 mg/m ³	47.6 mg/m ³	0.107338 ¹
Combined routes	0.779271 mg/kg _{bw} /day	-	0.114599
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.107338
Combined routes	- mg/kg _{bw} /day	-	0.114599



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9.26 Scenario 26: Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (processing, non-processing aids, auxiliary agent) (ES-4 PROC 1, ES-4 PROC 10, ES-4 PROC 13, ES-4 PROC 19, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 5, ES-4 PROC 7, ES-4 PROC 8b, ES-4 PROC 9, ES-4 ERC 6b)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (processing, non-processing aids, auxiliary agent) (ES-4 PROC 1, ES-4 PROC 10, ES-4 PROC 13, ES-4 PROC 19, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 5, ES-4 PROC 7, ES-4 PROC 8b, ES-4 PROC 9, ES-4 ERC 6b)
Systematic title based on use descriptor	ERC 6B; PROC 1, 10, 13, 19, 2, 3, 4, 5, 7, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 6b Industrial use of reactive processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring PROC 19 - Hand-mixing with intimate contact (only PPE available) PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 7 - Industrial spraying PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.26.1 Contributing Scenario (1) controlling environmental exposure for ERC 6B

9.26.1.1 Conditions of use

Operational conditions	
Annual tonnage	3.55E5 to/year
Daily amount used at site	10.41 kg/day
Release times per year	100 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.0001 %
Release fraction to wastewater from process	0.050 %
Release fraction to soil from process	0 %
Fraction tonnage to region	0.470 %
Fraction used at main source	0.249837 % (justification: Maximum tonnage used for calculation of regional/continental PEC: 25000 tpa worst case)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (justification: Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).)



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SpERC	<p>NH-4 - 6b (spERC -6b – NH4 Release time per year: 100 [20, 100, 300]. Assumed number of production days per year. Fraction main source: 0.25% (Default 100%). The substance is industrially used by 400 companies indicating a fraction main source of 0.25%. Fraction tonnage to region: 0.47% (Default 100%). Ratio of total tonnage 354631 tpa to regional tonnage 25000 tpa. Release to air: 0.0001% (Default: 0.1%). Emissions of the substance to air from industrial processes are considered well controlled by industrial firm measures, i.e. ventilation of ambient air through filters (discharged after use), following national safety regulations. Release water: 0.05% (Default: 5%). During industrial and subsequent waste water treatment, the substance is completely biologically transformed into mineral nitrogen components, as a part of the nitrogen cycle in STPs. Hence release to environmental surface waters is 0%. 5/100 = 0.05% was set arbitrarily. Release to soil: 0% (Default: 0.025%). Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).</p>
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9.26.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a

9.26.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH4/NH3 aqua)				
Freshwater	0.000018 mg/L	0.00135 mg/L	0.013485 ¹	772
Marine water	1.87E-6 mg/L	0.00135 mg/L	0.001383 ¹	7,527.218
Total result				
Freshwater	0.000018 mg/L	-	0.013485	772
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	1.87E-6 mg/L	-	0.001383	7,527.218
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.26.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH4/NH3 aqua)				
Agricultural soil	0.000277 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012538 ¹	830.298
Total result				
Agricultural soil	0.000277 mg/kg _{dwt}	-	-	830.298

9.26.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1

9.26.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No



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Respiratory protection	no
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9.26.2.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.001788 mg/m ³	47.6 mg/m ³	0.000038 ¹
Combined routes	0.012598 mg/kg _{bw} /day	-	0.001853
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000038
Combined routes	- mg/kg _{bw} /day	-	0.001853

9.26.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 1

9.26.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.3.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.002555 mg/m ³	47.6 mg/m ³	0.000054 ¹
Combined routes	0.012708 mg/kg _{bw} /day	-	0.001869
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000054
Combined routes	- mg/kg _{bw} /day	-	0.001869

9.26.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 1

9.26.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)

Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.4.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.00298 mg/m ³	47.6 mg/m ³	0.000063 ¹
Combined routes	0.020997 mg/kg _{bw} /day	-	0.003088
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000063
Combined routes	- mg/kg _{bw} /day	-	0.003088

9.26.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 1

9.26.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.5.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.26.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10

9.26.6.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)

Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.26.6.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	3.166 mg/kg _{bw} /day	-	0.465638
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.465638

9.26.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 10

9.26.7.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 0 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no

9.26.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	3.166 mg/kg _{bw} /day	-	0.465638
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.465638

9.26.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 10

9.26.8.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
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Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 0 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no

9.26.8.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.9 mg/kg _{bw} /day	-	0.279383
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.279383

9.26.9 Contributing Scenario (9) controlling industrial worker exposure for PROC 10

9.26.9.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.26.9.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	2.71 mg/kg _{bw} /day	-	0.398552
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.398552



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9.26.10 Contributing Scenario (10) controlling industrial worker exposure for PROC 10

9.26.10.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.26.10.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.626 mg/kg _{bw} /day	-	0.239131
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.239131

9.26.11 Contributing Scenario (11) controlling industrial worker exposure for PROC 13

9.26.11.1 Conditions of use

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.26.11.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	3.166 mg/kg _{bw} /day	-	0.465638
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.223621



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	- mg/kg _{bw} /day	-	0.465638

9.26.12 Contributing Scenario (12) controlling industrial worker exposure for PROC 13

9.26.12.1 Conditions of use

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.12.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.164571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.024202 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	1.685 mg/kg _{bw} /day	-	0.247823
Total result			
dermal	-	-	0.024202
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.247823

9.26.13 Contributing Scenario (13) controlling industrial worker exposure for PROC 13

9.26.13.1 Conditions of use

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.13.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.098743 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.014521 ¹
inhalation, long-term systemic	1.916 mg/m ³	47.6 mg/m ³	0.040252 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	0.372455 mg/kg _{bw} /day	-	0.054773
Total result			
dermal	-	-	0.014521
inhalation	-	-	0.040252
Combined routes	- mg/kg _{bw} /day	-	0.054773

9.26.14 Contributing Scenario (14) controlling industrial worker exposure for PROC 13

9.26.14.1 Conditions of use

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.26.14.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.626 mg/kg _{bw} /day	-	0.239131
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.239131

9.26.15 Contributing Scenario (15) controlling industrial worker exposure for PROC 13

9.26.15.1 Conditions of use

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.26.15.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	2.71 mg/kg _{bw} /day	-	0.398552
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.398552

9.26.16 Contributing Scenario (16) controlling industrial worker exposure for PROC 19

9.26.16.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (justification: Minimum protection limit.)
Respiratory protection	90 %

9.26.16.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.369 mg/kg _{bw} /day	-	0.348411
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.348411

9.26.17 Contributing Scenario (17) controlling industrial worker exposure for PROC 19

9.26.17.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 0 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (justification: Minimum protection limit.)



