SAFETY DATA SHEET



Diethylenetriamine, DETA

SECTION 1: Identification of the substance/mixture and of the company/ undertaking

1.1 Product identifier	
Product name	: Diethylenetriamine, DETA
Index number	: 612-058-00-X
EC number	: 203-865-4
REACH Registration numbe	<u>er</u>

Registration number		Legal entity	
01-2119473793-27-00	01	-	
CAS number	: 111-40-0		
Other means of identification	: -		

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

Product use	: Intermediate.
	Identified uses
ES1: Manufacture of su ERC01	bstance - Industrial: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15;
ES2: Formulation and (PROC05, PROC08a, P	re)packing of substances and mixtures - Industrial: PROC01, PROC02, PROC03, PROC04, ROC08b, PROC09, PROC15; ERC02
ES3: Use at industrial s PROC15; ERC06a	ites - Use as an intermediate: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b,
ES4: Use at industrial s PROC03, PROC04, PR ES5: Use at industrial s PROC07, PROC08a, P	tes - Use as a polyurethane curing agent for rigid foam production: PROC01, PROC02, OC05, PROC07, PROC08a, PROC08b, PROC10, PROC13, PROC15; ERC06c, ERC06d ites - Use as an epoxy curing agent: PROC01, PROC02, PROC03, PROC04, PROC05, ROC08b, PROC10, PROC13, PROC15; ERC06c, ERC06d
ES6: Use at industrial s ERC04	tes - Use as a processing aid/additive: PROC02, PROC05, PROC08a, PROC08b, PROC13;
ES7: Widespread use b PROC01, PROC02, PR PROC19; ERC08c, ER	y professional workers - Use as a polyurethane curing agent for rigid foam production: OC03, PROC04, PROC05, PROC08a, PROC08b, PROC10, PROC11, PROC13, PROC15, C08f
ES8: Widespread use to PROC04, PROC05, PR	y professional workers - Use as an epoxy curing agent: PROC01, PROC02, PROC03, OC08a, PROC08b, PROC10, PROC11, PROC13, PROC15, PROC19; ERC08c, ERC08f
Ashless dispersant (Ind PROC13, PROC17, PR	Jentified uses (industrial, Professional): Jstrial): PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, PROC10, OC18; ERC04
Corrosion inhibitor (Indu Electroplating. (Industria PROC15; ERC04	strial): PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b; ERC04 al): PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC13,
Ashless dispersant (Pro PROC10, PROC13, PR	fessional): PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, OC17, PROC18, PROC20; ERC08a, ERC08d
ES9: Consumer use - L Further information - I Ashless dispersant (Co	lse as an epoxy and polyurethane curing agent: PC01; ERC08c, ERC08f dentified uses (Consumer): nsumer): PC24; ERC08a, ERC08d
See Annex to the Safety	data sheet for additional information in the Exposure Scenario(s).

1.3 Details of the supplier of the safety data sheet

Delamine B.V.
 Stationsplein 121
 3818LE Amersfoort
 The Netherlands
 Telephone number: +31-334224600

SECTION 1: Identification of the substance/mixture and of the company/ undertaking

e-mail address of person responsible for this SDS

: sds.delamine@delamine.com

- 1.4 Emergency telephone number
- Supplier
 - **Telephone number**

: ₱1 352 323 3500 (24 h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition

: Mono-constituent substance

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 2, H330 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1B, H317 STOT SE 3, H335

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended. See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms



Signal word	Danger
Hazard statements	H330 - Fatal if inhaled. H302 + H312 - Harmful if swallowed or in contact with skin. H314 - Causes severe skin burns and eye damage. H317 - May cause an allergic skin reaction. H335 - May cause respiratory irritation.
Precautionary statements	
Prevention	P280 - Wear protective gloves. Wear protective clothing. Wear eye or face protection. P260 - Do not breathe vapour.
Response	 P304 + P340 + P310 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. P303 + P361 + P353 + P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or physician. P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
Storage	P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
Disposal	Not applicable.
Hazardous ingredients	2,2'-iminodiethylamine
Supplemental label elements	Not applicable.

: Not applicable.

SECTION 2: Hazards identification

Annex XVII - Restrictions
on the manufacture,
placing on the market and
use of certain dangerous
substances, mixtures and
articles

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

PBT	Р	В	т	vPvB	vP	vB
No	No	No	No	No	No	No

Other hazards which do not result in classification

SECTION 3: Composition/information on ingredients

: None known.

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3.1 Substances	: Mono-constituent substance)		
Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Туре
2,2'-iminodiethylamine	REACH #: 01-2119473793-27 EC: 203-865-4 CAS: 111-40-0 Index: 612-058-00-X	100	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 2, H330 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1B, H317 STOT SE 3, H335 See Section 16 for the full text of the H statements declared above.	[A]

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Туре

[A] Constituent

[B] Impurity

[C] Stabilising additive

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact	: Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
Inhalation	: Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

SECTION	4: First ai	d measures
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Skin contact	: Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health ef	fects
Eye contact	: Causes serious eye damage.
Inhalation	: Fatal if inhaled. May cause respiratory irritation.
Skin contact	: Causes severe burns. Harmful in contact with skin. May cause an allergic skin reaction.
Ingestion	: Harmful if swallowed.
Over-exposure signs/syr	nptoms
Eye contact	: Adverse symptoms may include the following: pain watering redness
Inhalation	: Adverse symptoms may include the following: respiratory tract irritation coughing
Skin contact	: Adverse symptoms may include the following: pain or irritation redness blistering may occur
Ingestion	: Adverse symptoms may include the following: stomach pains
4.3 Indication of any imme	ediate medical attention and special treatment needed
Notes to physician	 In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	: No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media	
Suitable extinguishing media	 Use dry chemical, CO₂, water spray (fog) or foam. Dry sand or other suitable absorbent. Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: Do not use water jet.

SECTION 5: Firefighting measures

5.2 Special hazards arising fr	om	the substance or mixture
Hazards from the substance or mixture	:	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous combustion products	:	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides
5.3 Advice for firefighters		
Special protective actions for fire-fighters	-	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
Additional information (Explosibility)	:	Not considered to be a product presenting a risk of explosion.

SECTION 6: Accidental release measures

6.1 Personal precautions, prot	tec	tive equipment and emergency procedures
For non-emergency personnel	:	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	:	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
6.2 Environmental precautions	:	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
6.3 Methods and material for o	or	ntainment and cleaning up
Small spill	:	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Large spill	:	Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.
6.4 Reference to other sections	:	See Section 1 for emergency contact information. See Section 8 for information on appropriate personal protective equipment. See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe ha	andling
Protective measures	: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container.
Advice on general occupational hygiene	: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Seveso Directive - Reporting thresholds (in tonnes)

Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
₩2: Acute toxicity 2 any route of entry or Acute toxicity 3 Inhalation route of entry or Note 7	50	200

7.3 Specific end use(s)

Section 7. Handling and storage: The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

SECTION 8: Exposure controls/personal protection

The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

Product/ingredier	nt name	Exposure limit values			
2,2'-iminodiethylamine		EH40/2005 WELs (United Kingdom (UK), 8/2018). Absorbed through skin. TWA: 4.3 mg/m ³ 8 hours. TWA: 1 ppm 8 hours.			
Recommended monitoring procedures	: If this product c atmosphere or of the ventilation protective equip the following: E the assessmen limit values and atmospheres - exposure to che (Workplace ath for the measure documents for required.	ontains ingredients biological monitorin n or other control m oment. Reference s European Standard t of exposure by inh- d measurement strat Guide for the applic emical and biologica nospheres - Genera ement of chemical a methods for the det	with exposure limits, pe g may be required to d easures and/or the new hould be made to mor EN 689 (Workplace at alation to chemical age regy) European Stand ation and use of proce al agents) European S I requirements for the igents) Reference to r ermination of hazardou	ersonal, workplace letermine the effective cessity to use respira- nitoring standards, s mospheres - Guidar ents for comparison ard EN 14042 (Wor dures for the assess tandard EN 482 performance of pro- national guidance us substances will a	veness atory uch as nce for with kplace sment of cedures Iso be
Date of issue/Date of revision	: 30/07/2019 Da	ate of previous issue	: 26/01/2018	Version : 13	6/130

SECTION 8: Exposure controls/personal protection

DNELs/DMELs

Product/ingredient name	Туре	Exposure	Value	Population	Effects
2,2'-iminodiethylamine	DNEL	Short term Inhalation	92.1 mg/m ³	Workers	Systemic
	DNEL	Short term Inhalation	2.6 mg/m³	Workers	Local
	DNEL	Long term Dermal	11.4 mg/ kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	15.4 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	1.1 mg/cm ²	Workers	Local
	DNEL	Long term Inhalation	0.87 mg/m³	Workers	Local
	DNEL	Short term Dermal	4.88 mg/ kg bw/day	General population [Consumers]	Systemic
	DNEL	Short term Inhalation	27.5 mg/m³	General population [Consumers]	Systemic
	DNEL	Long term Dermal	4.88 mg/ kg bw/day	General population [Consumers]	Systemic
	DNEL	Long term Inhalation	4.6 mg/m³	General population [Consumers]	Systemic

PNECs

Product/ingredient name	Compartment Detail	Value	Method Detail
2,2'-iminodiethylamine	Fresh water	0.56 mg/l	-
	Marine water	0.056 mg/l	-
	Intermittent release	0.32 mg/l	-
	Fresh water sediment	1072 mg/kg dwt	-
	Marine water sediment	107.2 mg/kg dwt	-
	Soil	7.97 mg/kg dwt	-
	Sewage Treatment Plant	6 mg/l	-

8.2 Exposure controls

Appropriate engineering controls

: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

SECTION 8: Ex	cposure	controls/	personal	protection
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Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
Skin protection	
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
	Recommended: Wear suitable gloves tested to EN374. > 8 hours (breakthrough time): butyl rubber (thickness ≥0.3 mm), nitrile rubber (thickness ≥0.4 mm), Chloroprene (thickness ≥0.65 mm).
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	 Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
	Recommended: Combination filtering device (DIN EN 14387), Filter type: A-P2.
Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

and chemical properties
: Liquid. [Viscous liquid.]
: Colourless. Yellow.
: Ammoniacal.
: Not available.
: 11.6 [Conc. (% w/w): 1%]
: -39°C
: 207°C
: Closed cup: 96.7°C
: Not available.
: Not applicable.
: Not available.

Date of issue/Date of revision

SECTION 9: Physical and chemical properties

Vapour pressure	;	0.021 kPa [room temperature]
Vapour density	;	Not available.
Relative density	1	Not available.
Density	÷	0.9586 g/cm³ [20°C]
Solubility(ies)	1	Not available.
Solubility in water	1	Miscible in water.
Partition coefficient: n-octanol/ water	:	-1.58
Auto-ignition temperature	:	358°C
Decomposition temperature	:	Not available.
Viscosity	1	Dynamic (room temperature): 5.05 mPa·s
Explosive properties	:	Not considered to be a product presenting a risk of explosion.
Oxidising properties	÷	None.

9.2 Other information

No additional information.

SECTION 10: Stabilit	y a	and reactivity
10.1 Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	:	The product is stable.
10.3 Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
10.4 Conditions to avoid	:	aerosol or mist formation. Keep away from heat, sparks and flame. Do not smoke.
10.5 Incompatible materials	:	Reactive or incompatible with the following materials: oxidizing materials, metals, acids. Chlorinated hydrocarbon.
10.6 Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure	Remarks
2,2'-iminodiethylamine	LD50 Dermal	Rabbit	1045 mg/kg	-	-
	LD50 Oral	Rat	1620 mg/kg	-	-

Conclusion/Summary : Fatal if inhaled. Harmful if swallowed or in contact with skin.

Acute toxicity estimates

Product/ingredient name	Oral (mg/ kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
2,2'-iminodiethylamine	1620	1045	N/A	0.5	N/A

Irritation/Corrosion

SECTION 11: Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation	Remarks
2,2'-iminodiethylamine	Skin - Visible necrosis	Rabbit	-	15 minutes	15 minutes	-
	Eyes - Oedema of the conjunctivae	Rabbit	6	-	8 days	-
	Eyes - Cornea opacity	Rabbit	4	-	8 days	-

Conclusion/Summary

: Causes severe burns.

: Causes serious eye damage.

Respiratory : May cause respiratory irritation.

Sensitisation

Skin

Eyes

Product/ingredient name	Route of exposure	Species	Result	Remarks
2,2'-iminodiethylamine	skin	Guinea pig	Sensitising [OECD 406]	-

Conclusion/Summary

Skin

: May cause an allergic skin reaction.

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
2,2'-iminodiethylamine	-	Experiment: In vitro Subject: Mammalian- Animal	Negative	-
	OECD 488	Experiment: In vivo Subject: Mammalian- Animal	Negative	-

Conclusion/Summary : Based on available data, the classification criteria are not met.

Carcinogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure	Remarks
2,2'-iminodiethylamine	Negative	-	Negative	Rat	Dermal: 30 mg/kg NOAEL	-	OECD 421

Conclusion/Summary : Based on available data, the classification criteria are not met.

Teratogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
2,2'-iminodiethylamine	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

SECTION 11: Toxicological information

Information on likely routes of exposure	:	Not available.
Potential acute health effects		
Eye contact	:	Causes serious eye damage.
Inhalation	:	Fatal if inhaled. May cause respiratory irritation.
Skin contact	:	Causes severe burns. Harmful in contact with skin. May cause an allergic skin reaction.
Ingestion	:	Harmful if swallowed.
Symptoms related to the phys	ic	al, chemical and toxicological characteristics
Eye contact	:	Adverse symptoms may include the following: pain watering redness
Inhalation	:	Adverse symptoms may include the following: respiratory tract irritation coughing
Skin contact	:	Adverse symptoms may include the following: pain or irritation redness blistering may occur
Ingestion	:	Adverse symptoms may include the following: stomach pains

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

<u>Short term exposure</u>		
Potential immediate effects	: No	t available.
Potential delayed effects	: No	t available.
<u>Long term exposure</u>		
Potential immediate effects	: No	t available.
Potential delayed effects	: No	t available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure	Remarks		
2,2'-iminodiethylamine	Sub-acute NOEL Inhalation Vapour	Rat - Male, Female	0.55 mg/l	15 days; 6 hours per day	-		
Conclusion/Summary	: Based on available data, the classification criteria are not met.						
General	: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.						
Carcinogenicity	: No known signific	cant effects or o	ritical hazard	S.			
Mutagenicity	: No known signific	cant effects or o	ritical hazard	S.			
Teratogenicity	: No known signific	cant effects or o	ritical hazard	S.			
Developmental effects	: No known significant effects or critical hazards.						
Fertility effects	: No known signific	cant effects or o	ritical hazard	s.			
Other information	: Not available.						

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure	Remarks
2,2'-iminodiethylamine	Acute EC50 1164 mg/l Fresh water [OECD 201]	Algae	72 hours	-
	Acute EC50 32 mg/l Fresh water	Daphnia	48 hours	-
	Acute LC50 430 mg/l Fresh water [EU C.1]	Fish	96 hours	-
	Chronic NOEC 10 mg/l Fresh water [OECD 201]	Algae	72 hours	-
	Chronic NOEC 5.6 mg/l Fresh water [EU C.2]	Daphnia - Daphnia magna	21 days	-
	Chronic NOEC >10 mg/l Fresh water [OECD 210]	Fish	28 days	-

Conclusion/Summary : Based on available data, the classification criteria are not met.

12.2 Persistence and degradability

Product/ingredient name	Test	Result		Dose	Inoculum		
2,2'-iminodiethylamine	OECD 301D	87 % - Readily - 21	days	-	-		
Conclusion/Summary	n/Summary : Readily biodegradable.						
Product/ingredient name	Aquatic half-life		Photolysis	5	Biodegradability		
2,2'-iminodiethylamine	-		-		Readily		

12.3 Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
2,2'-iminodiethylamine	-1.58	0.3 to 6.3	low

12.4 Mobility in soil

Soil/water partition coefficient (Koc)	: Not available.
Mobility	: Low mobility in soil predicted, based on log Kow < 3.0.

12.5 Results of PBT and vPvB assessment

Product/ingredient name	PBT	Р	В	Т	vPvB	vP	vB
2,2'-iminodiethylamine	No	No	No	No	No	No	No

12.6 Other adverse effects

ts : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

SECTION 13: Disposal considerations

Methods of disposal	 The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. The allocation of waste identity numbers/waste descriptions must be carried out according to the EWC, specific to the industry and process.
Hazardous waste	: The classification of the product may meet the criteria for a hazardous waste.
Packaging	
Methods of disposal	: The generation of waste should be avoided or minimised wherever possible.
Special precautions	: This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA	
14.1 UN number	UN2079	UN2079	UN2079	UN2079	
14.2 UN proper shipping name	DIETHYLENETRIAMINE	DIETHYLENETRIAMINE	DIETHYLENETRIAMINE	Diethylenetriamine	
14.3 Transport hazard class(es)	8	8	8	8	
Label		e e	1		
14.4 Packing group	II	II	II	Ш	
14.5 Environmental hazards	No.	N o.	Marine Pollutant: No	No.	
Additional information					
ADR/RID : <u>Hazard identification number</u> 80 Limited quantity 1 L Tunnel code (E)					
IMDG	: Emergency	<u>schedules</u> F-A, S-B			
ΙΑΤΑ	: <u>Quantity limitation</u> Passenger and Cargo Aircraft: 1 L. Packaging instructions: 851. Cargo Aircraft Only: 30 L. Packaging instructions: 855. Limited Quantities - Passenger Aircraft: 0.5 L. Packaging instructions: Y840.				
14.6 Special precautions for user: Transport within upright and secure the event of an action		ithin user's premises: a ecure. Ensure that perso an accident or spillage.	always transport in close ns transporting the prod	d containers that are uct know what to do in	
14.7 Transport in bulk according to Annex II of Marpol and the IBC CodeProper shipp Ship type Pollution cate		bing name : Diet : ♂ tegory : ⋎	thylenetriamine		

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions : Not applicable. on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Other EU regulations

Ozone depleting substances (1005/2009/EU) Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Seveso Directive

This product is controlled under the Seveso Directive.

Danger criteria

Category

H2: Acute toxicity 2 any route of entry or Acute toxicity 3 Inhalation route of entry or Note 7

National regulations

Hazchem code

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

: 2X

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants Not listed.

Rotterdam Convention on Prior Informed Consent (PIC) Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Republic of Korea	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
New Zealand	: All components are listed or exempted.
	All components are listed or exempted.
	Japan inventory (ISHL):
	All components are listed or exempted.
Japan	: Japan inventory (ENCS):
Europe	: All components are listed or exempted.
China	: All components are listed or exempted.
Canada	: All components are listed or exempted.
Australia inventory (AICS)	: All components are listed or exempted.

Date of issue/Date of revision

SECTION 15: Regulatory information

Taiwan	: All components are listed or exempted.
Turkey	: All components are listed or exempted.
United States	: All components are listed or exempted.
15.2 Chemical safety	: Complete.

assessment

Complet

SECTION 16: Other information

Indicates information that has a	hanged from previously issued version.
Abbreviations and acronyms :	ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
	ADR = The European Agreement concerning the International Carriage of
	Dangerous Goods by Road
	ATE = Acute Toxicity Estimate
	BCF = Bioconcentration Factor
	CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
	DMEL = Derived Minimal Effect Level
	DNEL = Derived No Effect Level
	EUH statement = CLP-specific Hazard statement
	EWC = European Waste Catalogue
	IATA = International Air Transport Association
	IBC = Intermediate Bulk Container
	IMDG = International Maritime Dangerous Goods
	LogPow = logarithm of the octanol/water partition coefficient
	MARPOL = International Convention for the Prevention of Pollution From Ships, 1973
	as modified by the Protocol of 1978. ("Marpol" = marine pollution)
	N/A = Not available
	PBT = Persistent, Bioaccumulative and Loxic
	PNEC = Predicted No Effect Concentration
	RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
	RRN = REACH Registration Number
	SGG = Segregation Group
	vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Acute Tox. 4, H302	Calculation method
Acute Tox. 4, H312	Calculation method
Acute Tox. 2, H330	Calculation method
Skin Corr. 1B, H314	Expert judgment
Eye Dam. 1, H318	On basis of test data
Skin Sens. 1B, H317	Expert judgment
STOT SE 3, H335	Calculation method

Full text of abbreviated H statements

H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.

Full text of classifications [CLP/GHS]

Diethylenetriamine, DETA

SECTION 16: Other information

Acute Tox. 2, H330 Acute Tox. 4, H302 Acute Tox. 4, H312 Eye Dam. 1, H318 Skin Corr. 1B, H314 Skin Sens. 1B, H317 STOT SE 3, H335		ACUTE TOXICITY (inhalation) - Category 2 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SKIN CORROSION/IRRITATION - Category 1B SKIN SENSITISATION - Category 1B SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3		
Date of printing	: 30/07/2019			
Date of issue/ Date of revision	: 30/07/2019			
Date of previous issue	: 26/01/2018			
Version	: 13			
Notice to reader				

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture **Product definition** : Mono-constituent substance Product name : Diethylenetriamine, DETA Section 1 - Title Short title of the exposure : Ashless dispersant (Industrial) scenario : Identified use name: Further information - Identified uses (Industrial, List of use descriptors Professional): Ashless dispersant (Industrial): PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC17, PROC18; ERC04 Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC17, PROC18 Substance supplied to that use in form of: In a mixture Subsequent service life relevant for that use: No. Environmental Release Category: ERC04 : Use of non-reactive processing aid at industrial site (no inclusion into or onto **Environmental contributing** scenarios article) - ERC04 **Health Contributing** : Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions - PROC01 scenarios Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions -PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03 Chemical production where opportunity for exposure arises - PROC04 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Transfer of substance or mixture into small containers (dedicated filling line, including weighing) - PROC09 Roller application or brushing - PROC10 Treatment of articles by dipping and pouring - PROC13 Lubrication at high energy conditions in metal working operations - PROC17 General greasing/lubrication at high kinetic energy conditions - PROC18 Additional information : Function: Intermediate (precursor). Remark: No exposure scenario developed - Concentrations of substance <0.1% in these products.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for: Not available.	
Contributing scenario controlling worker exposure for:	1
Not available.	

Section 3 - Exposure estimation and reference to its source

Exposure estimation and re Exposure assessment (environment):	 ference to its source - Environment: All Contributing scenarios No environmental risk assessment was performed. 	
Exposure estimation and re Exposure assessment (human):	ference to its source - Workers: All Contributing scenarios : No human health risk assessment was performed.	

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

General : Not applicable.	
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Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture **Product definition** : Mono-constituent substance **Product name** : Diethylenetriamine, DETA Section 1 - Title Short title of the exposure : Corrosion inhibitor (Industrial) scenario : Identified use name: Corrosion inhibitor (Industrial): PROC01, PROC02, PROC03, List of use descriptors PROC04, PROC08a, PROC08b; ERC04 Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b Substance supplied to that use in form of: In a mixture Subsequent service life relevant for that use: No. Environmental Release Category: ERC04 **Environmental contributing** : Use of non-reactive processing aid at industrial site (no inclusion into or onto article) - ERC04 scenarios **Health Contributing** : Chemical production or refinery in closed process without likelihood of scenarios exposure or processes with equivalent containment conditions - PROC01 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions -PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03 Chemical production where opportunity for exposure arises - PROC04 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Additional information : Function: Intermediate (precursor). Remark: No exposure scenario developed - Concentrations of substance <0.1% in these products.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for: Not available.
Contributing scenario controlling worker exposure for: Not available.

Section 3 - Exposure estimation and reference to its source

Exposure estimation and re	eference to its source - Environment: All Contributing scenarios
Exposure assessment (environment):	: No environmental risk assessment was performed.
Exposure estimation and re	eference to its source - Workers: All Contributing scenarios

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

General	: Not applicable.				
Date of issue/Date of revision	: 26/01/2018	Version	: 12	/ en	19/130

Exposure Scenario:



Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture **Product definition** : Mono-constituent substance Product name : Diethylenetriamine, DETA Section 1 - Title Short title of the exposure : Electroplating. (Industrial) scenario : Identified use name: Electroplating. (Industrial): PROC01, PROC02, PROC03, List of use descriptors PROC04, PROC05, PROC08a, PROC08b, PROC13, PROC15; ERC04 Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC13, PROC15 Substance supplied to that use in form of: As such Subsequent service life relevant for that use: No. Environmental Release Category: ERC04 **Environmental contributing** : Use of non-reactive processing aid at industrial site (no inclusion into or onto article) - ERC04 scenarios **Health Contributing** : Chemical production or refinery in closed process without likelihood of scenarios exposure or processes with equivalent containment conditions - PROC01 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions -PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03 Chemical production where opportunity for exposure arises - PROC04 Mixing or blending in batch processes - PROC05 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Treatment of articles by dipping and pouring - PROC13 Use as laboratory reagent - PROC15 Additional information : Function: Intermediate (precursor). Remark: No exposure scenario developed - Volumes of substance <1 mT total.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for: Not available.
Contributing scenario controlling worker exposure for: Not available.

Section 3 - Exposure estimation and reference to its source

Exposure estimation and real	erence to its source - Environment: All Contributing scenarios
Exposure assessment (environment):	: No environmental risk assessment was performed.
Exposure estimation and re	erence to its source - Workers: All Contributing scenarios
Exposure assessment (human):	: No human health risk assessment was performed.

Diethylenetriamine, DETA	Exposure Scenario:	Electroplating. (Industrial)
Section 4 - Guidance to Dl	J to evaluate whether h	e works inside the boundaries set by the ES
General :	Not applicable.	



Annex to the extended Safety Data Sheet (eSDS)

Professional

ent substance mine, DETA rsant (Professional) e name: Ashless dispersant (Professional): PROC01, PROC02, OC04, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC17, OC20; ERC08a, ERC08d egory: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, OC10, PROC13, PROC17, PROC18, PROC20 upplied to that use in form of: In a mixture service life relevant for that use: No. al Release Category: ERC08a, ERC08d use of non-reactive processing aid (no inclusion into or onto r) - ERC08a
mine, DETA rsant (Professional) a name: Ashless dispersant (Professional): PROC01, PROC02, OC04, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC17, OC20; ERC08a, ERC08d agory: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, OC10, PROC13, PROC17, PROC18, PROC20 upplied to that use in form of: In a mixture service life relevant for that use: No. al Release Category: ERC08a, ERC08d use of non-reactive processing aid (no inclusion into or onto up - ERC08a
rsant (Professional) e name: Ashless dispersant (Professional): PROC01, PROC02, OC04, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC17, OC20; ERC08a, ERC08d egory: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, OC10, PROC13, PROC17, PROC18, PROC20 upplied to that use in form of: In a mixture service life relevant for that use: No. al Release Category: ERC08a, ERC08d use of non-reactive processing aid (no inclusion into or onto r) - ERC08a
rsant (Professional) a name: Ashless dispersant (Professional): PROC01, PROC02, OC04, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC17, OC20; ERC08a, ERC08d agory: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, OC10, PROC13, PROC17, PROC18, PROC20 upplied to that use in form of: In a mixture service life relevant for that use: No. al Release Category: ERC08a, ERC08d use of non-reactive processing aid (no inclusion into or onto r) - ERC08a
e name: Ashless dispersant (Professional): PROC01, PROC02, OC04, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC17, OC20; ERC08a, ERC08d egory: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, OC10, PROC13, PROC17, PROC18, PROC20 upplied to that use in form of: In a mixture service life relevant for that use: No. al Release Category: ERC08a, ERC08d use of non-reactive processing aid (no inclusion into or onto or) - ERC08a
use of non-reactive processing aid (no inclusion into or onto r) - FRC08a
use of non-reactive processing aid (no inclusion into or onto por) - ERC08d
oduction or refinery in closed process without likelihood of processes with equivalent containment conditions - PROC01 oduction or refinery in closed continuous process with occasional posure or processes with equivalent containment conditions - or formulation in the chemical industry in closed batch processes nal controlled exposure or processes with equivalent containment ROC03 oduction where opportunity for exposure arises - PROC04 substance or mixture (charging and discharging) at non-dedicated ROC08a substance or mixture (charging and discharging) at dedicated ROC08b substance or mixture into small containers (dedicated filling line, ighing) - PROC09 sation or brushing - PROC10 f articles by dipping and pouring - PROC13 at high energy conditions in metal working operations - PROC17 asing/lubrication at high kinetic energy conditions - PROC18 ional fluids in small devices - PROC20
rmediate (precursor). exposure scenario developed - Concentrations of substance <0.1% in

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for: Not available.
Contributing scenario controlling worker exposure for: Not available.

Section 3 - Exposure estimation and reference to its source

Exposure estimation and re Exposure assessment (environment):	 ference to its source - Environment: All Contributing scenarios No environmental risk assessment was performed. 	
Exposure estimation and re Exposure assessment (human):	 ference to its source - Workers: All Contributing scenarios No human health risk assessment was performed. 	

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

General : Not applicable.	
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Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture **Product definition** : Mono-constituent substance Product name : Diethylenetriamine, DETA Section 1 - Title Short title of the exposure : Manufacture of substance - Industrial. scenario : Identified use name: ES1: Manufacture of substance - Industrial: PROC01, PROC02. List of use descriptors PROC03, PROC04, PROC08a, PROC08b, PROC15; ERC01 Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15 Subsequent service life relevant for that use: No. Environmental Release Category: ERC01 : Manufacture of substance - ERC01 **Environmental contributing** scenarios **Health Contributing** : Chemical production or refinery in closed process without likelihood of scenarios exposure or processes with equivalent containment conditions - PROC01 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions -PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03 Chemical production where opportunity for exposure arises - PROC04 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (indoor) - PROC08a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (outdoor) - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Use as laboratory reagent - PROC15 Number of the ES : 1

Section 2 - Exposure controls

Contributing scenario contro	ollin	g environmental exposure for 1: Manufacture of substanc	e			
Amounts used	:	Daily amount per site: ≤143.3 tonnes/day. Annual amount per site: ≤43000 tonnes/year.				
Frequency and duration of use	:	Emission days: ≥300 days per year.				
Environment factors not influenced by risk management	:	Receiving surface water flow: ≥18000 m³/d.				
Other conditions affecting environmental exposure	:	Release to waste water from process: Release factor after on-site risk management: 0.00015%. Local release rate: 0.215 kg/day.				
		Release to air from process: Release factor after on-site risk management: 0.0000102%. Local release rate: 0.015 kg/day.				
		Release to soil from process: Release factor after on-site risk management: 0%.				
Date of issue/Date of revision		: 26/01/2018 Versi	ion	: 12	/ en	25/130

Diethylenetriamine, DETA		Exposure Scenario: 1	Manufacture of substance - Industrial.	
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Incinerate, absorb, or adsorb va	apours stripped from solution whenever necessary.	
Organisational measures to prevent/limit release from site	:	Seneral good practice: Trained staff, spill protection including waste reuse. Site should have a spill plan to ensure that adequate safeguards are in place to ninimise the impact of episodic releases. Storage of finished products in closed containers (e.g., bulk tanks, drums, cans).		
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. Discharge rate: ≥2000 m³/d. Application of the STP sludge of	(Efficiency of at least 87.34%) on agricultural soil: Yes.	
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the Dispose of waste product or us	e waste treatment operations. ed containers according to local regulations.	
Contributing scenario contro without likelihood of exposur	llin 'e (g worker exposure for 2: Che or processes with equivalent c	mical production or refinery in closed process ontainment conditions	
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 100%.	
Physical state	4	Liquid.		
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.	
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. heral ventilation (1 to 3 air changes per hour).	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exports Segregation of the emitting presentation of the emitting presentation of the emitting presentation. Good standard of general vere Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in presentation of staff on good prace Good standard of personal hypersentation. 	osed. ocess. on. htilation. es. red tools and objects ht and work area. lace to check that the RMMs in place are being used ctice. rgiene.	
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation	
Personal protection	:	Substance/Task appropriate gl Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	oves. barrier material based on potential for contact with shield, goggles or safety glasses with side shields at contact. ontact with eyes. Wash off any skin contamination	
Contributing scenario contro process with occasional cont	llir tro	ig worker exposure for 3: Che lled exposure or processes wi	mical production or refinery in closed continuous th equivalent containment conditions	
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 100%.	
Physical state	1	Liquid.		
Frequency and duration of use/exposure	-	Covers daily exposures up to 8	nours.	
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.		
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 26/13	

Diethylenetriamine, DETA		Exposure Scenario: 1Manufacture of substance - Industrial.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 		
Conditions and measures rel	ate	d to personal protection, hygiene and health evaluation		
Personal protection	:	Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately.		
Respiratory protection	1	Respiratory protection (Efficiency of at least 90%).		
Contributing scenario contro closed batch processes with condition Concentration of substance in mixture or article	llin oc :	g worker exposure for 4: Manufacture or formulation in the chemical industry in casional controlled exposure or processes with equivalent containment Covers percentage substance in the product up to 100%.		
Physical state		Liquid		
Frequency and duration of use/exposure	ł	Covers daily exposures up to 8 hours.		
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 		
Conditions and measures rel	ate	d to personal protection, hygiene and health evaluation		
Personal protection	:	Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately.		

Diethylenetriamine, DETA		Exposure Scenario: 1	Manufacture of substance - Industrial.
Contributing scenario contro arises	lling	g worker exposure for 5	Chemical production where opportunity for exposure
Concentration of substance in mixture or article	:	Covers percentage substa	nce in the product up to 100%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up	to 8 hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40	°C.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and S Provide a basic standard o Local exhaust ventilation -	Safety Management System: Advanced. of general ventilation (1 to 3 air changes per hour). efficiency of at least 90% (Inhalation).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropri- Minimise number of staff Segregation of the emitti Effective contaminant ex Good standard of genera Minimisation of manual p Avoid contact with contar Regular cleaning of equi Management/supervisior correctly and OCs followe Training for staff on good Good standard of persor 	iate. exposed. ng process. traction. al ventilation. ohases. minated tools and objects pment and work area. n in place to check that the RMMs in place are being used d. d practice. mal hygiene.
Conditions and measures rel	ateo	I to personal protection,	hygiene and health evaluation
Personal protection	:	Wear chemical-resistant g employee training. (Efficie Skin coverage with approp the chemicals. Wear chemically resistant when there is potential for Avoid contact with skin. Av immediately.	loves (tested to EN374) in combination with 'basic' ncy of at least 90%) priate barrier material based on potential for contact with face shield, goggles or safety glasses with side shields direct contact. void contact with eyes. Wash off any skin contamination
Contributing scenario contro discharging) at non-dedicate	lling d fa	y worker exposure for 6: cilities (indoor)	Transfer of substance or mixture (charging and
Concentration of substance in mixture or article	:	Covers percentage substa	nce in the product up to 100%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up	to 8 hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40	°C.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and S Provide a basic standard o	Safety Management System: Advanced. of general ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropri- Minimise number of staff Segregation of the emitti Effective contaminant ex Good standard of genera Minimisation of manual p Avoid contact with contar Regular cleaning of equi Management/supervisior correctly and OCs followe Training for staff on good Good standard of persor 	iate. rexposed. ng process. traction. al ventilation. bhases. minated tools and objects pment and work area. n in place to check that the RMMs in place are being used d. b practice. hal hygiene.
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 28/130

Diethylenetriamine, DETA		Exposure Scenario: 1	Manufacture of substance - Industrial.	
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation	
Personal protection	:	Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately.		
Respiratory protection	:	Respiratory protection (Efficien	cy of at least 90%).	
Contributing scenario contro discharging) at non-dedicate	llin d fa	g worker exposure for 7: Tran acilities (outdoor)	nsfer of substance or mixture (charging and	
Concentration of substance in mixture or article	:	Covers percentage substance	n the product up to 100%.	
Physical state	1	Liquid.		
Frequency and duration of use/exposure	1	Covers exposure up to 1 hours	per day.	
Other conditions affecting workers exposure	1	Outdoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet	y Management System: Advanced.	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting presentation of the emitting presentation of the emitting presentation of the emitting presentation of general vert Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in proceeding of the presentation of the prese	used. ocess. on. itilation. is. ed tools and objects it and work area. ace to check that the RMMs in place are being used otice. giene.	
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation	
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	(tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination	
Contributing scenario contro discharging) at dedicated fac	llin ilit	g worker exposure for 8: Trai	nsfer of substance or mixture (charging and	
Concentration of substance in mixture or article	:	Covers percentage substance	n the product up to 100%.	
Physical state	:	Liquid.		
Frequency and duration of use/exposure	1	Covers exposure up to 4 hours	per day.	
Other conditions affecting workers exposure	1	Outdoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet	y Management System: Advanced.	
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 29/130	

Diethylenetriamine, DETA		Exposure Scenario: 1	Manufacture of substance - Industrial.	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hydiene. 		
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation	
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination	
Contributing scenario contro	llin	g worker exposure for 9: Use	as laboratory reagent	
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 100%.	
Physical state	1	Liquid.		
Frequency and duration of use/exposure	:	Covers exposure up to 4 hours	per day.	
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a good standard of ger hour). (Efficiency of at least 30	y Management System: Advanced. neral ventilation (not less than 3 to 5 air changes per % - Inhalation)	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting present emitting present emitting present emitting present emitting present emitted and an emitted an emitted and an emitted an emitted and an emitted an emitted and an emitted and an emitted and an emitted and an emitted an emitted and an emitted and an emitted an emitted an emitted an emitted and an emitted and an emitted an emitted an emitted an emitted an emitted and an emitted and an emitted an	osed. oocess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. /giene.	
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation	
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields et contact. contact with eyes. Wash off any skin contamination	

Section 3 - Exposure estimation and reference to its source

Exposure estimation and re	ference to its source - Environment: 1: Manufacture of substance
Exposure assessment (environment):	: EUSES 2.1.2
Exposure estimation	: Freshwater: 0.00954mg/l. Risk characterisation ratio (PEC/PNEC): 0.017.
	Freshwater sediment: 0.036 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Marine water: 0.000901 mg/l. Risk characterisation ratio (PEC/PNEC): 0.016.
	Marine water sediment: 0.00339 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Sewage Treatment Plant: 0.014 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.
	Soil: 0.00732 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Air: 0.00000485 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.
Remark	: Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR < 1).
Exposure estimation and re	ference to its source - Workers: 2: Chemical production or refinery in closed
process without likelihood o Exposure assessment (human):	of exposure or processes with equivalent containment conditions : ECETOC TRA worker v3
Exposure estimation	: Worker - inhalative, long-term - systemic: 0.043 mg/m ³ . Risk characterisation ratio: <0.01.
	Worker - dermal, long-term - systemic: 0.034 mg/kg bw/day. Risk characterisation ratio: <0.01.
	Worker - combined, long-term - systemic: <0.01.
Remark	: Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and re continuous process with or	ference to its source - Workers: 3: Chemical production or refinery in closed casional controlled exposure or processes with equivalent containment conditions
Exposure assessment (human):	: ECETOC TRA worker v3
Exposure estimation	: Worker - inhalative, long-term - systemic: 0.43 mg/m ³ . Risk characterisation ratio: 0.028.
	Worker - dermal, long-term - systemic: 0.137 mg/kg bw/day. Risk characterisation ratio: 0.012.
	Worker - combined, long-term - systemic: 0.04.
Remark	: Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).