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Respiratory protection	no
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9.26.17.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.422 mg/kg _{bw} /day	-	0.209047
Total result			
dermal	-	-	0.074874
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.209047

9.26.18 Contributing Scenario (18) controlling industrial worker exposure for PROC 19

9.26.18.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 0 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	no

9.26.18.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.369 mg/kg _{bw} /day	-	0.348411
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.348411

9.26.19 Contributing Scenario (19) controlling industrial worker exposure for PROC 19

9.26.19.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)



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Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) <i>(justification: Minimum protection limit.)</i>
Respiratory protection	90 %

9.26.19.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.913 mg/kg _{bw} /day	-	0.281325
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.281325

9.26.20 Contributing Scenario (20) controlling industrial worker exposure for PROC 19

9.26.20.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) <i>(justification: Minimum protection limit.)</i>
Respiratory protection	95 %

9.26.20.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹
inhalation, long-term systemic	2.235 mg/m ³	47.6 mg/m ³	0.04696 ¹
Combined routes	0.828474 mg/kg _{bw} /day	-	0.121834
Total result			
dermal	-	-	0.074874
inhalation	-	-	0.04696
Combined routes	- mg/kg _{bw} /day	-	0.121834

9.26.21 Contributing Scenario (21) controlling industrial worker exposure for PROC 2

9.26.21.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)

Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.21.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.26.22 Contributing Scenario (22) controlling industrial worker exposure for PROC 2

9.26.22.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.22.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.406 mg/kg _{bw} /day	-	0.206778
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.206778

9.26.23 Contributing Scenario (23) controlling industrial worker exposure for PROC 2

9.26.23.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
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Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.26.24 Contributing Scenario (24) controlling industrial worker exposure for PROC 2

9.26.24.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.24.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.132 mg/kg _{bw} /day	-	0.166526
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.166526

9.26.25 Contributing Scenario (25) controlling industrial worker exposure for PROC 3

9.26.25.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.25.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.453 mg/kg _{bw} /day	-	0.507747
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.507747

9.26.26 Contributing Scenario (26) controlling industrial worker exposure for PROC 3

9.26.26.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.26.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.072 mg/kg _{bw} /day	-	0.304648
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.268346



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	- mg/kg _{bw} /day	-	0.304648

9.26.27 Contributing Scenario (27) controlling industrial worker exposure for PROC 3

9.26.27.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.27.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.54 mg/kg _{bw} /day	-	0.373574
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.373574

9.26.28 Contributing Scenario (28) controlling industrial worker exposure for PROC 3

9.26.28.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.26.28.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.524 mg/kg _{bw} /day	-	0.224144
Total result			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.036303
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.224144

9.26.29 Contributing Scenario (29) controlling industrial worker exposure for PROC 4

9.26.29.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.29.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	25.547 mg/m ³	47.6 mg/m ³	0.536691 ¹
Combined routes	4.143 mg/kg _{bw} /day	-	0.609296
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.536691
Combined routes	- mg/kg _{bw} /day	-	0.609296

9.26.30 Contributing Scenario (30) controlling industrial worker exposure for PROC 4

9.26.30.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.30.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	0.690536 mg/kg _{bw} /day	-	0.101549
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.101549

9.26.31 Contributing Scenario (31) controlling industrial worker exposure for PROC 4

9.26.31.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.31.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	29.804 mg/m ³	47.6 mg/m ³	0.62614 ¹
Combined routes	5.081 mg/kg _{bw} /day	-	0.747148
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.62614
Combined routes	- mg/kg _{bw} /day	-	0.747148

9.26.32 Contributing Scenario (32) controlling industrial worker exposure for PROC 4

9.26.32.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.32.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	17.883 mg/m ³	47.6 mg/m ³	0.375684 ¹
Combined routes	3.048 mg/kg _{bw} /day	-	0.448289
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.375684
Combined routes	- mg/kg _{bw} /day	-	0.448289

9.26.33 Contributing Scenario (33) controlling industrial worker exposure for PROC 5

9.26.33.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.26.33.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.26.34 Contributing Scenario (34) controlling industrial worker exposure for PROC 5

9.26.34.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no

9.26.34.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	0.961746 mg/kg _{bw} /day	-	0.141433
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.141433

9.26.35 Contributing Scenario (35) controlling industrial worker exposure for PROC 5

9.26.35.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no

9.26.35.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	1.603 mg/kg _{bw} /day	-	0.235722
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.235722

9.26.36 Contributing Scenario (36) controlling industrial worker exposure for PROC 5

9.26.36.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %



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Respiratory protection	90 %
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9.26.36.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.26.37 Contributing Scenario (37) controlling industrial worker exposure for PROC 5

9.26.37.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.26.37.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.132 mg/kg _{bw} /day	-	0.166526
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.166526

9.26.38 Contributing Scenario (38) controlling industrial worker exposure for PROC 7

9.26.38.1 Conditions of use

Name of contributing scenario	PROC 7 Industrial spraying
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,500 cm ²
Location	indoors

Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no

9.26.38.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.128571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.018908 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	1.649 mg/kg _{bw} /day	-	0.242529
Total result			
dermal	-	-	0.018908
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.242529

9.26.39 Contributing Scenario (39) controlling industrial worker exposure for PROC 7

9.26.39.1 Conditions of use

Name of contributing scenario	PROC 7 Industrial spraying
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,500 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no

9.26.39.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.077143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.011345 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	0.989518 mg/kg _{bw} /day	-	0.145517
Total result			
dermal	-	-	0.011345
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.145517

9.26.40 Contributing Scenario (40) controlling industrial worker exposure for PROC 7

9.26.40.1 Conditions of use

Name of contributing scenario	PROC 7 Industrial spraying
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,500 cm ²

Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.26.40.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.128571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.018908 ¹
inhalation, long-term systemic	1.064 mg/m ³	47.6 mg/m ³	0.022362 ¹
Combined routes	0.280634 mg/kg _{bw} /day	-	0.04127
Total result			
dermal	-	-	0.018908
inhalation	-	-	0.022362
Combined routes	- mg/kg _{bw} /day	-	0.04127

9.26.41 Contributing Scenario (41) controlling industrial worker exposure for PROC 7

9.26.41.1 Conditions of use

Name of contributing scenario	PROC 7 Industrial spraying
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,500 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.26.41.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.077143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.011345 ¹
inhalation, long-term systemic	0.638663 mg/m ³	47.6 mg/m ³	0.013417 ¹
Combined routes	0.16838 mg/kg _{bw} /day	-	0.024762
Total result			
dermal	-	-	0.011345
inhalation	-	-	0.013417
Combined routes	- mg/kg _{bw} /day	-	0.024762

9.26.42 Contributing Scenario (42) controlling industrial worker exposure for PROC 7

9.26.42.1 Conditions of use

Name of contributing scenario	PROC 7 Industrial spraying
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours



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Exposed skin surface	1,500 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.26.42.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.543 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.226891 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	2.82 mg/kg _{bw} /day	-	0.414733
Total result			
dermal	-	-	0.226891
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.414733

9.26.43 Contributing Scenario (43) controlling industrial worker exposure for PROC 7

9.26.43.1 Conditions of use

Name of contributing scenario	PROC 7 Industrial spraying
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,500 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.26.43.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	2.571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.378151 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	4.7 mg/kg _{bw} /day	-	0.691221
Total result			
dermal	-	-	0.378151
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.691221

9.26.44 Contributing Scenario (44) controlling industrial worker exposure for PROC 8B

9.26.44.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
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Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.44.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	38.32 mg/m ³	47.6 mg/m ³	0.805037 ¹
Combined routes	6.462 mg/kg _{bw} /day	-	0.950247
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.805037
Combined routes	- mg/kg _{bw} /day	-	0.950247

9.26.45 Contributing Scenario (45) controlling industrial worker exposure for PROC 8B

9.26.45.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.26.45.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	2.558 mg/kg _{bw} /day	-	0.37619
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.37619

9.26.46 Contributing Scenario (46) controlling industrial worker exposure for PROC 8B

9.26.46.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.46.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	3.193 mg/m ³	47.6 mg/m ³	0.067086 ¹
Combined routes	0.538473 mg/kg _{bw} /day	-	0.079187
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.067086
Combined routes	- mg/kg _{bw} /day	-	0.079187

9.26.47 Contributing Scenario (47) controlling industrial worker exposure for PROC 8B

9.26.47.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.26.47.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	2.284 mg/kg _{bw} /day	-	0.335938
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.335938

9.26.48 Contributing Scenario (48) controlling industrial worker exposure for PROC 8B

9.26.48.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.48.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	26.824 mg/m ³	47.6 mg/m ³	0.563526 ¹
Combined routes	4.819 mg/kg _{bw} /day	-	0.708736
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.563526
Combined routes	- mg/kg _{bw} /day	-	0.708736

9.26.49 Contributing Scenario (49) controlling industrial worker exposure for PROC 9

9.26.49.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.26.49.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	2.039 mg/kg _{bw} /day	-	0.299905
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.178897



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	- mg/kg _{bw} /day	-	0.299905

9.26.50 Contributing Scenario (50) controlling industrial worker exposure for PROC 9

9.26.50.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.50.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	1.299 mg/kg _{bw} /day	-	0.190998
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.190998

9.26.51 Contributing Scenario (51) controlling industrial worker exposure for PROC 9

9.26.51.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.51.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	5.109 mg/m ³	47.6 mg/m ³	0.107338 ¹
Combined routes	0.779271 mg/kg _{bw} /day	-	0.114599
Total result			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.007261
inhalation	-	-	0.107338
Combined routes	- mg/kg _{bw} /day	-	0.114599

9.26.52 Contributing Scenario (52) controlling industrial worker exposure for PROC 9

9.26.52.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.26.52.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	5.961 mg/m ³	47.6 mg/m ³	0.125228 ¹
Combined routes	1.674 mg/kg _{bw} /day	-	0.246236
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.125228
Combined routes	- mg/kg _{bw} /day	-	0.246236

9.26.53 Contributing Scenario (53) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.26.53.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	35.765 mg/m ³	47.6 mg/m ³	0.751368 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	5.603 mg/kg _{bw} /day	-	0.823973
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.751368
Combined routes	- mg/kg _{bw} /day	-	0.823973

9.27 Scenario 27: Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (reactive agent/processing aid and for general chemical applications, e.g., extraction, water treatment/septicity control, pH/neutralising agent) (ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 8b, ES-4 PROC 9, ES-4 ERC 6b)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Up to 25% aqueous: Industrial end-use of anhydrous and aqueous ammonia (reactive agent/processing aid and for general chemical applications, e.g., extraction, water treatment/septicity control, pH/neutralising agent) (ES-4 PROC 1, ES-4 PROC 2, ES-4 PROC 3, ES-4 PROC 4, ES-4 PROC 8b, ES-4 PROC 9, ES-4 ERC 6b)
Systematic title based on use descriptor	ERC 6B; PROC 1, 2, 3, 4, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 6b Industrial use of reactive processing aids
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.27.1 Contributing Scenario (1) controlling environmental exposure for ERC 6B

9.27.1.1 Conditions of use

Operational conditions	
Annual tonnage	3.55E5 to/year
Daily amount used at site	10.41 kg/day
Release times per year	100 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.0001 %
Release fraction to wastewater from process	0.050 %
Release fraction to soil from process	0 %
Fraction tonnage to region	0.470 %
Fraction used at main source	0.249837 % (<i>justification: Maximum tonnage used for calculation of regional/continental PEC: 25000 tpa worst case</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).</i>)
SpERC	NH-4 - 6b (spERC -6b – NH ₄) Release time per year: 100 [20, 100, 300]. Assumed number of production days per year. Fraction main source: 0.25% (Default 100%). The substance is industrially used by 400 companies indicating a fraction main source of 0.25%. Fraction tonnage to region: 0.47% (Default 100%). Ratio of total tonnage 354631 tpa to regional tonnage 25000 tpa. Release to air: 0.0001% (Default: 0.1%). Emissions of the substance to air from industrial processes are considered



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	<p>well controlled by industrial firm measures, i.e. ventilation of ambient air through filters (discharged after use), following national safety regulations.</p> <p>Release water: 0.05% (Default: 5%). During industrial and subsequent waste water treatment, the substance is completely biologically transformed into mineral nitrogen components, as a part of the nitrogen cycle in STPs. Hence release to environmental surface waters is 0% . 5/100 = 0.05% was set arbitrarily.</p> <p>Release to soil: 0% (Default: 0.025%). Sludges of industrial firms will be incinerated or discharged according to national safety regulations. Hence there will be no released to soil (0%).</p>
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9.27.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.27.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH4/NH3 aqua)				
Freshwater	0.000018 mg/L	0.00135 mg/L	0.013485 ¹	772
Marine water	1.87E-6 mg/L	0.00135 mg/L	0.001383 ¹	7,527.218
Total result				
Freshwater	0.000018 mg/L	-	0.013485	772
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	1.87E-6 mg/L	-	0.001383	7,527.218
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.27.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH4/NH3 aqua)				
Agricultural soil	0.000277 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012538 ¹	830.298
Total result				
Agricultural soil	0.000277 mg/kg _{dwt}	-	-	830.298

9.27.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.27.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.2.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH4/NH3 aqua)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.001788 mg/m ³	47.6 mg/m ³	0.000038 ¹
Combined routes	0.012598 mg/kg _{bw} /day	-	0.001853
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000038
Combined routes	- mg/kg _{bw} /day	-	0.001853

9.27.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.27.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.3.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.002555 mg/m ³	47.6 mg/m ³	0.000054 ¹
Combined routes	0.012708 mg/kg _{bw} /day	-	0.001869
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000054
Combined routes	- mg/kg _{bw} /day	-	0.001869

9.27.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.27.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.4.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.00298 mg/m ³	47.6 mg/m ³	0.000063 ¹
Combined routes	0.020997 mg/kg _{bw} /day	-	0.003088
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000063
Combined routes	- mg/kg _{bw} /day	-	0.003088

9.27.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.27.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.5.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.004258 mg/m ³	47.6 mg/m ³	0.000089 ¹
Combined routes	0.02118 mg/kg _{bw} /day	-	0.003115
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000089
Combined routes	- mg/kg _{bw} /day	-	0.003115

9.27.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.27.6.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No

Respiratory protection	no
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9.27.6.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.27.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.27.7.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.406 mg/kg _{bw} /day	-	0.206778
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.206778

9.27.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.27.8.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)

Protective gloves	No
Respiratory protection	no

9.27.8.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.27.9 Contributing Scenario (9) controlling industrial worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.27.9.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.9.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.132 mg/kg _{bw} /day	-	0.166526
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.166526

9.27.10 Contributing Scenario (10) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.27.10.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors

Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.10.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.453 mg/kg _{bw} /day	-	0.507747
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.507747

9.27.11 Contributing Scenario (11) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.27.11.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.11.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.072 mg/kg _{bw} /day	-	0.304648
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.304648

9.27.12 Contributing Scenario (12) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.27.12.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²

Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.12.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.54 mg/kg _{bw} /day	-	0.373574
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.373574

9.27.13 Contributing Scenario (13) controlling industrial worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.27.13.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.27.13.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.524 mg/kg _{bw} /day	-	0.224144
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.224144

9.27.14 Contributing Scenario (14) controlling industrial worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.27.14.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%

Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.27.14.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	25.547 mg/m ³	47.6 mg/m ³	0.536691 ¹
Combined routes	4.143 mg/kg _{bw} /day	-	0.609296
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.536691
Combined routes	- mg/kg _{bw} /day	-	0.609296

9.27.15 Contributing Scenario (15) controlling industrial worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.27.15.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.27.15.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	4.258 mg/m ³	47.6 mg/m ³	0.089449 ¹
Combined routes	0.690536 mg/kg _{bw} /day	-	0.101549
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.089449
Combined routes	- mg/kg _{bw} /day	-	0.101549

9.27.16 Contributing Scenario (16) controlling industrial worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.27.16.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.27.16.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	29.804 mg/m ³	47.6 mg/m ³	0.62614 ¹
Combined routes	5.081 mg/kg _{bw} /day	-	0.747148
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.62614
Combined routes	- mg/kg _{bw} /day	-	0.747148

9.27.17 Contributing Scenario (17) controlling industrial worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.27.17.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.27.17.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	17.883 mg/m ³	47.6 mg/m ³	0.375684 ¹
Combined routes	3.048 mg/kg _{bw} /day	-	0.448289
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.375684
Combined routes	- mg/kg _{bw} /day	-	0.448289



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9.27.18 Contributing Scenario (18) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.27.18.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.27.18.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	38.32 mg/m ³	47.6 mg/m ³	0.805037 ¹
Combined routes	6.462 mg/kg _{bw} /day	-	0.950247
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.805037
Combined routes	- mg/kg _{bw} /day	-	0.950247

9.27.19 Contributing Scenario (19) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.27.19.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.27.19.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	2.558 mg/kg _{bw} /day	-	0.37619
Total result			
dermal	-	-	0.242017



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.37619

9.27.20 Contributing Scenario (20) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.27.20.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 95 %; dermal 95 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.27.20.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	3.193 mg/m ³	47.6 mg/m ³	0.067086 ¹
Combined routes	0.538473 mg/kg _{bw} /day	-	0.079187
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.067086
Combined routes	- mg/kg _{bw} /day	-	0.079187

9.27.21 Contributing Scenario (21) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.27.21.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.27.21.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	2.284 mg/kg _{bw} /day	-	0.335938
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.335938

9.27.22 Contributing Scenario (22) controlling industrial worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.27.22.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.27.22.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	26.824 mg/m ³	47.6 mg/m ³	0.563526 ¹
Combined routes	4.819 mg/kg _{bw} /day	-	0.708736
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.563526
Combined routes	- mg/kg _{bw} /day	-	0.708736

9.27.23 Contributing Scenario (23) controlling industrial worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.27.23.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.27.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	2.039 mg/kg _{bw} /day	-	0.299905
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.299905

9.27.24 Contributing Scenario (24) controlling industrial worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.27.24.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.27.24.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.082286 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.012101 ¹
inhalation, long-term systemic	8.516 mg/m ³	47.6 mg/m ³	0.178897 ¹
Combined routes	1.299 mg/kg _{bw} /day	-	0.190998
Total result			
dermal	-	-	0.012101
inhalation	-	-	0.178897
Combined routes	- mg/kg _{bw} /day	-	0.190998

9.27.25 Contributing Scenario (25) controlling industrial worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.27.25.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Local exhaust ventilation	yes (inhalation 90 %; dermal 90 %)
Protective gloves	Gloves APF 5 80 %



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Respiratory protection	no
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9.27.25.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.049371 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.007261 ¹
inhalation, long-term systemic	5.109 mg/m ³	47.6 mg/m ³	0.107338 ¹
Combined routes	0.779271 mg/kg _{bw} /day	-	0.114599
Total result			
dermal	-	-	0.007261
inhalation	-	-	0.107338
Combined routes	- mg/kg _{bw} /day	-	0.114599

9.27.26 Contributing Scenario (26) controlling industrial worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.27.26.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.27.26.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	5.961 mg/m ³	47.6 mg/m ³	0.125228 ¹
Combined routes	1.674 mg/kg _{bw} /day	-	0.246236
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.125228
Combined routes	- mg/kg _{bw} /day	-	0.246236

9.27.27 Contributing Scenario (27) controlling industrial worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.27.27.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)



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Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.27.27.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	35.765 mg/m ³	47.6 mg/m ³	0.751368 ¹
Combined routes	5.603 mg/kg _{bw} /day	-	0.823973
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.751368
Combined routes	- mg/kg _{bw} /day	-	0.823973



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9.30 Scenario 30: Up to 25% aqueous: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (formulation of mixtures) (ES-5 PROC 1, ES-5 PROC 15, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 5, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Up to 25% aqueous: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (formulation of mixtures) (ES-5 PROC 1, ES-5 PROC 15, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 5, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b)
Systematic title based on use descriptor	ERC 8B; PROC 1, 15, 19, 2, 3, 5, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 8b Wide dispersive indoor use of reactive substances in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 15 - Use of laboratory reagents in small scale laboratories PROC 19 - Hand-mixing with intimate contact (only PPE available) PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.30.1 Contributing Scenario (1) controlling environmental exposure for ERC 8B

9.30.1.1 Conditions of use

Operational conditions	
Annual tonnage	2.50E4 to/year
Daily amount used at site	60.685 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.100 %
Release fraction to wastewater from process	2 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	3.544 % <i>(justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.)</i>
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % <i>(justification: Sludges will be oxidized or discharged according to national safety regulations. Hence there will be no released to soil (0%).)</i>
No direct discharge to freshwater compartment <i>(justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to</i>	



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add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.