Diethylenetriamine, DETA		Exposure Scenario: 1	Manufacture of substance - Industrial.		
Exposure estimation and reference to its source - Workers: 4: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition					
Exposure assessment (human):	:	ECETOC TRA worker v3	ECETOC TRA worker v3		
Exposure estimation	:	Norker - inhalative, long-term - systemic: 12.9 mg/m³. Risk characterisation ratio: 0.837.			
		Norker - dermal, long-term - systemic: 0.069 mg/kg bw/day. Risk characterisation ratio: <0.01.			
		Worker - combined, long-terr	n - systemic: 0.843.		
Remark	:	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR		
Exposure estimation and refe exposure arises	re	nce to its source - Workers: 5	: Chemical production where opportunity for		
Exposure assessment (human):	:	ECETOC TRA worker v3			
Exposure estimation	:	Worker - inhalative, long-terr Risk characterisation ratio: 0.14	n - systemic: 2.149 mg/m³. 4.		
		Worker - dermal, long-term - Risk characterisation ratio: 0.06	systemic: 0.686 mg/kg bw/day. 5.		
		Worker - combined, long-terr	n - systemic: 0.2.		
Remark	:	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR		
Exposure estimation and refe discharging) at non-dedicated	rei d fa	nce to its source - Workers: 6 acilities (indoor)	: Transfer of substance or mixture (charging and		
Exposure assessment (human):	:	ECETOC TRA worker v3			
Exposure estimation	:	Worker - inhalative, long-terr Risk characterisation ratio: 0.2	n - systemic: 4.299 mg/m³. 79.		
		Worker - dermal, long-term - Risk characterisation ratio: 0.12	systemic: 1.371 mg/kg bw/day. 2.		
		Worker - combined, long-terr	n - systemic: 0.399.		
Remark	:	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR		
Exposure estimation and refe discharging) at non-dedicated	re d fa	nce to its source - Workers: 7 acilities (outdoor)	: Transfer of substance or mixture (charging and		
Exposure assessment (human):	:	ECETOC TRA worker v3			
Exposure estimation	:	Worker - inhalative, long-terr Risk characterisation ratio: 0.39	n - systemic: 6.018 mg/m³. 91.		
		Worker - dermal, long-term - Risk characterisation ratio: 0.12	systemic: 1.371 mg/kg bw/day. 2.		
		Worker - combined, long-terr	n - systemic: 0.511.		
Remark	:	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR		

Diethylenetriamine, DETA	Exposure Scenario: 1 Manufacture of substance - Industrial	Ι.
Exposure estimation and ref discharging) at dedicated fac	e to its source - Workers: 8: Transfer of substance or mixture (cha	arging and
Exposure assessment (human):	CETOC TRA worker v3	
Exposure estimation	/orker - inhalative, long-term - systemic: 9.027 mg/m³. .isk characterisation ratio: 0.586.	
	/orker - dermal, long-term - systemic: 1.371 mg/kg bw/day. isk characterisation ratio: 0.12.	
	/orker - combined, long-term - systemic: 0.706.	
Remark	ased on the applied RMMs the risk towards humans is sufficiently cont 1).	rolled (RCR
Exposure estimation and ref	e to its source - Workers: 9: Use as laboratory reagent	
Exposure assessment (human):	CETOC TRA worker v3	
Exposure estimation	<i>l</i> orker - inhalative, long-term - systemic: 9.027 mg/m³. .isk characterisation ratio: 0.586.	
	/orker - dermal, long-term - systemic: 0.034 mg/kg bw/day. isk characterisation ratio: <0.01.	
	/orker - combined, long-term - systemic: 0.589.	
Remark	ased on the applied RMMs the risk towards humans is sufficiently cont 1).	rolled (RCR

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

General	:	The immediate downstream user is required to evaluate whether the operational conditions and risk management measures described in the exposure scenario fit to his use. If other OC/RMM are adopted, the user has to ensure that risks are managed to at least equivalent levels. The risk assessment methods/tools given in section 3 may be used for this evaluation.
Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.



Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture **Product definition** : Mono-constituent substance Product name : Diethylenetriamine, DETA Section 1 - Title Short title of the exposure : Formulation and (re)packing of substances and mixtures - Industrial. scenario List of use descriptors : Identified use name: ES2: Formulation and (re)packing of substances and mixtures -Industrial: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15; ERC02 Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15 Subsequent service life relevant for that use: No. Environmental Release Category: ERC02 Market sector by type of chemical product: PC01 : Formulation and (re)packing of substances and mixtures - ERC02 **Environmental contributing** scenarios **Health Contributing** : Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions - PROC01 scenarios Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions -PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03 Chemical production where opportunity for exposure arises - PROC04 Chemical production where opportunity for exposure arises (AEROSOLS) -PROC04 Mixing or blending in batch processes - PROC05 Mixing or blending in batch processes (AEROSOLS) - PROC05 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (indoor) - PROC08a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (outdoor) - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (indoor) - PROC09 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (outdoor) - PROC09 Use as laboratory reagent - PROC15 Number of the ES : 2

Section 2 - Exposure controls

Contributing scenario contro mixtures	ng environmental exp	osure for 1: Formulation and (re)packing	g of su	bstance	es and
Amounts used	Daily amount per site Annual amount per si	: ≤195.5 tonnes/day (Msperc). ite: ≤43000 tonnes/year.				
Frequency and duration of use	Emission days: 220 d	ays per year.				
Environment factors not influenced by risk management	Receiving surface wa	ter flow: ≥18000 m³/d.				
Date of issue/Date of revision	: 26/01/2018		Version	: 12	/ en	34/130

Diethylenetriamine, DETA		Exposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
Other conditions affecting environmental exposure	:	Release to waste water from pr Release factor after on-site risk	rocess: r management: 0%. (FEICA 2.1b.v2)
		Release to air from process: Release factor after on-site risk Local release rate: 234.6 kg/da	management: 0.12%. (FEICA 2.1b.v2) y.
		Release to soil from process: Release factor after on-site risk	management: 0%. (FEICA 2.1b.v2)
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Solvent-based process. (FEICA Equipment cleaned with organic solvent waste. (FEICA) Process with efficient use of ray	v) c solvent, washings are collected and disposed of as v materials. (FEICA)
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. Discharge rate: ≥2000 m³/d. Application of the STP sludge of	(Efficiency of at least 87.34%) on agricultural soil: Yes.
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the	waste treatment operations.
Contributing scenario control without likelihood of exposur	llin e o	g worker exposure for 2: Che r processes with equivalent c	mical production or refinery in closed process ontainment conditions
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pri- Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in place Training for staff on good prace Good standard of personal hyperiod 	used. ocess. on. tilation. s. ed tools and objects et and work area. ace to check that the RMMs in place are being used ctice. giene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	s (tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
Contributing scenario controlling worker exposure for 3: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions			
Concentration of substance in mixture or article	:	Covers percentage substanc	e in the product up to 100%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	1	Covers daily exposures up to	8 hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Saf Provide a basic standard of g	ety Management System: Advanced. eneral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 	
Conditions and measures related to personal protection, hygiene and health evaluation			
Personal protection	:	Wear chemical-resistant glov employee training. (Efficiency Skin coverage with appropria the chemicals. Wear chemically resistant fac when there is potential for dir Avoid contact with skin. Avoid immediately.	es (tested to EN374) in combination with 'basic' of at least 90%) te barrier material based on potential for contact with se shield, goggles or safety glasses with side shields ect contact. contact with eyes. Wash off any skin contamination
Contributing scenario controlling worker exposure for 4: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition			
Concentration of substance in mixture or article	:	Covers percentage substanc	e in the product up to 100%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to	8 hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Saf Provide a basic standard of g	ety Management System: Advanced. eneral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate Minimise number of staff ex Segregation of the emitting Effective contaminant extract Good standard of general v Minimisation of manual pha Avoid contact with contamin Regular cleaning of equipm Management/supervision in correctly and OCs followed. 	n posed. process. stion. entilation. ses. ated tools and objects ent and work area. place to check that the RMMs in place are being used
Diethylenetriamine, DETA	Exposure Scenario: 2 Formulation and (re)packing of substances an mixtures - Industrial.		
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		 Training for staff on good prace Good standard of personal hy 	stice. giene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals.	(tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with
		Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 5: Che	mical production where opportunity for exposure
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger Local exhaust ventilation - effici	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour). ency of at least 90% (Inhalation).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pri- Effective contaminant extraction Good standard of general verices Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipment Management/supervision in plicorrectly and OCs followed. Training for staff on good prace Good standard of personal hypervisional hypervisi	used. ocess. on. tilation. s. ed tools and objects at and work area. ace to check that the RMMs in place are being used ctice. giene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	(tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Contributing scenario contro arises (AEROSOLS)	llin	g worker exposure for 6: Che	mical production where opportunity for exposure
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 37/130

Diethylenetriamine, DETA		Exposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Provide a basic standard of gen Local exhaust ventilation - efficient	/ Management System: Advanced. eral ventilation (1 to 3 air changes per hour). ency of at least 90% (Inhalation).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff expo Segregation of the emitting pro Effective contaminant extraction Good standard of general ven Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in pl correctly and OCs followed. Training for staff on good prace Good standard of personal hyperiod 	sed. ocess. on. tilation. s. ed tools and objects t and work area. ace to check that the RMMs in place are being used tice. giene.
Conditions and measures rela	ate	d to personal protection, hygic	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency o Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	(tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Contributing scenario control	llin	g worker exposure for 7: Mixi	ng or blending in batch processes
Concentration of substance in mixture or article	:	Covers percentage substance in	n the product up to 100%.
Physical state	4	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Provide a basic standard of gen Local exhaust ventilation - efficient	/ Management System: Advanced. eral ventilation (1 to 3 air changes per hour). ency of at least 90% (Inhalation).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff expo Segregation of the emitting pro Effective contaminant extraction Good standard of general ven Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in place Correctly and OCs followed. Training for staff on good prace Good standard of personal hypervision 	sed. ocess. on. tilation. s. ed tools and objects t and work area. ace to check that the RMMs in place are being used tice. giene.
Conditions and measures rela	ate	d to personal protection, hygic	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to B Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 2	Formulation and (re) mixtures - Industrial.	packing o	fsubs	stances	and
Contributing scenario contro	llin	g worker exposure for 8: I	lixing or blending in bate	ch proces	ses (A	EROS	OLS)
Concentration of substance in mixture or article	:	Covers percentage substan	ce in the product up to 100)%.			
Physical state	1	Liquid.					
Frequency and duration of use/exposure	-	Covers daily exposures up t	o 8 hours.				
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °	C.				
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Sa Provide a basic standard of Local exhaust ventilation - e	fety Management System general ventilation (1 to 3 fficiency of at least 90% (Ir	: Advanceo air change nhalation).	d. s per l	hour).	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate Minimise number of staff et Segregation of the emitting Effective contaminant extrate Good standard of general Minimisation of manual ph Avoid contact with contame Regular cleaning of equipte Management/supervision is correctly and OCs followed Training for staff on good personal 	te. xposed. g process. action. ventilation. ases. inated tools and objects nent and work area. n place to check that the F practice. I hygiene.	RMMs in pla	ace ar	e being	used
Conditions and measures rel	ate	d to personal protection, h	ygiene and health evalua	ation			
Personal protection	:	Wear suitable gloves tested Skin coverage with appropriate the chemicals. Wear chemically resistant far when there is potential for d Avoid contact with skin. Avo immediately.	to EN374. (Efficiency of a ate barrier material based ace shield, goggles or safe irect contact. id contact with eyes. Wash	t least 80% on potentia ty glasses off any sk	al for o with s in con	contact ide shie taminat	with Ids ion
Contributing scenario contro discharging) at non-dedicate	ollin d fa	g worker exposure for 9:] acilities (indoor)	ransfer of substance or	mixture (d	chargi	ng and	
Concentration of substance in mixture or article	:	Covers percentage substan	ce in the product up to 100)%.			
Physical state	:	Liquid.					
Frequency and duration of use/exposure	-	Covers daily exposures up t	o 8 hours.				
Other conditions affecting workers exposure	-	Indoor use. Process temperature: ≤40 °	C.				
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Sa Provide a basic standard of	afety Management System general ventilation (1 to 3	: Advanceo air change	d. s per l	hour).	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropria Minimise number of staff e Segregation of the emitting Effective contaminant extra Good standard of general Minimisation of manual ph Avoid contact with contam Regular cleaning of equipp Management/supervision i correctly and OCs followed Training for staff on good p Good standard of personal 	te. xposed. p process. action. ventilation. ases. nated tools and objects nent and work area. n place to check that the F practice. I hygiene.	RMMs in pla	ace ar	e being	used
Conditions and measures rel	ate	d to personal protection, h	ygiene and health evalua	ation			
Date of issue/Date of revision		: 26/01/2018		Version	: 12	/ en	39/130

Diethylenetriamine, DETA		Exposure Scenario: 2	Formulation and (re)packing of substances mixtures - Industrial.	and
Personal protection	:	Wear suitable gloves tested to EN374. (Efficiency of at least 80%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination		vith ds on
Respiratory protection	:	Respiratory protection (Efficier	ncy of at least 90%).	
Contributing scenario contro discharging) at non-dedicate	llin d fa	g worker exposure for 10: Tr acilities (outdoor)	ransfer of substance or mixture (charging and	l
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 100%.	
Physical state	1	Liquid.		
Frequency and duration of use/exposure	1	Covers exposure up to 1 hours	s per day.	
Other conditions affecting workers exposure	1	Outdoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safe	ty Management System: Advanced.	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exp Segregation of the emitting p Effective contaminant extract Good standard of general ve Minimisation of manual phase Avoid contact with contaminat Regular cleaning of equipme Management/supervision in p correctly and OCs followed. Training for staff on good pratication of personal h 	nosed. process. tion. entilation. es. ated tools and objects ent and work area. place to check that the RMMs in place are being u actice. hygiene.	ısed
Conditions and measures rel	ate	d to personal protection, hyg	jiene and health evaluation	
Personal protection	:	Wear chemical-resistant glove employee training. (Efficiency Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for dire Avoid contact with skin. Avoid o immediately.	es (tested to EN374) in combination with 'basic' of at least 90%) e barrier material based on potential for contact w e shield, goggles or safety glasses with side shield act contact. contact with eyes. Wash off any skin contamination	<i>v</i> ith ds on
Contributing scenario contro discharging) at dedicated fac	llin iliti	g worker exposure for 11: Tr es	ransfer of substance or mixture (charging and	l
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 100%.	
Physical state	4	Liquid.		
Frequency and duration of use/exposure	1	Covers exposure up to 4 hours	s per day.	
Other conditions affecting workers exposure	1	Outdoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safe	ty Management System: Advanced.	
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en	40/130

Diethylenetriamine, DETA		Exposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting prise Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipment Management/supervision in plicorrectly and OCs followed. Training for staff on good prace Good standard of personal hypervisional hy	used. ocess. on. tilation. s. ed tools and objects et and work area. ace to check that the RMMs in place are being used stice. giene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	s (tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Contributing scenario control containers (dedicated filling l	llin ine	g worker exposure for 12: Tra , including weighing) (indoor)	ansfer of substance or mixture into small
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.
Physical state	÷	Liquid.	
Frequency and duration of use/exposure	-	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of gen Local exhaust ventilation - effici	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour). ency of at least 90% (Inhalation).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting prise Effective contaminant extraction Good standard of general veries Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipmer Management/supervision in plicorrectly and OCs followed. Training for staff on good prace Good standard of personal hyperistical provides 	used. ocess. on. tilation. s. ed tools and objects at and work area. ace to check that the RMMs in place are being used otice. giene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid contact immediately.	s (tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
Contributing scenario contro containers (dedicated filling	ollin line	g worker exposure for 13: Tr , including weighing) (outdoo	ansfer of substance or mixture into small or)
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 100%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 4 hours	s per day.
Other conditions affecting workers exposure	:	Outdoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	-	Occupational Health and Safet	ty Management System: Advanced.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exports Segregation of the emitting provide the emittin	osed. rocess. ion. ntilation. es. ted tools and objects nt and work area. place to check that the RMMs in place are being used ctice. ygiene.
Conditions and measures rel	ate	d to personal protection, hygi	iene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) e barrier material based on potential for contact with e shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	ollin	g worker exposure for 14: Us	se as laboratory reagent
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 100%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 4 hours	s per day.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a good standard of ger hour). (Efficiency of at least 30	ty Management System: Advanced. neral ventilation (not less than 3 to 5 air changes per % - Inhalation)
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exports Segregation of the emitting presentation of the emitting presentation of the emitting presentation of the sentence of the second standard of general veres Minimisation of manual phase Avoid contact with contamination of equipment Regular cleaning of equipment Management/supervision in present of the second standard of personal hyperistical standard of personal hyperistical standard of the second standard second second	osed. rocess. ion. ntilation. es. ted tools and objects nt and work area. olace to check that the RMMs in place are being used ctice. ygiene.
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 42/130

Diethylenetriamine, DETA	Exposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
Conditions and measures rela	ted to personal protection, hy	giene and health evaluation
Personal protection	: Wear chemical-resistant glov employee training. (Efficienc Skin coverage with appropria the chemicals. Wear chemically resistant fa when there is potential for din Avoid contact with skin. Avoid immediately.	ves (tested to EN374) in combination with 'basic' y of at least 90%) ate barrier material based on potential for contact with ce shield, goggles or safety glasses with side shields rect contact. d contact with eyes. Wash off any skin contamination

Section 3 - Exposure estimation and reference to its source

Exposure estimation and read and mixtures	ference to its source - Environment: 1: Formulation and (re)packing of substances
Exposure assessment (environment):	: EUSES 2.1.2
Exposure estimation	: Freshwater: 0.00818mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.
	Freshwater sediment: 0.031 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Marine water: 0.000765 mg/l. Risk characterisation ratio (PEC/PNEC): 0.014.
	Marine water sediment: 0.00288 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Sewage Treatment Plant: 0 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.
	Soil: 0.018 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Air: 0.039 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.
Remark	: Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR < 1).
Exposure estimation and reprocess without likelihood	ference to its source - Workers: 2: Chemical production or refinery in closed
Exposure assessment (human):	: ECETOC TRA worker v3
Exposure estimation	: Worker - inhalative, long-term - systemic: 0.043 mg/m ³ . Risk characterisation ratio: <0.01.
	Worker - dermal, long-term - systemic: 0.0034 mg/kg bw/day. Risk characterisation ratio: <0.01.
	Worker - combined, long-term - systemic: <0.01.
Remark	: Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).