9.30.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.30.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Freshwater	0.000012 mg/L	0.00135 mg/L	0.008718 ¹	6,960.783
Marine water	0.000151 mg/L	0.00135 mg/L	0.112057 ¹	541.554
Total result				
Freshwater	0.000012 mg/L	-	0.008718	6,960.783
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	0.000151 mg/L	-	0.112057	541.554
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.30.1.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Agricultural soil	0.000278 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012569 ¹	4,828.27
Total result				
Agricultural soil	0.000278 mg/kg _{dwt}	-	-	4,828.27

9.30.2 Contributing Scenario (2) controlling professional worker exposure for PROC 1 (PC 20, PC 21, PC 40)

9.30.2.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.2.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.017883 mg/m ³	47.6 mg/m ³	0.000376 ¹



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
Combined routes	0.014898 mg/kg _{bw} /day	-	0.002191
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000376
Combined routes	- mg/kg _{bw} /day	-	0.002191

9.30.3 Contributing Scenario (3) controlling professional worker exposure for PROC 1 (PC 20, PC 21, PC 40)

9.30.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.3.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.025547 mg/m ³	47.6 mg/m ³	0.000537 ¹
Combined routes	0.015992 mg/kg _{bw} /day	-	0.002352
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000537
Combined routes	- mg/kg _{bw} /day	-	0.002352

9.30.4 Contributing Scenario (4) controlling professional worker exposure for PROC 1 (PC 20, PC 21, PC 40)

9.30.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.4.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.029804 mg/m ³	47.6 mg/m ³	0.000626 ¹
Combined routes	0.024829 mg/kg _{bw} /day	-	0.003651
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000626
Combined routes	- mg/kg _{bw} /day	-	0.003651

9.30.5 Contributing Scenario (5) controlling professional worker exposure for PROC 1 (PC 20, PC 21, PC 40)

9.30.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.5.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.042578 mg/m ³	47.6 mg/m ³	0.000894 ¹
Combined routes	0.026654 mg/kg _{bw} /day	-	0.00392
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000894
Combined routes	- mg/kg _{bw} /day	-	0.00392

9.30.6 Contributing Scenario (6) controlling professional worker exposure for PROC 15 (PC 20, PC 21, PC 40)

9.30.6.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional

Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.6.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.123429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.018151 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	1.948 mg/kg _{bw} /day	-	0.286497
Total result			
dermal	-	-	0.018151
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.286497

9.30.7 Contributing Scenario (7) controlling professional worker exposure for PROC 15 (PC 20, PC 21, PC 40)

9.30.7.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.7.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.123429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.018151 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.401 mg/kg _{bw} /day	-	0.205993
Total result			
dermal	-	-	0.018151
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.205993

9.30.8 Contributing Scenario (8) controlling professional worker exposure for PROC 15 (PC 20, PC 21, PC 40)

9.30.8.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)

Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.8.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.205714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.030252 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.247 mg/kg _{bw} /day	-	0.477495
Total result			
dermal	-	-	0.030252
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.477495

9.30.9 Contributing Scenario (9) controlling professional worker exposure for PROC 15 (PC 20, PC 21, PC 40)

9.30.9.1 Conditions of use

Name of contributing scenario	PROC 15 Use of laboratory reagents in small scale laboratories
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.9.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.205714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.030252 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.335 mg/kg _{bw} /day	-	0.343322
Total result			
dermal	-	-	0.030252
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.343322

9.30.10 Contributing Scenario (10) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.30.10.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default) (<i>justification: Minimum protection limit.</i>)
Respiratory protection	95 %

9.30.10.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.422 mg/kg _{bw} /day	-	0.209047
Total result			
dermal	-	-	0.074874
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.209047

9.30.11 Contributing Scenario (11) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.30.11.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default)
Respiratory protection	95 %

9.30.11.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹
inhalation, long-term systemic	1.916 mg/m ³	47.6 mg/m ³	0.040252 ¹
Combined routes	0.782855 mg/kg _{bw} /day	-	0.115126
Total result			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.074874
inhalation	-	-	0.040252
Combined routes	- mg/kg _{bw} /day	-	0.115126

9.30.12 Contributing Scenario (12) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.30.12.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default)
Respiratory protection	90 %

9.30.12.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.786 mg/kg _{bw} /day	-	0.262716
Total result			
dermal	-	-	0.074874
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.262716

9.30.13 Contributing Scenario (13) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.30.13.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default)
Respiratory protection	90 %

9.30.13.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.89 mg/kg _{bw} /day	-	0.572033
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.572033

9.30.14 Contributing Scenario (14) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.30.14.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (inhalation 80 %; dermal 0 %)
Protective gloves	99 %, burst-time: > 4 hours (default)
Respiratory protection	95 %

9.30.14.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	2.129 mg/m ³	47.6 mg/m ³	0.044724 ¹
Combined routes	1.153 mg/kg _{bw} /day	-	0.169514
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.044724
Combined routes	- mg/kg _{bw} /day	-	0.169514

9.30.15 Contributing Scenario (15) controlling professional worker exposure for PROC 19 (PC 20, PC 21, PC 40)

9.30.15.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Domain	professional

Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default)
Respiratory protection	90 %

9.30.15.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.977 mg/kg _{bw} /day	-	0.43786
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.43786

9.30.16 Contributing Scenario (16) controlling professional worker exposure for PROC 2 (PC 20, PC 21, PC 40)

9.30.16.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.16.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.318 mg/kg _{bw} /day	-	0.340951
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.340951

9.30.17 Contributing Scenario (17) controlling professional worker exposure for PROC 2 (PC 20, PC 21, PC 40)

9.30.17.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours



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Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.17.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.771 mg/kg _{bw} /day	-	0.260447
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.260447

9.30.18 Contributing Scenario (18) controlling professional worker exposure for PROC 2 (PC 20, PC 21, PC 40)

9.30.18.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.18.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.864 mg/kg _{bw} /day	-	0.568251
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.568251

9.30.19 Contributing Scenario (19) controlling professional worker exposure for PROC 2 (PC 20, PC 21, PC 40)

9.30.19.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.19.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.952 mg/kg _{bw} /day	-	0.434078
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.434078

9.30.20 Contributing Scenario (20) controlling professional worker exposure for PROC 3 (PC 20, PC 21, PC 40)

9.30.20.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.20.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	25.547 mg/m ³	47.6 mg/m ³	0.536691 ¹
Combined routes	3.896 mg/kg _{bw} /day	-	0.572994
Total result			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.036303
inhalation	-	-	0.536691
Combined routes	- mg/kg _{bw} /day	-	0.572994

9.30.21 Contributing Scenario (21) controlling professional worker exposure for PROC 3 (PC 20, PC 21, PC 40)

9.30.21.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.21.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	17.883 mg/m ³	47.6 mg/m ³	0.375684 ¹
Combined routes	2.802 mg/kg _{bw} /day	-	0.411986
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.375684
Combined routes	- mg/kg _{bw} /day	-	0.411986

9.30.22 Contributing Scenario (22) controlling professional worker exposure for PROC 3 (PC 20, PC 21, PC 40)

9.30.22.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.22.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	42.578 mg/m ³	47.6 mg/m ³	0.894485 ¹
Combined routes	6.494 mg/kg _{bw} /day	-	0.95499
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.894485
Combined routes	- mg/kg _{bw} /day	-	0.95499

9.30.23 Contributing Scenario (23) controlling professional worker exposure for PROC 3 (PC 20, PC 21, PC 40)

9.30.23.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.30.23.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	29.804 mg/m ³	47.6 mg/m ³	0.62614 ¹
Combined routes	4.669 mg/kg _{bw} /day	-	0.686644
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.62614
Combined routes	- mg/kg _{bw} /day	-	0.686644

9.30.24 Contributing Scenario (24) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.30.24.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional

Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.30.24.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.318 mg/kg _{bw} /day	-	0.340951
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.340951

9.30.25 Contributing Scenario (25) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.30.25.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.30.25.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	3.832 mg/m ³	47.6 mg/m ³	0.080504 ¹
Combined routes	1.041 mg/kg _{bw} /day	-	0.153109
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.080504
Combined routes	- mg/kg _{bw} /day	-	0.153109

9.30.26 Contributing Scenario (26) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.30.26.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
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Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.30.26.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.771 mg/kg _{bw} /day	-	0.260447
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.260447

9.30.27 Contributing Scenario (27) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.30.27.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.30.27.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.735 mg/kg _{bw} /day	-	0.255181
Total result			
dermal	-	-	0.121008



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.255181

9.30.28 Contributing Scenario (28) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.30.28.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.30.28.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.735 mg/kg _{bw} /day	-	0.255181
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.255181

9.30.29 Contributing Scenario (29) controlling professional worker exposure for PROC 5 (PC 20, PC 21, PC 40)

9.30.29.1 Conditions of use

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.30.29.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.952 mg/kg _{bw} /day	-	0.434078
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.434078

9.30.30 Contributing Scenario (30) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.30.30.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.30.30.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	19.16 mg/m ³	47.6 mg/m ³	0.402518 ¹
Combined routes	3.725 mg/kg _{bw} /day	-	0.547728
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.402518
Combined routes	- mg/kg _{bw} /day	-	0.547728

9.30.31 Contributing Scenario (31) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.30.31.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)

Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.30.31.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.626 mg/kg _{bw} /day	-	0.239131
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.239131

9.30.32 Contributing Scenario (32) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.30.32.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.30.32.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	3.166 mg/kg _{bw} /day	-	0.465638
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.465638

9.30.33 Contributing Scenario (33) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.30.33.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
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Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.30.33.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	6.208 mg/kg _{bw} /day	-	0.912881
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.912881

9.30.34 Contributing Scenario (34) controlling professional worker exposure for PROC 8B (PC 20, PC 21, PC 40)

9.30.34.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.30.34.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	2.71 mg/kg _{bw} /day	-	0.398552
Total result			
dermal	-	-	0.242017



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.398552

9.30.35 Contributing Scenario (35) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.30.35.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.30.35.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	19.16 mg/m ³	47.6 mg/m ³	0.402518 ¹
Combined routes	3.231 mg/kg _{bw} /day	-	0.475123
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.402518
Combined routes	- mg/kg _{bw} /day	-	0.475123

9.30.36 Contributing Scenario (36) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.30.36.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.30.36.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.132 mg/kg _{bw} /day	-	0.166526
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.166526

9.30.37 Contributing Scenario (37) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.30.37.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.30.37.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.30.38 Contributing Scenario (38) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.30.38.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)

Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.30.38.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	5.385 mg/kg _{bw} /day	-	0.791872
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.791872

9.30.39 Contributing Scenario (39) controlling professional worker exposure for PROC 9 (PC 20, PC 21, PC 40)

9.30.39.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.30.39.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543



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9.34 Scenario 34: Up to 25% aqueous: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (reactive agent/processing aid, general chemical applications, e.g., pH/neutralising agent, water treatment) (ES-5 PROC 1, ES-5 PROC 10, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 4, ES-5 PROC 8a, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b, ES-5 ERC 8e)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Free short title	Up to 25% aqueous: Wide dispersive end-use: Professional uses of anhydrous and aqueous ammonia (reactive agent/processing aid, general chemical applications, e.g., pH/neutralising agent, water treatment) (ES-5 PROC 1, ES-5 PROC 10, ES-5 PROC 19, ES-5 PROC 2, ES-5 PROC 3, ES-5 PROC 4, ES-5 PROC 8a, ES-5 PROC 8b, ES-5 PROC 9, ES-5 ERC 8b, ES-5 ERC 8e)
Systematic title based on use descriptor	ERC 8B, 8E; PROC 1, 10, 19, 2, 3, 4, 8A, 8B, 9
Name of contributing environmental scenario and corresponding ERC	ERC 8b Wide dispersive indoor use of reactive substances in open systems ERC 8e Wide dispersive outdoor use of reactive substances in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 10 - Roller application or brushing PROC 19 - Hand-mixing with intimate contact (only PPE available) PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

9.34.1 Contributing Scenario (1) controlling environmental exposure for ERC 8B

9.34.1.1 Conditions of use

Operational conditions	
Annual tonnage	2.50E4 to/year
Daily amount used at site	60.685 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.100 %
Release fraction to wastewater from process	2 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	3.544 % (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	



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Reduction of sludge to soil	100 % (<i>justification: Sludges will be oxidized or discharged according to national safety regulations. Hence there will be no released to soil (0%).</i>)
No direct discharge to freshwater compartment (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>)	

9.34.1.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.34.1.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Freshwater	0.000012 mg/L	0.00135 mg/L	0.008718 ¹	6,960.783
Marine water	0.000151 mg/L	0.00135 mg/L	0.112057 ¹	541.554
Total result				
Freshwater	0.000012 mg/L	-	0.008718	6,960.783
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	0.000151 mg/L	-	0.112057	541.554
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.34.1.4 Terrestrial compartment

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Agricultural soil	0.000278 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012569 ¹	4,828.27
Total result				
Agricultural soil	0.000278 mg/kg _{dwt}	-	-	4,828.27

9.34.2 Contributing Scenario (2) controlling environmental exposure for ERC 8E

9.34.2.1 Conditions of use

Operational conditions	
Annual tonnage	2.50E4 to/year
Daily amount used at site	60.685 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.100 %
Release fraction to wastewater from process	2 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %

Fraction used at main source	3.544 % (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>)
STP	yes (municipal)
River flow rate	18000 m ³ /day
Municipal sewage treatment plant discharge	2000 m ³ /day
Risk management measures	
Reduction of sludge to soil	100 % (<i>justification: Sludges will be oxidized or discharged according to national safety regulations. Hence there will be no released to soil (0%).</i>)
No direct discharge to freshwater compartment (<i>justification: The majority of ammonia in the environment originates from natural sources, predominantly decaying organic matter. Wide dispersive professional uses of ammonia are diverse and widespread. The resulting environmental exposure is not expected to add significantly to already present background levels of ammonia in the environment. An additional assessment for environmental exposure for wide dispersive uses has therefore not been performed.</i>)	

9.34.2.2 Exposure and risks for workers for the environment and man via the environment

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.34.2.3 Aquatic compartment (including sediment)

Environmental risk aquatic of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Freshwater	0.000012 mg/L	0.00135 mg/L	0.008718 ¹	6,960.783
Marine water	0.000151 mg/L	0.00135 mg/L	0.112057 ¹	541.554
Total result				
Freshwater	0.000012 mg/L	-	0.008718	6,960.783
Freshwater sediment	- mg/kg _{dwt}	-	-	-
Marine water	0.000151 mg/L	-	0.112057	541.554
Marine water sediment	- mg/kg _{dwt}	-	-	-

9.34.2.4 Terrestrial compartment

Environmental risk terrestrial of the ES

Compartments	PEC	PNEC	RCR* = PEC/PNEC	MSafe kg/d
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)				
Agricultural soil	0.000278 mg/kg _{dwt}	0.0221 mg/kg _{dwt}	0.012569 ¹	4,828.27
Total result				
Agricultural soil	0.000278 mg/kg _{dwt}	-	-	4,828.27

9.34.3 Contributing Scenario (3) controlling professional worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.34.3.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.3.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.017883 mg/m ³	47.6 mg/m ³	0.000376 ¹
Combined routes	0.014898 mg/kg _{bw} /day	-	0.002191
Total result			
dermal	-	-	0.001815
inhalation	-	-	0.000376
Combined routes	- mg/kg _{bw} /day	-	0.002191