Diethylenetriamine, DETA		Exposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
Exposure estimation and refe continuous process with occ	ere asi	nce to its source - Workers: 3: onal controlled exposure or p	Chemical production or refinery in closed rocesses with equivalent containment conditions
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.27	n - systemic: 4.299 mg/m³. ′9.
		Worker - dermal, long-term - s Risk characterisation ratio: 0.01	systemic: 0.137 mg/kg bw/day. 2.
		Worker - combined, long-tern	n - systemic: 0.291.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe industry in closed batch proc containment condition	ere es	nce to its source - Workers: 4: ses with occasional controlled	Manufacture or formulation in the chemical exposure or processes with equivalent
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.83	n - systemic: 12.9 mg/m³. 67.
		Worker - dermal, long-term - Risk characterisation ratio: <0.0	systemic: 0.069 mg/kg bw/day.)1.
		Worker - combined, long-tern	n - systemic: 0.843.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe exposure arises	ere	nce to its source - Workers: 5:	Chemical production where opportunity for
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	1	Worker - inhalative, long-tern Risk characterisation ratio: 0.14	n - systemic: 2.149 mg/m³.
		Worker - dermal, long-term - s Risk characterisation ratio: 0.06	systemic: 0.686 mg/kg bw/day. 5.
		Worker - combined, long-tern	n - systemic: 0.2.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe exposure arises (AEROSOLS	ere)	nce to its source - Workers: 6:	Chemical production where opportunity for
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.57	n - local: 0.5 mg/m³. ′5.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR

Diethylenetriamine, DETA	E	xposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
Exposure estimation and re	ference	e to its source - Workers	s: 7: Mixing or blending in batch processes
Exposure assessment (human):	: E	CETOC TRA worker v3	
Exposure estimation	: W R	term - systemic: 2.149 mg/m³. 0.14.	
	W R	/orker - dermal, long-ter isk characterisation ratio:	m - systemic: 2.742 mg/kg bw/day. 0.241.
	W	/orker - combined, long-	term - systemic: 0.38.
Remark	: Ba <	ased on the applied RMM 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re (AEROSOLS)	ference	e to its source - Workers	s: 8: Mixing or blending in batch processes
Exposure assessment (human):	: E	SIG ESVOC 3	
Exposure estimation	: W R	'orker - inhalative, long- isk characterisation ratio:	term - local: 0.5 mg/m³. 0.575.
Remark	: Ba <	ased on the applied RMM 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re discharging) at non-dedicat	ference ed faci	∍ to its source - Workers lities (indoor)	s: 9: Transfer of substance or mixture (charging and
Exposure assessment (human):	: E	CETOC TRA worker v3	
Exposure estimation	: W R	'orker - inhalative, long- isk characterisation ratio:	term - systemic: 4.299 mg/m³. 0.279.
	W R	/orker - dermal, long-ter isk characterisation ratio:	m - systemic: 2.742 mg/kg bw/day. 0.241.
	W	/orker - combined, long-	term - systemic: 0.52.
Remark	: Ba <	ased on the applied RMM 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re discharging) at non-dedicat	ference ed faci	३ to its source - Workers lities (outdoor)	s: 10: Transfer of substance or mixture (charging and
Exposure assessment (human):	: E	CETOC TRA worker v3	
Exposure estimation	: W R	<pre>/orker - inhalative, long- isk characterisation ratio:</pre>	term - systemic: 6.018 mg/m³. 0.391.
	W R	'orker - dermal, long-ter isk characterisation ratio:	m - systemic: 1.371 mg/kg bw/day. 0.12.
	W	orker - combined, long-	term - systemic: 0.511.
Remark	: Ba <	ased on the applied RMM 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re discharging) at dedicated fa	ference acilities	e to its source - Workers	s: 11: Transfer of substance or mixture (charging and
Exposure assessment (human):	: E	CETOC TRA worker v3	

Diethylenetriamine, DETA		Exposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
Exposure estimation	:	Worker - inhalative, long-term Risk characterisation ratio: 0.58	n - systemic: 9.027 mg/m³. 36.
		Worker - dermal, long-term - Risk characterisation ratio: 0.12	systemic: 1.371 mg/kg bw/day. 2.
		Worker - combined, long-terr	n - systemic: 0.706.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe containers (dedicated filling	ere: line	nce to its source - Workers: 12 , including weighing) (indoor)	2: Transfer of substance or mixture into small
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.14	n - systemic: 2.149 mg/m³. I.
		Worker - dermal, long-term - Risk characterisation ratio: 0.06	systemic: 0.686 mg/kg bw/day. 6.
		Worker - combined, long-terr	n - systemic: 0.2.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe containers (dedicated filling	ere: line	nce to its source - Workers: 13 , including weighing) (outdoo	3: Transfer of substance or mixture into small r)
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.58	n - systemic: 9.027 mg/m³. 36.
		Worker - dermal, long-term - Risk characterisation ratio: 0.06	systemic: 0.686 mg/kg bw/day. 6.
		Worker - combined, long-terr	n - systemic: 0.646.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe	ere	nce to its source - Workers: 14	4: Use as laboratory reagent
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-term Risk characterisation ratio: 0.58	n - systemic: 9.027 mg/m³. 36.
		Worker - dermal, long-term - Risk characterisation ratio: <0.0	systemic: 0.034 mg/kg bw/day.)1.
		Worker - combined, long-terr	n - systemic: 0.589.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR

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

Diethylenetriamine, DETA	Exposure Scenario: 2	Formulation and (re)packing of substances and mixtures - Industrial.
General	: The immediate downstrear conditions and risk manage his use. If other OC/RMM a managed to at least equiva section 3 may be used for t	n user is required to evaluate whether the operational ement measures described in the exposure scenario fit to re adopted, the user has to ensure that risks are lent levels. The risk assessment methods/tools given in this evaluation.
Environment	: Guidance is based on assu all sites; thus, scaling may management measures. F provided in SpERC factshe	med operating conditions which may not be applicable to be necessary to define appropriate site-specific risk urther details on scaling and control technologies are et (http://cefic.org/en/reach-for-industries-libraries.html).



Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture **Product definition** : Mono-constituent substance Product name : Diethylenetriamine, DETA Section 1 - Title Short title of the exposure : Use at industrial sites - Use as an intermediate. scenario : Identified use name: ES3: Use at industrial sites - Use as an intermediate: PROC01. List of use descriptors PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15; ERC06a Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC15 Subsequent service life relevant for that use: No. Environmental Release Category: ERC06a : Use of intermediate - ERC06a **Environmental contributing** scenarios **Health Contributing** : Chemical production or refinery in closed process without likelihood of scenarios exposure or processes with equivalent containment conditions - PROC01 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions -PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03 Chemical production where opportunity for exposure arises - PROC04 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (indoor) - PROC08a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (outdoor) - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Use as laboratory reagent - PROC15 Number of the ES : 3

Section 2 - Exposure controls

Contributing scenario contro	olling environmental exposure for 1: Use of intermediate		
Amounts used	: Daily amount per site: ≤143.3 tonnes/day. Annual amount per site: ≤43000 tonnes/year.		
Frequency and duration of use	Emission days: ≥300 days per year.		
Environment factors not influenced by risk management	: Receiving surface water flow: ≥18000 m³/d.		
Other conditions affecting environmental exposure	: Release to waste water from process: Release factor after on-site risk management: 0.02%. (SpERC ESVOC 6.1a.v1) Local release rate: 28.67 kg/day.		
	Release to air from process: Release factor after on-site risk management: 0.002%. (SpERC ESVOC 6.1a.v1) Local release rate: 2.867 kg/day.		
	Release to soil from process: Release factor after on-site risk management: 0.002%. (SpERC ESVOC 6.1a.v1)		
Date of issue/Date of revision	: 26/01/2018 Version : 12 / en 48/13		

Diethylenetriamine, DETA		Exposure Scenario: 3	Use at industrial sites - Use as an intermediate.	
Organisational measures to prevent/limit release from site	:	General good practice: Trained Site should have a spill plan to minimise the impact of episodic	staff, spill protection including waste reuse. ensure that adequate safeguards are in place to releases.	
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. (Efficiency of at least 87.34%) Discharge rate: ≥2000 m³/d. Application of the STP sludge on agricultural soil: Yes.		
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the waste treatment operations. Dispose of waste product or used containers according to local regulations.		
Contributing scenario control without likelihood of exposure	lin a c	g worker exposure for 2: Che r processes with equivalent c	mical production or refinery in closed process ontainment conditions	
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.	
Physical state	:	Liquid.		
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.	
Other conditions affecting workers exposure	÷	Indoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour).	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pri- Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipmer Management/supervision in plicorrectly and OCs followed. Training for staff on good prace Good standard of personal hypervisional hype	ocess. on. tilation. s. ed tools and objects at and work area. ace to check that the RMMs in place are being used ctice. giene.	
Conditions and measures rela	ite	d to personal protection, hygi	ene and health evaluation	
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	(tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination	
Contributing scenario control process with occasional cont	lin rol	g worker exposure for 3: Che led exposure or processes wi	mical production or refinery in closed continuous the equivalent containment conditions	
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.	
Physical state	:	Liquid.		
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.	
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour).	
Date of issue/Date of revision		: 26/01/2018	Version 12 / en 40/130	

Diethylenetriamine, DETA		Exposure Scenario: 3	Use at industrial sites - Use as an intermediate.	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 		
Conditions and measures rela Personal protection	ate :	d to personal protection, hygi Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	ene and health evaluation s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields at contact. ontact with eyes. Wash off any skin contamination	
Contributing scenario control closed batch processes with condition	llir oc	g worker exposure for 4: Man casional controlled exposure	ufacture or formulation in the chemical industry in or processes with equivalent containment	
Concentration of substance in mixture or article	:	Covers percentage substance i	in the product up to 100%.	
Physical state	÷	Liquid.		
Frequency and duration of use/exposure	1	Covers daily exposures up to 8	hours.	
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour).	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting presentation of the emitting presentation. Effective contaminant extraction. Good standard of general vertex. Minimisation of manual phase. Avoid contact with contaminate. Regular cleaning of equipment. Management/supervision in place. Training for staff on good prace. Good standard of personal hypersection. 	osed. ocess. on. ntilation. es. ed tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. giene.	
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation	
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields at contact. ontact with eyes. Wash off any skin contamination	

Diethylenetriamine, DETA	Exposure Scenario: 3 Use at industrial sites - Use as an inter	rmediate.			
Contributing scenario controlling worker exposure for 5: Chemical production where opportunity for exposure arises					
Concentration of substance in mixture or article	Covers percentage substance in the product up to 100%.				
Physical state	_iquid.				
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours.				
Other conditions affecting workers exposure	ndoor use. Process temperature: ≤40 °C.				
Technical conditions and measures to control dispersion from source towards the worker	Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Local exhaust ventilation - efficiency of at least 90% (Inhalation).				
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are b correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 	being used			
Conditions and measures rel	to personal protection, hygiene and health evaluation				
Personal protection	Wear chemical-resistant gloves (tested to EN374) in combination with 'bas employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for con the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contan immediately.	ntact with shields nination			
Contributing scenario contro discharging) at non-dedicated	worker exposure for 6: Transfer of substance or mixture (charging cilities (indoor)	l and			
Concentration of substance in mixture or article	Covers percentage substance in the product up to 100%.				
Physical state	_iquid.				
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours.				
Other conditions affecting workers exposure	ndoor use. Process temperature: ≤40 °C.				
Technical conditions and measures to control dispersion from source towards the worker	Dccupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hou	ur).			
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are b correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 	being used			
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Diethylenetriamine, DETA		Exposure Scenario: 3	Use at industrial sites - Use as an intermediate.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	 Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately. 	
Respiratory protection	:	Respiratory protection (Efficient	cy of at least 90%).
Contributing scenario contro discharging) at non-dedicate	llin d fa	g worker exposure for 7: Trai acilities (outdoor)	nsfer of substance or mixture (charging and
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 1 hours	per day.
Other conditions affecting workers exposure	:	Outdoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet	y Management System: Advanced.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exports Segregation of the emitting presentation of	osed. ocess. on. tilation. s. ed tools and objects at and work area. ace to check that the RMMs in place are being used otice. giene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	s (tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Contributing scenario contro discharging) at dedicated fac	llir ilit	g worker exposure for 8: Trai ies	nsfer of substance or mixture (charging and
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.
Physical state	4	Liquid.	
Frequency and duration of use/exposure	1	Covers exposure up to 4 hours	per day.
Other conditions affecting workers exposure	:	Outdoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet	y Management System: Advanced.
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 52/130

Diethylenetriamine, DETA		Exposure Scenario: 3	Use at industrial sites - Use as an intermediate.		
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 			
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation		
Personal protection	:	wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination		
Contributing scenario contro	llin	g worker exposure for 9: Use	as laboratory reagent		
Concentration of substance in mixture or article	-	Covers percentage substance	in the product up to 100%.		
Physical state	÷		a an darr		
use/exposure	•	Covers exposure up to 4 nours	per day.		
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.			
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a good standard of ger hour). (Efficiency of at least 30 ⁶	y Management System: Advanced. neral ventilation (not less than 3 to 5 air changes per % - Inhalation)		
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pre- Effective contaminant extractions Good standard of general vert Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in pre- correctly and OCs followed. Training for staff on good prace Good standard of personal hypervision in pre- constant of personal hypervision in personal hypervis	osed. oocess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. /giene.		
Conditions and measures rela	Conditions and measures related to personal protection, hygiene and health evaluation				
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid of immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination		

Section 3 - Exposure estimation and reference to its source

Exposure estimation and ref	ference to its source - Environment: 1: Use of intermediate			
Exposure assessment (environment):	: EUSES 2.1.2			
Exposure estimation	: Freshwater: 0.19 mg/l. Risk characterisation ratio (PEC/PNEC): 0.339. Freshwater sediment: 0.713 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.			
	Marine water: 0.019 mg/l. Risk characterisation ratio (PEC/PNEC): 0.338.			
	Marine water sediment: 0.071 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.			
	Sewage Treatment Plant: 1.814 mg/l. Risk characterisation ratio (PEC/PNEC): 0.302.			
	Soil: 0.014 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.			
	Air: 0.000657 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.			
Remark	: Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR < 1).			
Exposure estimation and ref	ference to its source - Workers: 2: Chemical production or refinery in closed			
Exposure assessment	: ECETOC TRA worker v3			
Exposure estimation	: Worker - inhalative, long-term - systemic: 0.043 mg/m ³ . Risk characterisation ratio: <0.01.			
	Worker - dermal, long-term - systemic: 0.0034 mg/kg bw/day. Risk characterisation ratio: <0.01.			
	Worker - combined, long-term - systemic: <0.01.			
Remark	 Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1). 			
Exposure estimation and ref	ference to its source - Workers: 3: Chemical production or refinery in closed			
Exposure assessment (human):	: ECETOC TRA worker v3			
Exposure estimation	: Worker - inhalative, long-term - systemic: 4.299 mg/m ³ . Risk characterisation ratio: 0.279.			
	Worker - dermal, long-term - systemic: 0.137 mg/kg bw/day. Risk characterisation ratio: 0.012.			
	Worker - combined, long-term - systemic: 0.291.			
Remark	: Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).			

Diethylenetriamine, DETA		Exposure Scenario: 3	Use at industrial sites - Use as an intermediate.	
Exposure estimation and reference to its source - Workers: 4: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition				
Exposure assessment (human):	:	ECETOC TRA worker v3		
Exposure estimation	:	Worker - inhalative, long-term - systemic: 12.9 mg/m ³ . Risk characterisation ratio: 0.837.		
		Worker - dermal, long-term - Risk characterisation ratio: <0.0	systemic: 0.069 mg/kg bw/day.)1.	
		Worker - combined, long-terr	n - systemic: 0.843.	
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR	
Exposure estimation and refe exposure arises	re	nce to its source - Workers: 5:	Chemical production where opportunity for	
Exposure assessment (human):	:	ECETOC TRA worker v3		
Exposure estimation	:	Worker - inhalative, long-term Risk characterisation ratio: 0.14	n - systemic: 2.149 mg/m³. 4.	
		Worker - dermal, long-term - Risk characterisation ratio: 0.06	systemic: 0.686 mg/kg bw/day. 6.	
		Worker - combined, long-terr	n - systemic: 0.2.	
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR	
Exposure estimation and refe discharging) at non-dedicated	ere d fa	nce to its source - Workers: 6: acilities (indoor)	Transfer of substance or mixture (charging and	
Exposure assessment (human):	:	ECETOC TRA worker v3		
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.27	n - systemic: 4.299 mg/m³. 79.	
		Worker - dermal, long-term - Risk characterisation ratio: 0.12	systemic: 1.371 mg/kg bw/day. 2.	
		Worker - combined, long-terr	n - systemic: 0.399.	
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR	
Exposure estimation and refe discharging) at non-dedicated	ere d fa	nce to its source - Workers: 7: acilities (outdoor)	Transfer of substance or mixture (charging and	
Exposure assessment (human):	:	ECETOC TRA worker v3		
Exposure estimation	:	Worker - inhalative, long-term Risk characterisation ratio: 0.39	n - systemic: 6.018 mg/m³. 91.	
		Worker - dermal, long-term - Risk characterisation ratio: 0.12	systemic: 1.371 mg/kg bw/day. 2.	
		Worker - combined, long-terr	n - systemic: 0.511.	
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR	

Diethylenetriamine, DETA		Exposure Scenario: 3	Use at industrial sites - Use as an intermediate.		
Exposure estimation and reference to its source - Workers: 8: Transfer of substance or mixture (charging and discharging) at dedicated facilities					
Exposure assessment (human):	:	ECETOC TRA worker v3			
Exposure estimation	:	Worker - inhalative, long-te Risk characterisation ratio: 0	e rm - systemic: 9.027 mg/m³. .586.		
		Worker - dermal, long-term Risk characterisation ratio: 0	i - systemic: 1.371 mg/kg bw/day. .12.		
		Worker - dermal, long-term Risk characterisation ratio: 0	i - local: 0.1 mg/cm². .091.		
		Worker - combined, long-te	erm - systemic: 0.706.		
Remark	:	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR		
Exposure estimation and refe	rei	nce to its source - Workers:	9: Use as laboratory reagent		
Exposure assessment (human):	:	ECETOC TRA worker v3			
Exposure estimation	:	Worker - inhalative, long-te Risk characterisation ratio: 0	e rm - systemic: 9.027 mg/m³. .586.		
		Worker - dermal, long-term Risk characterisation ratio: <	i - systemic: 0.068 mg/kg bw/day. 0.01.		
		Worker - combined, long-te	erm - systemic: 0.592.		
Remark	:	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR		

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

General	The immediate downstream user is required to evaluate whether the operational conditions and risk management measures described in the exposure scenario fil his use. If other OC/RMM are adopted, the user has to ensure that risks are managed to at least equivalent levels. The risk assessment methods/tools given i section 3 may be used for this evaluation.	: to n
Environment	Guidance is based on assumed operating conditions which may not be applicable all sites; thus, scaling may be necessary to define appropriate site-specific risk nanagement measures. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.htm	e to I).



Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture **Product definition** : Mono-constituent substance Product name : Diethylenetriamine, DETA Section 1 - Title Short title of the exposure : Use at industrial sites - Use as a polyure than curing agent for rigid foam production. scenario : Identified use name: ES4: Use at industrial sites - Use as a polyurethane curing List of use descriptors agent for rigid foam production: PROC01, PROC02, PROC03, PROC04, PROC05, PROC07, PROC08a, PROC08b, PROC10, PROC13, PROC15; ERC06c, ERC06d Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC07, PROC08a, PROC08b, PROC10, PROC13, PROC15 Subsequent service life relevant for that use: No. Environmental Release Category: ERC06c, ERC06d Use as a polyurethane curing agent for rigid foam production - ERC06c **Environmental contributing** 5 Use as a polyurethane curing agent for rigid foam production - ERC06d scenarios **Health Contributing** : Chemical production or refinery in closed process without likelihood of scenarios exposure or processes with equivalent containment conditions - PROC01 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions -PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03 Chemical production where opportunity for exposure arises - PROC04 Chemical production where opportunity for exposure arises (AEROSOLS) -PROC04 Mixing or blending in batch processes - PROC05 Mixing or blending in batch processes (AEROSOLS) - PROC05 Industrial spraying - PROC07 Industrial spraying (AEROSOLS) - PROC07 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Roller application or brushing - PROC10 Treatment of articles by dipping and pouring - PROC13 Use as laboratory reagent - PROC15 Number of the ES : 4

Section 2 - Exposure controls

Contributing scenario contro foam production	olling environmental exposure for 1: Use as a polyurethane curing agent for rigid
Amounts used	: Daily amount per site: ≤48.2 tonnes/day. Annual amount per site: ≤10644 tonnes/year.
Frequency and duration of use	: Emission days: ≥220 days per year.
Environment factors not influenced by risk management	: Receiving surface water flow: ≥18000 m³/d.

Diethylenetriamine, DETA		Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Other conditions affecting environmental exposure	:	Release to waste water from p Release factor after on-site risk	rocess: c management: 0%. (FEICA SpERC 5.1b.v2)
		Release to air from process: Release factor after on-site risk Local release rate: 819.1 kg/da	x management: 1.7%. (FEICA SpERC 5.1b.v2) ly.
		Release to soil from process: Release factor after on-site risk	x management: 0%. (FEICA SpERC 5.1b.v2)
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	•	Incinerate, absorb, or adsorb va	apours stripped from solution whenever necessary.
Organisational measures to prevent/limit release from site	:	General good practice: Trained Site should have a spill plan to minimise the impact of episodic Storage of finished products in	I staff, spill protection including waste reuse. ensure that adequate safeguards are in place to preleases. closed containers (e.g., bulk tanks, drums, cans).
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. Discharge rate: ≥2000 m³/d. Application of the STP sludge of	(Efficiency of at least 87.34%) on agricultural soil: Yes.
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the Dispose of waste product or us	e waste treatment operations. ed containers according to local regulations.
Contributing scenario control foam production	llin	g environmental exposure for	2: Use as a polyurethane curing agent for rigid
Amounts used	:	Daily amount per site: ≤48.2 to Annual amount per site: ≤1064	nnes/day. 4 tonnes/year.
Frequency and duration of use	:	Emission days: ≥220 days per y	/ear.
Environment factors not influenced by risk management	:	Receiving surface water flow: ≥	:18000 m³/d.
Other conditions affecting environmental exposure	:	Release to waste water from pr Release factor after on-site risk	rocess: a management: 0%. (FEICA SpERC 5.1b.v2)
		Release to air from process: Release factor after on-site risk Local release rate: 819.1 kg/da	x management: 1.7%. (FEICA SpERC 5.1b.v2) y.
		Release to soil from process: Release factor after on-site risk	a management: 0%. (FEICA SpERC 5.1b.v2)
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Incinerate, absorb, or adsorb va	apours stripped from solution whenever necessary.
Organisational measures to prevent/limit release from site	:	General good practice: Trained Site should have a spill plan to minimise the impact of episodic Storage of finished products in	l staff, spill protection including waste reuse. ensure that adequate safeguards are in place to preleases. closed containers (e.g., bulk tanks, drums, cans).
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. Discharge rate: ≥2000 m ³ /d. Application of the STP sludge of	(Efficiency of at least 87.34%)
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the Dispose of waste product or us	e waste treatment operations. ed containers according to local regulations.

Diethylenetriamine, DETA		Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Contributing scenario contro without likelihood of exposu	ollin re c	g worker exposure for 3: Chorrecter and the second se	emical production or refinery in closed process containment conditions
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	3 hours.
Other conditions affecting workers exposure	-	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safe Provide a basic standard of ge	ty Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exp Segregation of the emitting p Effective contaminant extract Good standard of general ve Minimisation of manual phase Avoid contact with contaminat Regular cleaning of equipme Management/supervision in p correctly and OCs followed. Training for staff on good pra Good standard of personal h 	osed. rocess. ion. ntilation. es. ted tools and objects int and work area. place to check that the RMMs in place are being used place to check that the RMMs in place are being used
Conditions and measures rel	ate	d to personal protection, hyg	iene and health evaluation
Personal protection	:	Wear chemical-resistant glove employee training. (Efficiency Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for dire Avoid contact with skin. Avoid o immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) e barrier material based on potential for contact with e shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	ollin trol	g worker exposure for 4: Che led exposure or processes w	emical production or refinery in closed continuous ith equivalent containment conditions
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	3 hours.
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safe Provide a basic standard of ge	ty Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exp Segregation of the emitting p Effective contaminant extract Good standard of general ve Minimisation of manual phase Avoid contact with contaminat Regular cleaning of equipme Management/supervision in p correctly and OCs followed. Training for staff on good prace 	osed. rocess. ion. ntilation. es. ted tools and objects nt and work area. blace to check that the RMMs in place are being used

Diethylenetriamine, DETA	Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
	- Good standard of personal	nygiene.
Conditions and measures rel	ated to personal protection, hy	giene and health evaluation
Personal protection	: Wear chemical-resistant glov employee training. (Efficiency Skin coverage with appropria the chemicals. Wear chemically resistant fac when there is potential for dir	es (tested to EN374) in combination with 'basic' of at least 90%) te barrier material based on potential for contact with se shield, goggles or safety glasses with side shields ect contact.
	immediately.	contact with eyes. Wash off any skin contamination
Contributing scenario contro closed batch processes with condition	lling worker exposure for 5: Ma occasional controlled exposur	anufacture or formulation in the chemical industry in e or processes with equivalent containment
Concentration of substance in mixture or article	: Covers percentage substance	e in the product up to 5%.
Physical state	: Liquid.	
Frequency and duration of use/exposure	: Covers daily exposures up to	8 hours.
Other conditions affecting workers exposure	: Indoor use. Process temperature: ≤40 °C	
Technical conditions and measures to control dispersion from source towards the worker	: Occupational Health and Safe Provide a basic standard of g	ety Management System: Advanced. eneral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate Minimise number of staff ex Segregation of the emitting Effective contaminant extract Good standard of general voltariation of manual phase Avoid contact with contamin Regular cleaning of equipm Management/supervision in correctly and OCs followed. Training for staff on good pr Good standard of personal 	bosed. brocess. stion. entilation. ses. ated tools and objects ent and work area. place to check that the RMMs in place are being used actice. hygiene.
Conditions and measures rel	ated to personal protection, hy	giene and health evaluation
Personal protection	: Wear chemical-resistant glov employee training. (Efficiency Skin coverage with appropria the chemicals. Wear chemically resistant fac when there is potential for dire Avoid contact with skin. Avoid immediately.	es (tested to EN374) in combination with 'basic' of at least 90%) te barrier material based on potential for contact with es shield, goggles or safety glasses with side shields ect contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	lling worker exposure for 6: Cl	nemical production where opportunity for exposure
Concentration of substance in mixture or article	: Covers percentage substance	e in the product up to 5%.
Physical state	: Liquid.	
Frequency and duration of use/exposure	: Covers exposure up to 4 hour	s per day.
Other conditions affecting workers exposure	: Indoor use. Process temperature: ≤40 °C	
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Diethylenetriamine, DETA		Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting presentation of the emitting presentation. Good standard of general vert Minimisation of manual phase Avoid contact with contaminate. Regular cleaning of equipmere. Management/supervision in ple correctly and OCs followed. Training for staff on good prace. Good standard of personal hypervision. 	osed. occess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. giene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro arises (AEROSOLS)	llin	g worker exposure for 7: Che	mical production where opportunity for exposure
Concentration of substance in mixture or article	:	Covers percentage substance i	in the product up to 5%.
Physical state	4	Liquid.	
Frequency and duration of use/exposure	1	Covers exposure up to 4 hours	per day.
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. heral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pr Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in place Correctly and OCs followed. Training for staff on good prace Good standard of personal hypervisional hypervi	osed. occess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. <i>r</i> giene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields at contact. contact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Contributing scenario contro	llin	g worker exposure for 8: Mix	ing or blending in batch processes
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	-	Covers exposure up to 4 hours	s per day.
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ge	ty Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff experience. Segregation of the emitting perience. Effective contaminant extractions. Good standard of general verters. Minimisation of manual phase. Avoid contact with contaminata. Regular cleaning of equipme. Management/supervision in period contact. Training for staff on good pratical design of the staff on good pratical design. 	osed. rocess. ion. ntilation. es. ted tools and objects nt and work area. place to check that the RMMs in place are being used ctice. ygiene.
Conditions and measures rel	ate	d to personal protection, hyg	iene and health evaluation
Personal protection	:	Wear chemical-resistant glove employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) e barrier material based on potential for contact with e shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 9: Mix	ing or blending in batch processes (AEROSOLS)
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	-	Covers exposure up to 4 hours	s per day.
Other conditions affecting workers exposure	-	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ge	ty Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff experience. Segregation of the emitting presence of the emitted of the emitting presence of the emitted of	osed. rocess. ion. ntilation. es. ted tools and objects nt and work area. place to check that the RMMs in place are being used ctice. ygjene.
	ale		
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 62/130

Diethylenetriamine, DETA		Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Personal protection	 Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately. 		s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 10: In	dustrial spraying
Spraying (automatic/robotic) Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	-	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ge Local exhaust ventilation - effic	ry Management System: Advanced. neral ventilation (1 to 3 air changes per hour). iency of at least 95% (Inhalation).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff experience. Segregation of the emitting presence of the emitting presence. Effective contaminant extraction. Good standard of general vere. Minimisation of manual phase. Avoid contact with contaminal. Regular cleaning of equipme. Management/supervision in presence. Training for staff on good prant. Good standard of personal hypersection. 	osed. rocess. on. htilation. es. ted tools and objects ht and work area. lace to check that the RMMs in place are being used ctice. /giene.
Conditions and measures rel	ate	d to personal protection, hyg	ene and health evaluation
Personal protection	:	Wear chemical-resistant glove employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 11: In	dustrial spraying (AEROSOLS)
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ge Local exhaust ventilation - effic	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour). iency of at least 95% (Inhalation).
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 63/130

Diethylenetriamine, DETA		Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff expo Segregation of the emitting pro Effective contaminant extraction Good standard of general ven Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipmer Management/supervision in place Correctly and OCs followed. Training for staff on good prace Good standard of personal hypervision 	sed. ocess. on. tilation. s. ed tools and objects et and work area. ace to check that the RMMs in place are being used stice. giene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency o Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	(tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Contributing scenario controlling worker exposure for 12: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities			
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 5%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Provide a basic standard of gen	/ Management System: Advanced. eral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff expo Segregation of the emitting pro Effective contaminant extraction Good standard of general ven Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipmer Management/supervision in pl correctly and OCs followed. Training for staff on good prace Good standard of personal hyperiod 	sed. ocess. on. tilation. s. ed tools and objects et and work area. ace to check that the RMMs in place are being used ace to check that the RMMs in place are being used
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to I Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Contributing scenario contro discharging) at dedicated fac	llin iliti	g worker exposure for 13: Tr	ansfer of substance or mixture (charging and
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	-	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ge	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff experience. Segregation of the emitting presence of the emitting presence of the emitting presence of the emitting presence. Effective contaminant extractions of the emitting presence of the emitting presenc	osed. rocess. ion. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. ygiene.
Conditions and measures rel	ate	d to personal protection, hygi	iene and health evaluation
Personal protection	:	Wear chemical-resistant glove employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) e barrier material based on potential for contact with e shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 14: Ro	oller application or brushing
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ge	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff experience. Segregation of the emitting presence of the emitting presence. Effective contaminant extraction. Good standard of general vere. Minimisation of manual phase. Avoid contact with contaminate. Regular cleaning of equipmere. Management/supervision in presence. Training for staff on good prate. Good standard of personal hyperce. 	osed. rocess. ion. htilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. /giene.

Diethylenetriamine, DETA	Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Conditions and measures rel	ated to personal protect	ion, hygiene and health evaluation
Personal protection	: Wear chemical-resist employee training. (E Skin coverage with ap the chemicals. Wear chemically resis when there is potentia Avoid contact with skin immediately.	ant gloves (tested to EN374) in combination with 'basic' fficiency of at least 90%) propriate barrier material based on potential for contact with stant face shield, goggles or safety glasses with side shields I for direct contact. h. Avoid contact with eyes. Wash off any skin contamination
Contributing scenario contro	lling worker exposure fo	r 15: Treatment of articles by dipping and pouring
Concentration of substance in mixture or article	: Covers percentage su	ibstance in the product up to 5%.
Physical state	: Liquid.	
Frequency and duration of use/exposure	: Covers daily exposure	es up to 8 hours.
Other conditions affecting	: Indoor use.	<10 °C
Technical conditions and measures to control dispersion from source towards the worker	 Occupational Health a Provide a basic stand 	and Safety Management System: Advanced. ard of general ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as app Minimise number of Segregation of the e Effective contaminar Good standard of ge Minimisation of man Avoid contact with co Regular cleaning of Management/supervicorrectly and OCs foll Training for staff on Good standard of pe 	ropriate. staff exposed. mitting process. nt extraction. eneral ventilation. ual phases. ontaminated tools and objects equipment and work area. rision in place to check that the RMMs in place are being used owed. good practice. ersonal hygiene.
Conditions and measures rel	ated to personal protect	ion, hygiene and health evaluation
Personal protection	: Wear chemical-resist employee training. (E Skin coverage with ap the chemicals. Wear chemically resis when there is potentia Avoid contact with skin immediately.	ant gloves (tested to EN374) in combination with 'basic' fficiency of at least 90%) propriate barrier material based on potential for contact with stant face shield, goggles or safety glasses with side shields I for direct contact. h. Avoid contact with eyes. Wash off any skin contamination
Contributing scenario contro	lling worker exposure fo	r 16: Use as laboratory reagent
Concentration of substance in mixture or article	: Covers percentage su	ibstance in the product up to 5%.
Physical state	: Liquid.	
Frequency and duration of use/exposure	: Covers daily exposure	es up to 8 hours.
Other conditions affecting workers exposure	: Indoor use. Process temperature:	≤40 °C.
Technical conditions and measures to control dispersion from source towards the worker	: Occupational Health a Provide a basic stand	and Safety Management System: Advanced. ard of general ventilation (1 to 3 air changes per hour).