9.34.4 Contributing Scenario (4) controlling professional worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.34.4.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.4.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.012343 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.001815 ¹
inhalation, long-term systemic	0.025547 mg/m ³	47.6 mg/m ³	0.000537 ¹
Combined routes	0.015992 mg/kg _{bw} /day	-	0.002352
Total result			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.001815
inhalation	-	-	0.000537
Combined routes	- mg/kg _{bw} /day	-	0.002352

9.34.5 Contributing Scenario (5) controlling professional worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.34.5.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.5.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.029804 mg/m ³	47.6 mg/m ³	0.000626 ¹
Combined routes	0.024829 mg/kg _{bw} /day	-	0.003651
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000626
Combined routes	- mg/kg _{bw} /day	-	0.003651

9.34.6 Contributing Scenario (6) controlling professional worker exposure for PROC 1 (PC 20, PC 37, PC 40)

9.34.6.1 Conditions of use

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.6.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.020571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.003025 ¹
inhalation, long-term systemic	0.042578 mg/m ³	47.6 mg/m ³	0.000894 ¹
Combined routes	0.026654 mg/kg _{bw} /day	-	0.00392
Total result			
dermal	-	-	0.003025
inhalation	-	-	0.000894
Combined routes	- mg/kg _{bw} /day	-	0.00392

9.34.7 Contributing Scenario (7) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.34.7.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.34.7.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.812 mg/kg _{bw} /day	-	0.413556
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.413556

9.34.8 Contributing Scenario (8) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.34.8.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	good (30%)



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Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.34.8.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	2.265 mg/kg _{bw} /day	-	0.333052
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.333052

9.34.9 Contributing Scenario (9) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.34.9.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.34.9.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	2.265 mg/kg _{bw} /day	-	0.333052
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.333052

9.34.10 Contributing Scenario (10) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.34.10.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
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Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.34.10.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	4.687 mg/kg _{bw} /day	-	0.689259
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.689259

9.34.11 Contributing Scenario (11) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.34.11.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	good (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.34.11.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	3.775 mg/kg _{bw} /day	-	0.555087
Total result			
dermal	-	-	0.242017



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.555087

9.34.12 Contributing Scenario (12) controlling professional worker exposure for PROC 10 (PC 20, PC 37, PC 40)

9.34.12.1 Conditions of use

Name of contributing scenario	PROC 10 Roller application or brushing
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

9.34.12.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	3.775 mg/kg _{bw} /day	-	0.555087
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.555087

9.34.13 Contributing Scenario (13) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.34.13.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default)) (justification: Minimum protection limit.)
Respiratory protection	95 %

9.34.13.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	1.422 mg/kg _{bw} /day	-	0.209047
Total result			
dermal	-	-	0.074874
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.209047

9.34.14 Contributing Scenario (14) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.34.14.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default)
Respiratory protection	95 %

9.34.14.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹
inhalation, long-term systemic	1.916 mg/m ³	47.6 mg/m ³	0.040252 ¹
Combined routes	0.782855 mg/kg _{bw} /day	-	0.115126
Total result			
dermal	-	-	0.074874
inhalation	-	-	0.040252
Combined routes	- mg/kg _{bw} /day	-	0.115126

9.34.15 Contributing Scenario (15) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.34.15.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default)

Respiratory protection	90 %
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9.34.15.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.509143 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.074874 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.786 mg/kg _{bw} /day	-	0.262716
Total result			
dermal	-	-	0.074874
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.262716

9.34.16 Contributing Scenario (16) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.34.16.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default)
Respiratory protection	90 %

9.34.16.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.89 mg/kg _{bw} /day	-	0.572033
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.572033

9.34.17 Contributing Scenario (17) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.34.17.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²

Location	indoors
Domain	professional
Local exhaust ventilation	yes (inhalation 80 %; dermal 0 %)
Protective gloves	99 %, burst-time: > 4 hours (default)
Respiratory protection	95 %

9.34.17.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	2.129 mg/m ³	47.6 mg/m ³	0.044724 ¹
Combined routes	1.153 mg/kg _{bw} /day	-	0.169514
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.044724
Combined routes	- mg/kg _{bw} /day	-	0.169514

9.34.18 Contributing Scenario (18) controlling professional worker exposure for PROC 19 (PC 20, PC 37, PC 40)

9.34.18.1 Conditions of use

Name of contributing scenario	PROC 19 Hand-mixing with intimate contact and only PPE available
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	1,980 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	99 %, burst-time: > 4 hours (default)
Respiratory protection	90 %

9.34.18.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.848571 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.12479 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.977 mg/kg _{bw} /day	-	0.43786
Total result			
dermal	-	-	0.12479
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.43786

9.34.19 Contributing Scenario (19) controlling professional worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.34.19.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.19.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.318 mg/kg _{bw} /day	-	0.340951
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.340951

9.34.20 Contributing Scenario (20) controlling professional worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.34.20.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.20.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	1.771 mg/kg _{bw} /day	-	0.260447
Total result			
dermal	-	-	0.072605



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.260447

9.34.21 Contributing Scenario (21) controlling professional worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.34.21.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.21.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	3.864 mg/kg _{bw} /day	-	0.568251
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.568251

9.34.22 Contributing Scenario (22) controlling professional worker exposure for PROC 2 (PC 20, PC 37, PC 40)

9.34.22.1 Conditions of use

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.22.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	2.952 mg/kg _{bw} /day	-	0.434078
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.434078

9.34.23 Contributing Scenario (23) controlling professional worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.34.23.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.23.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	25.547 mg/m ³	47.6 mg/m ³	0.536691 ¹
Combined routes	3.896 mg/kg _{bw} /day	-	0.572994
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.536691
Combined routes	- mg/kg _{bw} /day	-	0.572994

9.34.24 Contributing Scenario (24) controlling professional worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.34.24.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)



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Protective gloves	No
Respiratory protection	no

9.34.24.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.246857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.036303 ¹
inhalation, long-term systemic	17.883 mg/m ³	47.6 mg/m ³	0.375684 ¹
Combined routes	2.802 mg/kg _{bw} /day	-	0.411986
Total result			
dermal	-	-	0.036303
inhalation	-	-	0.375684
Combined routes	- mg/kg _{bw} /day	-	0.411986

9.34.25 Contributing Scenario (25) controlling professional worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.34.25.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	240 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.25.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	42.578 mg/m ³	47.6 mg/m ³	0.894485 ¹
Combined routes	6.494 mg/kg _{bw} /day	-	0.95499
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.894485
Combined routes	- mg/kg _{bw} /day	-	0.95499

9.34.26 Contributing Scenario (26) controlling professional worker exposure for PROC 3 (PC 20, PC 37, PC 40)

9.34.26.1 Conditions of use

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)

Exposed skin surface	240 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	No
Respiratory protection	no

9.34.26.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.411429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.060504 ¹
inhalation, long-term systemic	29.804 mg/m ³	47.6 mg/m ³	0.62614 ¹
Combined routes	4.669 mg/kg _{bw} /day	-	0.686644
Total result			
dermal	-	-	0.060504
inhalation	-	-	0.62614
Combined routes	- mg/kg _{bw} /day	-	0.686644