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Diethylenetriamine, DETA	Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate. Minimise number of staff exponsional staff exponsion of the emitting propriate of the emitting proprese of the emitting	osed. rocess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. /giene.
Conditions and measures relation	ted to personal protection, hygi	ene and health evaluation
Personal protection	: Wear chemical-resistant glove employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination

Section 3 - Exposure estimation and reference to its source

Exposure estimation and in foam production	ference to its source - Environment: 1: Use as a polyurethane curing agent for rigio	d
Exposure assessment (environment):	: EUSES 2.1.2	
Exposure estimation	: Freshwater: 0.00818 mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.	
	Freshwater sediment: 0.031 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Marine water: 0.000765 mg/l. Risk characterisation ratio (PEC/PNEC): 0.014.	
	Marine water sediment: 0.00288 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Sewage Treatment Plant: 0 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Soil: 0.045 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Air: 0.138 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.	
Remark	: Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR < 1).	
Exposure estimation and in foam production	ference to its source - Environment: 2: Use as a polyurethane curing agent for rigid	d
Exposure assessment (environment):	: EUSES 2.1.2	
Exposure estimation	: Freshwater: 0.00818 mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.	
	Freshwater sediment: 0.031 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Marine water: 0.000765 mg/l.	
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Diethylenetriamine, DETA	Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
	Risk characterisation ratio (F	PEC/PNEC): 0.014.
	Marine water sediment: 0.00 Risk characterisation ratio (F	288 mg/kg dwt. PEC/PNEC): <0.01.
	Sewage Treatment Plant: 0 Risk characterisation ratio (F	mg/l. PEC/PNEC): <0.01.
	Soil: 0.045 mg/kg dwt. Risk characterisation ratio (F	PEC/PNEC): <0.01.
	Air: 0.138 mg/m³. Risk characterisation ratio (F	PEC/PNEC): Not available.
Remark	: Based on the applied RMMs (RCR < 1).	the risk towards environment is sufficiently controlled
Exposure estimation and refere	ence to its source - Workers:	3: Chemical production or refinery in closed
Exposure assessment	xposure or processes with e : ECETOC TRA worker v3	equivalent containment conditions
(numan): Exposure estimation	: Worker - inhalative, long-to Risk characterisation ratio: <	erm - systemic: 0.0086 mg/m³. 0.01.
	Worker - dermal, long-term Risk characterisation ratio: <	n - systemic: 0.00068 mg/kg bw/day. 0.01.
	Worker - combined, long-t	erm - systemic: <0.01.
Remark	: Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR
Exposure estimation and refere	ence to its source - Workers:	4: Chemical production or refinery in closed
Exposure assessment	ECETOC TRA worker v3	
Exposure estimation	: Worker - inhalative, long-to Risk characterisation ratio: 0	erm - systemic: 0.86 mg/m³. .056.
	Worker - dermal, long-term Risk characterisation ratio: <	n - systemic: 0.027 mg/kg bw/day. 0.01.
	Worker - combined, long-t	erm - systemic: 0.058.
Remark	: Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR
Exposure estimation and refere industry in closed batch proces	ence to its source - Workers: sses with occasional control	5: Manufacture or formulation in the chemical led exposure or processes with equivalent
Exposure assessment	ECETOC TRA worker v3	
Exposure estimation	: Worker - inhalative, long-te Risk characterisation ratio: 0	erm - systemic: 2.579 mg/m³. .168.
	Worker - dermal, long-term Risk characterisation ratio: <	n - systemic: 0.014 mg/kg bw/day. 0.01.
	Worker - dermal, short-ter	m - local: 0.00402 mg/cm².
	Worker - combined, long-t	erm - systemic: 0.169.
Remark	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR
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Diethylenetriamine, DETA		Exposure Scenario: 4Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Exposure estimation and refe	rei	nce to its source - Workers: 6: Chemical production where opportunity for
Exposure assessment (human):	:	ECETOC TRA worker v3
Exposure estimation	:	Worker - inhalative, long-term - systemic: 2.579 mg/m ³ . Risk characterisation ratio: 0.168.
		Worker - dermal, long-term - systemic: 0.137 mg/kg bw/day. Risk characterisation ratio: 0.012.
		Worker - combined, long-term - systemic: 0.18.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and refe exposure arises (AEROSOLS	reı)	nce to its source - Workers: 7: Chemical production where opportunity for
Exposure assessment (human):	:	ESIG ESVOC 3
Exposure estimation	:	Worker - inhalative, long-term - local: 0.6 mg/m ³ . Risk characterisation ratio: 0.69.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and refe	rei	nce to its source - Workers: 8: Mixing or blending in batch processes
Exposure assessment (human):	:	ECETOC TRA worker v3
Exposure estimation	:	Worker - inhalative, long-term - systemic: 2.579 mg/m ³ . Risk characterisation ratio: 0.168.
		Worker - dermal, long-term - systemic: 0.274 mg/kg bw/day. Risk characterisation ratio: 0.024.
		Worker - combined, long-term - systemic: 0.192.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and refe (AEROSOLS)	rei	nce to its source - Workers: 9: Mixing or blending in batch processes
Exposure assessment (human):	:	ESIG ESVOC 3
Exposure estimation	:	Worker - inhalative, long-term - local: 0.6 mg/m³. Risk characterisation ratio: 0.69.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and refe	rei	nce to its source - Workers: 10: Industrial spraying
Exposure assessment (human):	:	ECETOC TRA worker v3
Exposure estimation	:	Worker - inhalative, long-term - systemic: 4.299 mg/m ³ . Risk characterisation ratio: 0.279.
		Worker - dermal, long-term - systemic: 0.857 mg/kg bw/day. Risk characterisation ratio: 0.075.
		Worker - combined, long-term - systemic: 0.354.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).

Diethylenetriamine, DETA		Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.
Exposure estimation and re	feren	ice to its source - Workers	: 11: Industrial spraying (AEROSOLS)
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: (term - local: 0.2 mg/m³. 0.23.
Remark	:	Based on the applied RMMs < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and readischarging) at non-dedicate	feren ed fa	ice to its source - Workers cilities	: 12: Transfer of substance or mixture (charging and
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: (erm - systemic: 8.597 mg/m³. D.558.
		Worker - dermal, long-terr Risk characterisation ratio: (n - systemic: 0.548 mg/kg bw/day. 0.048.
		Worker - combined, long-	term - systemic: 0.606.
Remark	:	Based on the applied RMMs < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and readischarging) at dedicated fa	feren ciliti	ice to its source - Workers es	: 13: Transfer of substance or mixture (charging and
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	-	Worker - inhalative, long-t Risk characterisation ratio: (term - systemic: 4.299 mg/m³. 0.279.
		Worker - dermal, long-terr Risk characterisation ratio: (n - systemic: 0.274 mg/kg bw/day. 0.024.
		Worker - combined, long-	term - systemic: 0.303.
Remark	:	Based on the applied RMMs < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re-	feren	ice to its source - Workers	: 14: Roller application or brushing
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: (term - systemic: 8.597 mg/m³. 0.558.
		Worker - dermal, long-terr Risk characterisation ratio: (n - systemic: 0.549 mg/kg bw/day. 0.048.
		Worker - combined, long-	term - systemic: 0.606.
Remark	:	Based on the applied RMMs < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re	feren	ice to its source - Workers	: 15: Treatment of articles by dipping and pouring
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: (term - systemic: 8.597 mg/m³. 0.558.
		Worker - dermal, long-terr Risk characterisation ratio: (n - systemic: 0.274 mg/kg bw/day. 0.024.
		Worker - combined, long-	term - systemic: 0.582.
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Diethylenetriamine, DETA	Exposure Scenario: 4	Use at industrial sites - Use as a polyurethane curing agent for rigid foam production.		
Remark	: Based on the applied RMN < 1).	<i>I</i> s the risk towards humans is sufficiently controlled (RCR		
Exposure estimation and reference to its source - Workers: 16: Use as laboratory reagent				
Exposure assessment (human):	: ECETOC TRA worker v3			
Exposure estimation	: Worker - inhalative, long Risk characterisation ratio:	-term - systemic: 4.299 mg/m³. : 0.279.		
	Worker - dermal, long-te Risk characterisation ratio	rm - systemic: 0.0068 mg/kg bw/day. : <0.01.		
	Worker - combined, long	-term - systemic: 0.28.		
Remark	: Based on the applied RMN < 1).	Is the risk towards humans is sufficiently controlled (RCR		

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

General	: The immediate downstream user is required to evaluate whether the operational conditions and risk management measures described in the exposure scenario fit to his use. If other OC/RMM are adopted, the user has to ensure that risks are managed to at least equivalent levels. The risk assessment methods/tools given in section 3 may be used for this evaluation.
Environment	: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the subs	sta	ince or mixture
Product definition	:	Mono-constituent substance
Product name	:	Diethylenetriamine, DETA
Section 1 - Title		
Short title of the exposure scenario	:	Use at industrial sites - Use as an epoxy curing agent.
List of use descriptors	:	Identified use name: ES5: Use at industrial sites - Use as an epoxy curing agent: PROC01, PROC02, PROC03, PROC04, PROC05, PROC07, PROC08a, PROC08b, PROC10, PROC13, PROC15; ERC06c, ERC06d Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC07, PROC08a, PROC08b, PROC10, PROC13, PROC15 Subsequent service life relevant for that use: No. Environmental Release Category: ERC06c, ERC06d
Environmental contributing scenarios	:	Epoxy curing agent - ERC06c Epoxy curing agent - ERC06d
Health Contributing scenarios	:	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions - PROC01 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions - PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03 Chemical production where opportunity for exposure arises - PROC04 Chemical production where opportunity for exposure arises (AEROSOLS) - PROC04 Mixing or blending in batch processes - PROC05 Mixing or blending in batch processes (AEROSOLS) - PROC05 Industrial spraying - PROC07 Industrial spraying (AEROSOLS) - PROC07 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Roller application or brushing - PROC10 Treatment of articles by dipping and pouring - PROC13 Use as laboratory reagent - PROC15
Number of the ES	:	5

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1: Epoxy curing agent			
Amounts used	: Daily amount per site: ≤48.2 tonnes/day. Annual amount per site: ≤10644 tonnes/year.		
Frequency and duration of use	: Emission days: ≥220 days per year.		
Environment factors not influenced by risk management	: Receiving surface water flow: ≥18000 m³/d.		
Diethylenetriamine, DETA		Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.
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Other conditions affecting environmental exposure	:	Release to waste water from pr Release factor after on-site risk	rocess: management: 0%. (FEICA SpERC 5.1b.v2)
		Release to air from process: Release factor after on-site risk Local release rate: 819.1 kg/da	management: 1.7%. (FEICA SpERC 5.1b.v2) y.
		Release to soil from process: Release factor after on-site risk	management: 0%. (FEICA SpERC 5.1b.v2)
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to	:	Incinerate, absorb, or adsorb vapours stripped from solution whenever necessary.	
soil			
Organisational measures to prevent/limit release from site	•	General good practice: Trained staff, spill protection including waste reuse. Site should have a spill plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases. Storage of finished products in closed containers (e.g., bulk tanks, drums, cans)	
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. Discharge rate: ≥2000 m³/d. Application of the STP sludge of	(Efficiency of at least 87.34%) on agricultural soil: Yes.
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the Dispose of waste product or use	e waste treatment operations. ed containers according to local regulations.
Contributing scenario control	llin	g environmental exposure for	2: Epoxy curing agent
Amounts used	:	Daily amount per site: ≤48.2 tor Annual amount per site: ≤1064	nnes/day. 4 tonnes/year.
Frequency and duration of use	:	Emission days: ≥220 days per y	/ear.
Environment factors not influenced by risk management	:	Receiving surface water flow: ≥	18000 m³/d.
Other conditions affecting environmental exposure	:	Release to waste water from pr Release factor after on-site risk	rocess: management: 0%. (FEICA SpERC 5.1b.v2)
		Release to air from process: Release factor after on-site risk Local release rate: 819.1 kg/da	management: 1.7%. (FEICA SpERC 5.1b.v2) y.
		Release to soil from process: Release factor after on-site risk	management: 0%. (FEICA SpERC 5.1b.v2)
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Incinerate, absorb, or adsorb va	apours stripped from solution whenever necessary.
Organisational measures to prevent/limit release from site	:	General good practice: Trained Site should have a spill plan to minimise the impact of episodic Storage of finished products in	staff, spill protection including waste reuse. ensure that adequate safeguards are in place to releases. closed containers (e.g., bulk tanks, drums, cans).
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. Discharge rate: ≥2000 m³/d. Application of the STP sludge of	(Efficiency of at least 87.34%)
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the Dispose of waste product or us	e waste treatment operations. ed containers according to local regulations.

Diethylenetriamine, DETA		Exposure Scenario: 5Use at industrial sites - Use as an epoxy curing agent.			
Contributing scenario contro without likelihood of exposur	Contributing scenario controlling worker exposure for 3: Chemical production or refinery in closed process				
Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 50%.			
Physical state	4	Liquid.			
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 hours.			
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.			
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour).			
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 			
Conditions and measures rel	ate	d to personal protection, hygiene and health evaluation			
Personal protection	:	Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately.			
Contributing scenario controlling worker exposure for 4: Chemical production or refinery in closed continuous					
Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 50%.			
Physical state	:	Liquid.			
Frequency and duration of use/exposure	1	Covers daily exposures up to 8 hours.			
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.			
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour).			
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. 			

Diethylenetriamine, DETA	Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.
	- Good standard of persona	al hygiene.
Conditions and measures rela	ated to personal protection, h	ygiene and health evaluation
Personal protection	: Wear chemical-resistant gl employee training. (Efficien Skin coverage with appropr the chemicals. Wear chemically resistant f	oves (tested to EN374) in combination with 'basic' cy of at least 90%) iate barrier material based on potential for contact with ace shield, goggles or safety glasses with side shields
	when there is potential for o Avoid contact with skin. Avo immediately.	lirect contact. id contact with eyes. Wash off any skin contamination
Contributing scenario control closed batch processes with o condition	ling worker exposure for 5: occasional controlled expos	Manufacture or formulation in the chemical industry in ure or processes with equivalent containment
Concentration of substance in mixture or article	: Covers percentage substar	ice in the product up to 50%.
Physical state	: Liquid.	
Frequency and duration of use/exposure	: Covers daily exposures up	to 8 hours.
Other conditions affecting workers exposure	 Indoor use. Process temperature: ≤40 ⁻ 	°C.
Technical conditions and measures to control dispersion from source towards the worker	: Occupational Health and S Provide a basic standard of	afety Management System: Advanced. general ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropria Minimise number of staff Segregation of the emittin Effective contaminant extr Good standard of general Minimisation of manual ph Avoid contact with contam Regular cleaning of equip Management/supervision correctly and OCs followed Training for staff on good Good standard of persona 	te. exposed. g process. action. ventilation. nases. inated tools and objects ment and work area. in place to check that the RMMs in place are being used practice. al hygiene.
Conditions and measures rela	ated to personal protection, h	ygiene and health evaluation
Personal protection	: Wear chemical-resistant gl employee training. (Efficien Skin coverage with appropri the chemicals. Wear chemically resistant f when there is potential for of Avoid contact with skin. Avo immediately.	oves (tested to EN374) in combination with 'basic' cy of at least 90%) iate barrier material based on potential for contact with ace shield, goggles or safety glasses with side shields lirect contact. id contact with eyes. Wash off any skin contamination
Contributing scenario control arises	ling worker exposure for 6:	Chemical production where opportunity for exposure
Concentration of substance in mixture or article	: Covers percentage substar	nce in the product up to 50%.
Physical state	: Liquid.	
Frequency and duration of use/exposure	: Covers daily exposures up	to 8 hours.
Other conditions affecting workers exposure	: Indoor use. Process temperature: ≤40	°C.
Date of issue/Date of revision	: 26/01/2018	Version : 12 / en 75/130