9.34.27 Contributing Scenario (27) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.34.27.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.34.27.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	19.16 mg/m ³	47.6 mg/m ³	0.402518 ¹
Combined routes	3.231 mg/kg _{bw} /day	-	0.475123
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.402518
Combined routes	- mg/kg _{bw} /day	-	0.475123

9.34.28 Contributing Scenario (28) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.34.28.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.28.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.132 mg/kg _{bw} /day	-	0.166526
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.166526

9.34.29 Contributing Scenario (29) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.34.29.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.29.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.34.30 Contributing Scenario (30) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.34.30.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.34.30.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	5.385 mg/kg _{bw} /day	-	0.791872
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.791872

9.34.31 Contributing Scenario (31) controlling professional worker exposure for PROC 4 (PC 20, PC 37, PC 40)

9.34.31.1 Conditions of use

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.31.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543

9.34.32 Contributing Scenario (32) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.34.32.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.32.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	12.773 mg/m ³	47.6 mg/m ³	0.268346 ¹
Combined routes	2.812 mg/kg _{bw} /day	-	0.413556
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.268346
Combined routes	- mg/kg _{bw} /day	-	0.413556

9.34.33 Contributing Scenario (33) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.34.33.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors

Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.34.33.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	38.32 mg/m ³	47.6 mg/m ³	0.805037 ¹
Combined routes	6.462 mg/kg _{bw} /day	-	0.950247
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.805037
Combined routes	- mg/kg _{bw} /day	-	0.950247

9.34.34 Contributing Scenario (34) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.34.34.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.34.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	8.941 mg/m ³	47.6 mg/m ³	0.187842 ¹
Combined routes	2.265 mg/kg _{bw} /day	-	0.333052
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.187842
Combined routes	- mg/kg _{bw} /day	-	0.333052

9.34.35 Contributing Scenario (35) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.34.35.1 Conditions of use



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Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.35.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH4/NH3 aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	21.289 mg/m ³	47.6 mg/m ³	0.447243 ¹
Combined routes	4.687 mg/kg _{bw} /day	-	0.689259
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.447243
Combined routes	- mg/kg _{bw} /day	-	0.689259

9.34.36 Contributing Scenario (36) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.34.36.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.36.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH4/NH3 aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	6.387 mg/m ³	47.6 mg/m ³	0.134173 ¹
Combined routes	2.558 mg/kg _{bw} /day	-	0.37619
Total result			



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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.242017
inhalation	-	-	0.134173
Combined routes	- mg/kg _{bw} /day	-	0.37619

9.34.37 Contributing Scenario (37) controlling professional worker exposure for PROC 8A (PC 20, PC 37, PC 40)

9.34.37.1 Conditions of use

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.37.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	14.902 mg/m ³	47.6 mg/m ³	0.31307 ¹
Combined routes	3.775 mg/kg _{bw} /day	-	0.555087
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.31307
Combined routes	- mg/kg _{bw} /day	-	0.555087

9.34.38 Contributing Scenario (38) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.34.38.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.34.38.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	19.16 mg/m ³	47.6 mg/m ³	0.402518 ¹
Combined routes	3.725 mg/kg _{bw} /day	-	0.547728
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.402518
Combined routes	- mg/kg _{bw} /day	-	0.547728

9.34.39 Contributing Scenario (39) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.34.39.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.39.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.987429 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.14521 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.626 mg/kg _{bw} /day	-	0.239131
Total result			
dermal	-	-	0.14521
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.239131

9.34.40 Contributing Scenario (40) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.34.40.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Domain	professional

Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.40.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	3.166 mg/kg _{bw} /day	-	0.465638
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.465638

9.34.41 Contributing Scenario (41) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.34.41.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.34.41.2 Exposure and risks for workers - for general information see Note 2 on COVERING PAGE**

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	6.208 mg/kg _{bw} /day	-	0.912881
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.912881

9.34.42 Contributing Scenario (42) controlling professional worker exposure for PROC 8B (PC 20, PC 37, PC 40)

9.34.42.1 Conditions of use

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Concentration in substance	>5-25%

Duration of activity	> 4 hours (default)
Exposed skin surface	960 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.42.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	1.646 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.242017 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	2.71 mg/kg _{bw} /day	-	0.398552
Total result			
dermal	-	-	0.242017
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.398552

9.34.43 Contributing Scenario (43) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.34.43.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.34.43.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	19.16 mg/m ³	47.6 mg/m ³	0.402518 ¹
Combined routes	3.231 mg/kg _{bw} /day	-	0.475123
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.402518
Combined routes	- mg/kg _{bw} /day	-	0.475123

9.34.44 Contributing Scenario (44) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.34.44.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	1 - 4 hours
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.44.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.493714 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.072605 ¹
inhalation, long-term systemic	4.471 mg/m ³	47.6 mg/m ³	0.093921 ¹
Combined routes	1.132 mg/kg _{bw} /day	-	0.166526
Total result			
dermal	-	-	0.072605
inhalation	-	-	0.093921
Combined routes	- mg/kg _{bw} /day	-	0.166526

9.34.45 Contributing Scenario (45) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.34.45.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.34.45.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	10.644 mg/m ³	47.6 mg/m ³	0.223621 ¹
Combined routes	2.343 mg/kg _{bw} /day	-	0.34463
Total result			



AMMONIA LIQUOR TECHNICAL
WITH AMMONIUM CONTENT BELOW 25%
SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH), as amended

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Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
dermal	-	-	0.121008
inhalation	-	-	0.223621
Combined routes	- mg/kg _{bw} /day	-	0.34463

9.34.46 Contributing Scenario (46) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.34.46.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	indoors
Ventilation	enhanced (70%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.34.46.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	31.933 mg/m ³	47.6 mg/m ³	0.670864 ¹
Combined routes	5.385 mg/kg _{bw} /day	-	0.791872
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.670864
Combined routes	- mg/kg _{bw} /day	-	0.791872

9.34.47 Contributing Scenario (47) controlling professional worker exposure for PROC 9 (PC 20, PC 37, PC 40)

9.34.47.1 Conditions of use

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Concentration in substance	>5-25%
Duration of activity	> 4 hours (default)
Exposed skin surface	480 cm ²
Location	outdoors (30%)
Domain	professional
Local exhaust ventilation	yes (dermal 100 %)
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %



AMMONIA LIQUOR TECHNICAL
WITH AMMONIUM CONTENT BELOW 25%
SAFETY DATA SHEET

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9.34.47.2 Exposure and risks for workers - *for general information see Note 2 on COVERING PAGE***

Route	Exposure concentration (EC)	DNEL	RCR* = EC/DNEL
25% aqueous Ammonia (Ammonia NH₄/NH₃ aqua)			
dermal, long-term systemic	0.822857 mg/kg _{bw} /day	6.8 mg/kg _{bw} /day	0.121008 ¹
inhalation, long-term systemic	7.451 mg/m ³	47.6 mg/m ³	0.156535 ¹
Combined routes	1.887 mg/kg _{bw} /day	-	0.277543
Total result			
dermal	-	-	0.121008
inhalation	-	-	0.156535
Combined routes	- mg/kg _{bw} /day	-	0.277543