Diethylenetriamine, DETA		Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safe Provide a basic standard of ge	ety Management System: Advanced. Aneral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exp. Segregation of the emitting p. Effective contaminant extract Good standard of general verses. Minimisation of manual phase. Avoid contact with contaminate. Regular cleaning of equipment. Management/supervision in p. correctly and OCs followed. Training for staff on good prase. Good standard of personal here. 	nosed. process. tion. entilation. es. ated tools and objects ent and work area. place to check that the RMMs in place are being used actice. hygiene.
Conditions and measures relations	ate	d to personal protection, hyg	iene and health evaluation
Personal protection	:	Wear chemical-resistant glove employee training. (Efficiency Skin coverage with appropriate the chemicals. Wear chemically resistant fact when there is potential for dire Avoid contact with skin. Avoid immediately.	es (tested to EN374) in combination with 'basic' of at least 90%) e barrier material based on potential for contact with e shield, goggles or safety glasses with side shields act contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro arises (AEROSOLS)	llin	g worker exposure for 7: Ch	emical production where opportunity for exposure
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 50%.
Physical state	4	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to a	3 hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safe Provide a basic standard of ge Local exhaust ventilation - efficient	ety Management System: Advanced. Aneral ventilation (1 to 3 air changes per hour). Siency of at least 90% (Inhalation).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exp Segregation of the emitting p Effective contaminant extract Good standard of general vere Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in p correctly and OCs followed. Training for staff on good prate Good standard of personal here. 	nosed. process. tion. intilation. es. ated tools and objects ent and work area. place to check that the RMMs in place are being used actice. pygiene.
Conditions and measures rel	ate	d to personal protection, hyo	iene and health evaluation
Personal protection	:	Wear chemical-resistant glove employee training. (Efficiency Skin coverage with appropriate the chemicals. Wear chemically resistant fact when there is potential for dire Avoid contact with skin. Avoid immediately.	es (tested to EN374) in combination with 'basic' of at least 90%) e barrier material based on potential for contact with e shield, goggles or safety glasses with side shields act contact. contact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA	Exposure Scenario: 5Use at industrial sites - Use as an epoxy curing agent.	
Contributing scenario contro	g worker exposure for 8: Mixing or blending in batch processes	
Concentration of substance in mixture or article	Covers percentage substance in the product up to 50%.	
Physical state	Liquid.	
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours.	
Other conditions affecting workers exposure	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Local exhaust ventilation - efficiency of at least 90% (Inhalation).	
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 	Ł
Conditions and measures rel	ל to personal protection, hygiene and health evaluation	
Personal protection	Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately.	
Contributing scenario contro	g worker exposure for 9: Mixing or blending in batch processes (AEROSOLS)	1
Concentration of substance in mixture or article	Covers percentage substance in the product up to 50%.	
Physical state	Liquid.	
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours.	
Other conditions affecting workers exposure	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Local exhaust ventilation - efficiency of at least 90% (Inhalation).	
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 	Ł
Conditions and measures rel	t to personal protection, hygiene and health evaluation	
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Diethylenetriamine, DETA	Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.		
Personal protection	: Wear chemical-resistant of employee training. (Efficient Skin coverage with appro- the chemicals. Wear chemically resistant when there is potential for Avoid contact with skin. At immediately.	 Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately. 		
Contributing scenario contro	lling worker exposure for 1	0: Industrial spraying		
Spraying (automatic/robotic) Concentration of substance in mixture or article	: Covers percentage substa	ance in the product up to 50%.		
Physical state	: Liquid.			
Frequency and duration of use/exposure	: Covers daily exposures up	o to 8 hours.		
Other conditions affecting workers exposure	: Indoor use. Process temperature: ≤40) °C.		
Technical conditions and measures to control dispersion from source towards the worker	: Occupational Health and Provide a basic standard Local exhaust ventilation	Safety Management System: Advanced. of general ventilation (1 to 3 air changes per hour). · efficiency of at least 95% (Inhalation).		
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as approprient Minimise number of staft Segregation of the emitt Effective contaminant experient Good standard of genererient Minimisation of manual present Avoid contact with contational experient Regular cleaning of equitient Management/supervision correctly and OCs followere Training for staff on gooding of standard of personal 	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal bygiene 		
Conditions and measures relation	ated to personal protection,	hygiene and health evaluation		
Personal protection	 Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency of at least 95%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately. 			
Contributing scenario contro	lling worker exposure for 1	1: Industrial spraying (AEROSOLS)		
Concentration of substance in mixture or article	: Covers percentage substa	ance in the product up to 50%.		
Physical state	: Liquid.			
Frequency and duration of use/exposure	: Covers daily exposures u	Covers daily exposures up to 8 hours.		
Other conditions affecting workers exposure	: Indoor use. Process temperature: ≤40	Indoor use. Process temperature: ≤40 °C.		
Technical conditions and measures to control dispersion from source towards the worker	: Occupational Health and Provide a basic standard Local exhaust ventilation	Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour). Local exhaust ventilation - efficiency of at least 95% (Inhalation).		
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Diethylenetriamine, DETA		Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.		
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pro- Effective contaminant extraction Good standard of general vent Minimisation of manual phase Avoid contact with contaminatter Regular cleaning of equipmerter Management/supervision in place Training for staff on good prace Good standard of personal hydrogeneral vent 	sed. occess. on. tilation. s. ed tools and objects et and work area. ace to check that the RMMs in place are being used stice. giene.		
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation		
Personal protection	:	Wear chemical-resistant gloves training. (Efficiency of at least 9 Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	(tested to EN374) in combination with specific activity 5%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination		
Contributing scenario control discharging) at non-dedicated	llin d fa	g worker exposure for 12: Tra acilities	insfer of substance or mixture (charging and		
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 50%.		
Physical state	1	Liquid.			
Frequency and duration of use/exposure	1	Covers exposure up to 4 hours	per day.		
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.			
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Provide a good standard of gen hour). (Efficiency of at least 30%	/ Management System: Advanced. eral ventilation (not less than 3 to 5 air changes per ⁄ - Inhalation)		
		or: Ensure operation is undertal	ken outdoors.		
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pro- Effective contaminant extraction Good standard of general vent Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipment Management/supervision in place Training for staff on good prace Good standard of personal hyperiod 	sed. ocess. on. tilation. s. ed tools and objects at and work area. ace to check that the RMMs in place are being used stice. giene.		
Conditions and measures rela	Conditions and measures related to personal protection, hygiene and health evaluation				
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency o Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	(tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination		

Diethylenetriamine, DETA		Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.
Contributing scenario contro	llin	g worker exposure for 13: T	ransfer of substance or mixture (charging and
Concentration of substance in mixture or article	:	es Covers percentage substance	in the product up to 50%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to	8 hours.
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safe Provide a basic standard of ge	ety Management System: Advanced. Reneral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exp Segregation of the emitting p Effective contaminant extract Good standard of general verses Minimisation of manual phase Avoid contact with contaminat Regular cleaning of equipmet Management/supervision in p correctly and OCs followed. Training for staff on good pratication of personal here. 	posed. process. tion. entilation. es. ated tools and objects ent and work area. place to check that the RMMs in place are being used actice. aggiene.
Conditions and measures rel	ate	d to personal protection, hyg	jiene and health evaluation
Personal protection	:	Wear chemical-resistant glove employee training. (Efficiency Skin coverage with appropriat the chemicals. Wear chemically resistant fac when there is potential for dire Avoid contact with skin. Avoid immediately.	es (tested to EN374) in combination with 'basic' of at least 90%) e barrier material based on potential for contact with e shield, goggles or safety glasses with side shields ect contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 14: R	oller application or brushing
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 50%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	-	Covers exposure up to 4 hour	s per day.
Other conditions affecting workers exposure	-	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safe Provide a good standard of ge hour). (Efficiency of at least 30	ety Management System: Advanced. Eneral ventilation (not less than 3 to 5 air changes per 0% - Inhalation)
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exp Segregation of the emitting p Effective contaminant extract Good standard of general verses Minimisation of manual phase Avoid contact with contaminat Regular cleaning of equipmet Management/supervision in p correctly and OCs followed. Training for staff on good pratication of personal h 	posed. process. tion. entilation. es. ated tools and objects ent and work area. place to check that the RMMs in place are being used actice. hygiene.

Diethylenetriamine, DETA	Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.
Conditions and measures relation	ated to personal protection, hy	giene and health evaluation
Personal protection	 Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately. 	
Contributing scenario contro	lling worker exposure for 15:	Treatment of articles by dipping and pouring
Concentration of substance in mixture or article	: Covers percentage substanc	e in the product up to 50%.
Physical state	: Liquid.	
Frequency and duration of use/exposure	: Covers exposure up to 4 hou	ırs per day.
Other conditions affecting	: Indoor use.	
workers exposure Technical conditions and measures to control dispersion from source towards the worker	 Process temperature: \$40 °C Occupational Health and Sa Provide a good standard of g hour). (Efficiency of at least 3 	5. fety Management System: Advanced. general ventilation (not less than 3 to 5 air changes per 30% - Inhalation)
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate Minimise number of staff ex Segregation of the emitting Effective contaminant extra Good standard of general w Minimisation of manual pha Avoid contact with contamii Regular cleaning of equipm Management/supervision in correctly and OCs followed. Training for staff on good p Good standard of personal 	e. (posed. process. ction. ventilation. ases. nated tools and objects nent and work area. n place to check that the RMMs in place are being used ractice. hygiene.
Conditions and measures rela	ated to personal protection, hy	giene and health evaluation
Personal protection	: Wear chemical-resistant glor employee training. (Efficienc Skin coverage with appropria the chemicals. Wear chemically resistant fa when there is potential for di Avoid contact with skin. Avoid immediately.	ves (tested to EN374) in combination with 'basic' y of at least 90%) ate barrier material based on potential for contact with ce shield, goggles or safety glasses with side shields rect contact. d contact with eyes. Wash off any skin contamination
Contributing scenario contro	lling worker exposure for 16:	Use as laboratory reagent
Concentration of substance in mixture or article	: Covers percentage substanc	e in the product up to 50%.
Physical state	: Liquid.	
Frequency and duration of use/exposure	: Covers daily exposures up to) 8 hours.
Other conditions affecting workers exposure	Indoor use. Process temperature: ≤40 °C	
Technical conditions and measures to control dispersion from source towards the worker	: Occupational Health and Sa Provide a good standard of g hour). (Efficiency of at least 3	tety Management System: Advanced. general ventilation (not less than 3 to 5 air changes per 30% - Inhalation)

Diethylenetriamine, DETA	Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate. Minimise number of staff export Segregation of the emitting propriate. Effective contaminant extractionant extractionation of general vertime. Minimisation of manual phase Avoid contact with contaminationation of equipme. Management/supervision in propriet of the propriet of	osed. rocess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. /giene.
Conditions and measures rela	ted to personal protection, hyg	ene and health evaluation
Personal protection	: Wear chemical-resistant glove employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid of immediately.	s (tested to EN374) in combination with 'basic' of at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination

Section 3 - Exposure estimation and reference to its source

Exposure estimation and re	reference to its source - Environment: 1: Epoxy curing agent	
Exposure assessment (environment):	: EUSES 2.1.2	
Exposure estimation	: Freshwater: 0.00818 mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.	
	Freshwater sediment: 0.031 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Marine water: 0.000765 mg/l. Risk characterisation ratio (PEC/PNEC): 0.014.	
	Marine water sediment: 0.00288 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Sewage Treatment Plant: 0 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Soil: 0.045 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Air: 0.138 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.	
Remark	: Based on the applied RMMs the risk towards environment is suffic (RCR < 1).	ciently controlled
Exposure estimation and re	reference to its source - Environment: 2: Epoxy curing agent	
Exposure assessment (environment):	: EUSES 2.1.2	
Exposure estimation	: Freshwater: 0.00818 mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.	
	Freshwater sediment: 0.031 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Marine water: 0.000765 mg/l. Risk characterisation ratio (PEC/PNEC): 0.014.	
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Diethylenetriamine, DETA	Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.
	Marine water sediment: 0.0028 Risk characterisation ratio (PE	88 mg/kg dwt. C/PNEC): <0.01.
	Sewage Treatment Plant: 0 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Soil: 0.045 mg/kg dwt. Risk characterisation ratio (PE	C/PNEC): <0.01.
	Air: 0.138 mg/m³. Risk characterisation ratio (PE	C/PNEC): Not available.
Remark :	Based on the applied RMMs th (RCR < 1).	e risk towards environment is sufficiently controlled
Exposure estimation and refere	nce to its source - Workers: 3	Chemical production or refinery in closed
process without likelihood of e	kposure or processes with equ	uivalent containment conditions
Exposure assessment : (human):	ECETOC TRA worker v3	
Exposure estimation :	Worker - inhalative, long-terr with modifications). Risk characterisation ratio: <0.0	n - systemic: 0.02 mg/m³ (ECETOC TRA worker v3 01.
	Worker - dermal, long-term - Risk characterisation ratio: <0.	systemic: 0.0034 mg/kg bw/day. 01.
	Worker - combined, long-ter	n - systemic: <0.01.
Remark :	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refere	nce to its source - Workers: 4	Chemical production or refinery in closed
continuous process with occas	ional controlled exposure or p	processes with equivalent containment conditions
(human):	ECETUC TRA worker v3	
Exposure estimation :	Worker - Inhalative, long-terr with modifications). Risk characterisation ratio: 0.14	n - systemic: 2.15 mg/m³ (ECETOC TRA worker v3 4.
	Worker - dermal, long-term - Risk characterisation ratio: 0.0	systemic: 0.137 mg/kg bw/day. 12.
	Worker - combined, long-ter	n - systemic: 0.152.
Remark :	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refere industry in closed batch proces containment condition	nce to its source - Workers: 5 ses with occasional controlle	: Manufacture or formulation in the chemical d exposure or processes with equivalent
Exposure assessment : (human):	ECETOC TRA worker v3	
Exposure estimation :	Worker - inhalative, long-terr with modifications). Risk characterisation ratio: 0.4	n - systemic: 6.45 mg/m³ (ECETOC TRA worker v3 19.
	Worker - dermal, long-term - Risk characterisation ratio: <0.0	systemic: 0.069 mg/kg bw/day. 01.
	Worker - combined, long-ter	n - systemic: 0.425.
Remark :	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR

Diethylenetriamine, DETA		Exposure Scenario: 5	Use at industrial sites - Use as an epoxy curing agent.
Exposure estimation and ref	ferer	ice to its source - Workers: 6	3: Chemical production where opportunity for
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-ter with modifications). Risk characterisation ratio: 0.6	m - systemic: 10.75 mg/m³ (ECETOC TRA worker v3
		Worker - dermal, long-term - Risk characterisation ratio: 0.0	• systemic: 0.686 mg/kg bw/day. l6.
		Worker - combined, long-ter	r m - systemic: 0.758.
Remark	:	Based on the applied RMMs th < 1).	ne risk towards humans is sufficiently controlled (RCR
Exposure estimation and ref exposure arises (AEROSOLS	ferer S)	ice to its source - Workers: 7	: Chemical production where opportunity for
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.2	m - local: 0.25 mg/m³. 287.
Remark	:	Based on the applied RMMs th < 1).	ne risk towards humans is sufficiently controlled (RCR
Exposure estimation and ref	ferer	ice to its source - Workers: 8	3: Mixing or blending in batch processes
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-ter with modifications). Risk characterisation ratio: 0.0	m - systemic: 1.07 mg/m³ (ECETOC TRA worker v3 169.
		Worker - dermal, long-term - Risk characterisation ratio: 0.1	• systemic: 1.371 mg/kg bw/day. 2.
		Worker - combined, long-ter	r m - systemic: 0.19.
Remark	:	Based on the applied RMMs th < 1).	ne risk towards humans is sufficiently controlled (RCR
Exposure estimation and ref (AEROSOLS)	ferer	ice to its source - Workers: 9): Mixing or blending in batch processes
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.2	m - local: 0.25 mg/m³. 287.
Remark	:	Based on the applied RMMs th < 1).	ne risk towards humans is sufficiently controlled (RCR
Exposure estimation and ref	ferer	ice to its source - Workers: 1	0: Industrial spraying
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-ter with modifications). Risk characterisation ratio: 0.6	m - systemic: 10.75 mg/m³ (ECETOC TRA worker v3 i98.
		Worker - dermal, long-term - Risk characterisation ratio: 0.1	• systemic: 2.143 mg/kg bw/day. 88.
		Worker - combined, long-ter	r m - systemic: 0.886.
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Diethylenetriamine, DETA		Exposure Scenario: 5Use at industrial sites - Use as an epoxy curing agent.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and refe	erer	ice to its source - Workers: 11: Industrial spraying (AEROSOLS)
Exposure assessment (human):	:	ESIG ESVOC 3
Exposure estimation	:	Worker - inhalative, long-term - local: 0.5 mg/m³. Risk characterisation ratio: 0.575.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and refe discharging) at non-dedicate	erer d fa	nce to its source - Workers: 12: Transfer of substance or mixture (charging and cilities
Exposure assessment (human):	:	ECETOC TRA worker v3
Exposure estimation	:	Worker - inhalative, long-term - systemic: 9.03 mg/m ³ (ECETOC TRA worker v3 with modifications). Risk characterisation ratio: 0.586.
		Worker - dermal, long-term - systemic: 0.823 mg/kg bw/day. Risk characterisation ratio: 0.072.
		Worker - combined, long-term - systemic: 0.659.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and refe discharging) at dedicated fac	erer iliti	nce to its source - Workers: 13: Transfer of substance or mixture (charging and es
Exposure assessment (human):	:	ECETOC TRA worker v3
Exposure estimation	:	Worker - inhalative, long-term - systemic: 10.75 mg/m ³ (ECETOC TRA worker v3 with modifications). Risk characterisation ratio: 0.698.
		Worker - dermal, long-term - systemic: 1.371 mg/kg bw/day. Risk characterisation ratio: 0.12.
		Worker - combined, long-term - systemic: 0.818.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and refe	erer	nce to its source - Workers: 14: Roller application or brushing
Exposure assessment (human):	:	ECETOC TRA worker v3
Exposure estimation	:	Worker - inhalative, long-term - systemic: 9.03 mg/m ³ (ECETOC TRA worker v3 with modifications). Risk characterisation ratio: 0.586.
		Worker - dermal, long-term - systemic: 1.646 mg/kg bw/day. Risk characterisation ratio: 0.144.
		Worker - combined, long-term - systemic: 0.731.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).

Diethylenetriamine, DETA	xposure Scenario: 5Use at industrial sites - Use as an epox agent.	cy curing
Exposure estimation and refe	e to its source - Workers: 15: Treatment of articles by dipping and r	pouring
Exposure assessment (human):	CETOC TRA worker v3	
Exposure estimation	/orker - inhalative, long-term - systemic: 9.03 mg/m³ (ECETOC TRA ith modifications). isk characterisation ratio: 0.586.	worker v3
	/orker - dermal, long-term - systemic: 0.823 mg/kg bw/day. isk characterisation ratio: 0.072.	
	/orker - combined, long-term - systemic: 0.659.	
Remark	ased on the applied RMMs the risk towards humans is sufficiently contro 1).	lled (RCR
Exposure estimation and refe	e to its source - Workers: 16: Use as laboratory reagent	
Exposure assessment (human):	CETOC TRA worker v3	
Exposure estimation	/orker - inhalative, long-term - systemic: 7.52 mg/m³ (ECETOC TRA ith modifications). isk characterisation ratio: 0.488.	worker v3
	/orker - dermal, long-term - systemic: 0.034 mg/kg bw/day. isk characterisation ratio: <0.01.	
	/orker - combined, long-term - systemic: 0.491.	
Remark	ased on the applied RMMs the risk towards humans is sufficiently contro 1).	lled (RCR

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

General	:	The immediate downstream user is required to evaluate whether the operational conditions and risk management measures described in the exposure scenario fit to his use. If other OC/RMM are adopted, the user has to ensure that risks are managed to at least equivalent levels. The risk assessment methods/tools given in section 3 may be used for this evaluation.
Environment	:	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).



Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture **Product definition** : Mono-constituent substance Product name : Diethylenetriamine, DETA Section 1 - Title Short title of the exposure : Use at industrial sites - Use as a processing aid/additive. scenario : Identified use name: ES6: Use at industrial sites - Use as a processing aid/additive: List of use descriptors PROC02, PROC05, PROC08a, PROC08b, PROC13; ERC04 Process Category: PROC02, PROC05, PROC08a, PROC08b, PROC13 Subsequent service life relevant for that use: No. Environmental Release Category: ERC04 : Use of non-reactive processing aid at industrial site (no inclusion into or onto **Environmental contributing** article) - ERC04 scenarios **Health Contributing** : Chemical production or refinery in closed continuous process with occasional scenarios controlled exposure or processes with equivalent containment conditions -PROC02 Mixing or blending in batch processes - PROC05 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Treatment of articles by dipping and pouring - PROC13 Number of the ES : 6

Section 2 - Exposure controls

Contributing scenario control site (no inclusion into or onto	lin ar	g environmental exposure for 1: Use of non-reactive processing aid at industrial ticle)
Amounts used	:	Daily amount per site: ≤35.3 tonnes/day. Annual amount per site: ≤10644 tonnes/year.
Frequency and duration of use	:	Emission days: ≥300 days per year.
Other conditions affecting environmental exposure	-	Release to waste water from process: Release factor after on-site risk management: 0%. (FEICA SpERC 5.1b.v2) Release to air from process: Release factor after on-site risk management: 1.7%. (FEICA SpERC 5.1b.v2) Local release rate: 600.6 kg/day. Release to soil from process: Release factor after on-site risk management: 0% (FEICA SpERC 5.1b.v2)
Conditions and measures related to sewage treatment plant Conditions and measures related to external treatment	:	Sewage Treatment Plant: Yes. (Efficiency of at least 87.34%) Discharge rate: ≥2000 m ³ /d. Application of the STP sludge on agricultural soil: Yes. Particular considerations on the waste treatment operations. Dispose of waste product or used containers according to local regulations
of waste for disposal		Dispose of waste product of used containers according to local regulations.

Diethylenetriamine, DETA	Exposure Scenario: 6 Use at industrial sites - Use as a processing aid/ additive.
Contributing scenario contro process with occasional cont	lling worker exposure for 2: Chemical production or refinery in closed continuous trolled exposure or processes with equivalent containment conditions
Concentration of substance in mixture or article	: Covers percentage substance in the product up to 100%.
Physical state	: Liquid.
Frequency and duration of use/exposure	: Covers daily exposures up to 8 hours.
Other conditions affecting workers exposure	: Indoor use. Process temperature: ≤40 °C.
Technical conditions and measures to control dispersion from source towards the worker	: Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene.
Conditions and measures rel	ated to personal protection, hygiene and health evaluation
Personal protection	 Wear chemical-resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately.
Contributing scenario contro	lling worker exposure for 3: Mixing or blending in batch processes
Concentration of substance in mixture or article	: Covers percentage substance in the product up to 100%.
Physical state	: Liquid.
Frequency and duration of use/exposure	: Covers daily exposures up to 8 hours.
Other conditions affecting workers exposure	: Indoor use. Process temperature: ≤40 °C.
Technical conditions and measures to control dispersion from source towards the worker	: Occupational Health and Safety Management System: Advanced. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene.

Diethylenetriamine, DETA		Exposure Scenario: 6	Use at industrial sites - Use as a processing aid/ additive.
Conditions and measures rel	ateo	I to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid c immediately.	(tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Respiratory protection	1	Respiratory protection (Efficien	cy of at least 90%).
Contributing scenario contro discharging) at non-dedicate	lling d fa	y worker exposure for 4: Trai cilities	isfer of substance or mixture (charging and
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exports Segregation of the emitting pr Effective contaminant extractions Good standard of general verts Minimisation of manual phase Avoid contact with contaminat Regular cleaning of equipmer Management/supervision in pl correctly and OCs followed. Training for staff on good prace Good standard of personal hy 	ised. ocess. on. tilation. is. ed tools and objects it and work area. ace to check that the RMMs in place are being used ctice. giene.
Conditions and measures rel	ateo	I to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid c immediately.	(tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields to contact. ontact with eyes. Wash off any skin contamination
Respiratory protection	1	Respiratory protection (Efficien	cy of at least 90%).
Contributing scenario contro discharging) at dedicated fac	lling: ilitie	g worker exposure for 5: Trai	nsfer of substance or mixture (charging and
Concentration of substance in mixture or article Physical state	:	Covers percentage substance i Liquid.	n the product up to 100%.
Frequency and duration of	1	Covers daily exposures up to 8	hours
Use/exposure	÷	ladaar yaa	nours.
workers exposure	-	indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. heral ventilation (1 to 3 air changes per hour).
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 89/130

Diethylenetriamine, DETA		Exposure Scenario: 6	Use at industrial sites - Use as a processing aid/ additive.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pr Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipment Management/supervision in place Training for staff on good pract Good standard of personal hyperiation 	ocess. on. tilation. s. ed tools and objects at and work area. ace to check that the RMMs in place are being used ctice. giene.
Conditions and measures relations	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	s (tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Respiratory protection	1	Respiratory protection (Efficient	cy of at least 90%).
Contributing scenario contro	llin	g worker exposure for 6: Trea	atment of articles by dipping and pouring
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 100%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	1	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	÷	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Advanced. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pr Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in place Correctly and OCs followed. Training for staff on good prace Good standard of personal hypervision 	ocess. on. tilation. s. ed tools and objects nt and work area. ace to check that the RMMs in place are being used ctice. giene.
Conditions and measures relations	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves employee training. (Efficiency of Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	s (tested to EN374) in combination with 'basic' f at least 90%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields at contact. ontact with eyes. Wash off any skin contamination
Respiratory protection	:	Respiratory protection (Efficient	cy of at least 90%).

Section 3 - Exposure estimation and reference to its source

Exposure estimation and refe industrial site (no inclusion in	erei nto	nce to its source - Environment: 1: Use of non-reactive processing aid at or or onto article)
Exposure assessment (environment):	-	EUSES 2.1.2
Exposure estimation	:	Freshwater: 0.00818 mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.
		Freshwater sediment: 0.031 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
		Marine water: 0.000765 mg/l. Risk characterisation ratio (PEC/PNEC): 0.014.
		Marine water sediment: 0.00288 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
		Sewage Treatment Plant: 0 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.
		Soil: 0.045 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
		Air: 0.138 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.
Remark	:	Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR < 1).
Exposure estimation and refe continuous process with occ	erei asi	nce to its source - Workers: 2: Chemical production or refinery in closed onal controlled exposure or processes with equivalent containment conditions
Exposure assessment (human):	:	ECETOC TRA worker v3
Exposure estimation	:	Worker - inhalative, long-term - systemic: 4.299 mg/m³. Risk characterisation ratio: 0.279.
		Worker - dermal, long-term - systemic: 0.137 mg/kg bw/day. Risk characterisation ratio: 0.012.
		Worker - combined, long-term - systemic: 0.291.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).
Exposure estimation and refe	erei	nce to its source - Workers: 3: Mixing or blending in batch processes
Exposure assessment (human):	:	ECETOC TRA worker v3
Exposure estimation	-	Worker - inhalative, long-term - systemic: 2.149 mg/m ³ . Risk characterisation ratio: 0.14.
		Worker - dermal, long-term - systemic: 1.371 mg/kg bw/day. Risk characterisation ratio: 0.12.
		Worker - combined, long-term - systemic: 0.26.
Remark	:	Based on the applied RMMs the risk towards humans is sufficiently controlled (RCR < 1).

Diethylenetriamine, DETA		Exposure Scenario: 6	Use at industrial sites - Use as a processing aid/ additive.
Exposure estimation and refe	erei ed fa	nce to its source - Workers: acilities	4: Transfer of substance or mixture (charging and
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: 0	erm - systemic: 4.299 mg/m³. .279.
		Worker - dermal, long-term Risk characterisation ratio: 0	i - systemic: 1.371 mg/kg bw/day. .12.
		Worker - combined, long-t	erm - systemic: 0.399.
Remark	:	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe discharging) at dedicated fac	ere: ciliti	nce to its source - Workers: les	5: Transfer of substance or mixture (charging and
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: 0	erm - systemic: 2.149 mg/m³. .14.
		Worker - dermal, long-tern Risk characterisation ratio: 0	i - systemic: 1.371 mg/kg bw/day. .12.
		Worker - combined, long-t	erm - systemic: 0.26.
Remark	:	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR
Exposure estimation and ref	erei	nce to its source - Workers:	6: Treatment of articles by dipping and pouring
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: 0	erm - systemic: 4.299 mg/m³. .279.
		Worker - dermal, long-tern Risk characterisation ratio: 0	i - systemic: 1.371 mg/kg bw/day. .12.
		Worker - combined, long-t	erm - systemic: 0.399.
Remark	:	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR

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

General	: The immediate downstream user is required to evaluate whether the operational conditions and risk management measures described in the exposure scenario fit to his use. If other OC/RMM are adopted, the user has to ensure that risks are managed to at least equivalent levels. The risk assessment methods/tools given in section 3 may be used for this evaluation.
Environment	: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the sub	sta	ince or mixture
Product definition	1	Mono-constituent substance
Product name	:	Diethylenetriamine, DETA
Section 1 - Title		
Short title of the exposure scenario	:	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
List of use descriptors	:	Identified use name: ES7: Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC10, PROC11, PROC13, PROC15, PROC19; ERC08c, ERC08f Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC10, PROC11, PROC13, PROC15, PROC19 Subsequent service life relevant for that use: No. Environmental Release Category: ERC08c, ERC08f
Environmental contributing scenarios	:	Use as a polyurethane curing agent for rigid foam production - ERC08c Use as a polyurethane curing agent for rigid foam production - ERC08f
Health Contributing scenarios	:	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions - PROC01 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions - PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03 Chemical production where opportunity for exposure arises - PROC04 Chemical production where opportunity for exposure arises (AEROSOLS) - PROC04 Mixing or blending in batch processes - PROC05 Mixing or blending in batch processes (AEROSOLS) - PROC05 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - PROC08a Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b Roller application or brushing - PROC10 Non industrial spraying - PROC11 Treatment of articles by dipping and pouring - PROC13 Use as laboratory reagent - PROC15
		Manual activities involving hand contact - PROC19 Manual activities involving hand contact (AEROSOLS) - PROC19
Number of the ES	:	7

Section 2 - Exposure controls

Contributing scenario contro foam production	Iling environmental exposure for 1: Use as a polyurethane curing agen	t for rigid	
Amounts used	: Daily local widespread use amount: ≤0.0059 tonnes/day.		
Other conditions affecting environmental exposure	Release to waste water from process: Release factor after on-site risk management: 1.5%. (FEICA 8c.3.v2) Local release rate: 0.088 kg/day.		
	Release to air from process: Release factor after on-site risk management: 0%. (FEICA 8c.3.v2)		
	Release to soil from process:		
Date of issue/Date of revision	: 26/01/2018 Version : 12	/ en 93/130	

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.	
		Release factor after on-site risk	management: 0%. (FEICA 8c.3.v2)	
Organisational measures to prevent/limit release from site	:	Application of solvent-borne or water-borne products. (FEICA) Covers indoor and outdoor use. (FEICA) Equipment cleaned with organic solvent, washings are collected and disposed of as solvent waste. (FEICA) Process with efficient use of raw materials. (FEICA)		
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes.	(Efficiency of at least 87.34%)	
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the	waste treatment operations.	
Contributing scenario control foam production	llin	g environmental exposure for	2: Use as a polyurethane curing agent for rigid	
Amounts used	:	Daily local widespread use amo	ount: ≤0.0059 tonnes/day.	
Other conditions affecting environmental exposure	:	Release to waste water from pr Release factor after on-site risk Local release rate: 0.088 kg/da	ocess: management: 1.5%. (FEICA 8c.3.v2) y.	
		Release to air from process: Release factor after on-site risk	management: 0%. (FEICA 8c.3.v2)	
		Release to soil from process:		
Conditions and measures		Release factor after on-site risk	(Efficiency of at least 87 34%)	
related to sewage treatment plant	Ì	Sewage freatment Flam. fes.	(Enciency of at least of .54 %)	
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the Dispose of waste product or use	waste treatment operations. ed containers according to local regulations.	
Contributing scenario control without likelihood of exposur	llin e c	g worker exposure for 3: Che or processes with equivalent c	mical production or refinery in closed process ontainment conditions	
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 5%.	
Physical state	:	Liquid.		
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.	
Other conditions affecting workers exposure	-	Indoor use. Process temperature: ≤40 °C.		
neasures to control dispersion from source towards the worker	:	Provide a basic standard of ger	/ Management System: Basic. eral ventilation (1 to 3 air changes per hour).	
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff expo Segregation of the emitting pro- Effective contaminant extraction Good standard of general ven Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in place Correctly and OCs followed. Training for staff on good prace Good standard of personal hydrogeneous protection 	sed. occess. on. tilation. s. ed tools and objects t and work area. ace to check that the RMMs in place are being used tice. giene.	
		· 26/01/2018	Varsian (12 / an 04/420	
Date of Issue/Date of revision		: 20/01/2018	Version : 12 / en 94/130	

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
Personal protection	:	Wear suitable gloves tested to EN374. (Efficiency of at least 80%) Skin coverage with appropriate barrier material based on potential for contact with the chemicals. Wear chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact. Avoid contact with skin. Avoid contact with eyes. Wash off any skin contamination immediately.	
Contributing scenario contro	llin	g worker exposure for 4: Che	emical production or refinery in closed continuous
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	1	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	÷	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of gen	y Management System: Basic. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pre- Effective contaminant extractions Good standard of general vere- Minimisation of manual phase Avoid contact with contamination Regular cleaning of equipment Management/supervision in pre- correctly and OCs followed. Training for staff on good prace- Good standard of personal hypervisions. 	osed. rocess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. <i>r</i> giene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro closed batch processes with condition	llin oc	g worker exposure for 5: Mar casional controlled exposure	nufacture or formulation in the chemical industry in or processes with equivalent containment
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	;	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of get	y Management System: Basic. neral ventilation (1 to 3 air changes per hour).
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 95/130

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exponsional staff exponsion of the emitting provide the emitting	osed. ocess. on. tilation. s. ed tools and objects nt and work area. ace to check that the RMMs in place are being used ctice. giene.
Porsonal protection		Wear suitable gloves tested to	EN374 (Efficiency of at least 80%)
Personal protection		Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid c immediately.	shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Contributing scenario controll arises	lin	g worker exposure for 6: Che	mical production where opportunity for exposure
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 5%.
Physical state	;	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Provide a good standard of gen hour). (Efficiency of at least 30%	y Management System: Basic. leral ventilation (not less than 3 to 5 air changes per % - Inhalation)
		or: Ensure operation is underta	ken outdoors.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exports Segregation of the emitting prime Effective contaminant extraction Good standard of general veries Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipmer Management/supervision in place Correctly and OCs followed. Training for staff on good prace Good standard of personal hypervision 	osed. ocess. on. tilation. s. ed tools and objects nt and work area. ace to check that the RMMs in place are being used ctice. giene.
Conditions and measures rela	te	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.		
Contributing scenario contro arises (AEROSOLS)	Contributing scenario controlling worker exposure for 7: Chemical production where opportunity for exposure arises (AEROSOLS)				
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.		
Physical state	1	Liquid.			
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.		
Other conditions affecting workers exposure	-	Indoor use. Process temperature: ≤40 °C.			
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a good standard of ger hour). (Efficiency of at least 30	y Management System: Basic. neral ventilation (not less than 3 to 5 air changes per % - Inhalation)		
		or: Ensure operation is underta	ken outdoors.		
organisational measures to prevent/limit releases, dispersion and exposure	•	 Containment as appropriate. Minimise number of staff expo Segregation of the emitting pr Effective contaminant extracti Good standard of general ver Minimisation of manual phase 	osed. rocess. on. ntilation. es. ted tools and objects		
		 Avoid contact with containing Regular cleaning of equipment Management/supervision in p correctly and OCs followed. Training for staff on good practice Good standard of personal hyperbolic 	nt and work area. lace to check that the RMMs in place are being used ctice. /giene.		
Conditions and measures relations	ate	d to personal protection, hygi	ene and health evaluation		
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination		
Contributing scenario contro	llin	g worker exposure for 8: Mix	ing or blending in batch processes		
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.		
Physical state	:	Liquid.			
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.		
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.			
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a good standard of ger hour). (Efficiency of at least 30	y Management System: Basic. neral ventilation (not less than 3 to 5 air changes per % - Inhalation)		
		or: Ensure operation is underta	ken outdoors.		
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting presentation of the emitting presentation of the emitting presentation. Good standard of general vere Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in presentation of staff on good prace 	osed. rocess. on. htilation. es. ted tools and objects ht and work area. lace to check that the RMMs in place are being used ctice.		
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 97/130		

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
		- Good standard of personal hy	giene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. ontact with eyes. Wash off any skin contamination
		immediately.	
Contributing scenario contro	ollin	g worker exposure for 9: Mix	ing or blending in batch processes (AEROSOLS)
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a good standard of ger hour). (Efficiency of at least 30°	y Management System: Basic. neral ventilation (not less than 3 to 5 air changes per % - Inhalation)
		or: Ensure operation is underta	ken outdoors.
organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff expo Segregation of the emitting pr Effective contaminant extracti Good standard of general ver Minimisation of manual phase Avoid contact with contaminat Regular cleaning of equipmer Management/supervision in p correctly and OCs followed. Training for staff on good prace Good standard of personal hy 	osed. ocess. on. ntilation. es. ed tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. rgiene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. ontact with eyes. Wash off any skin contamination
Contributing scenario contro discharging) at non-dedicate	ollin d fa	g worker exposure for 10: Tra acilities	ansfer of substance or mixture (charging and
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 4 hours	per day.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Basic. neral ventilation (1 to 3 air changes per hour).
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 98/130

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.		
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exports Segregation of the emitting presentation of the emitting presentation of the emitting presentation. Good standard of general verts Minimisation of manual phase Avoid contact with contaminate regular cleaning of equipment. Management/supervision in proceeding of staff on good prace. Training for staff on good prace. 	osed. ocess. on. utilation. es. red tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. rgiene.		
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation		
Personal protection	-	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields at contact. ontact with eyes. Wash off any skin contamination		
Contributing scenario control discharging) at dedicated fac	llin iliti	g worker exposure for 11: Trates	ansfer of substance or mixture (charging and		
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 5%.		
Physical state	:	Liquid.			
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.		
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.			
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Basic. heral ventilation (1 to 3 air changes per hour).		
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting presentation of the emitting presentation. Effective contaminant extraction. Good standard of general vertex. Minimisation of manual phase. Avoid contact with contaminate. Regular cleaning of equipment. Management/supervision in procorrectly and OCs followed. Training for staff on good prace. Good standard of personal hypervision. 	osed. ocess. on. titilation. es. red tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. rgiene.		
Conditions and measures rela	Conditions and measures related to personal protection, hygiene and health evaluation				
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. ontact with eyes. Wash off any skin contamination		

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
Contributing scenario contro	llin	g worker exposure for 12: I	Roller application or brushing
Concentration of substance in mixture or article	:	Covers percentage substanc	e in the product up to 5%.
Physical state	- 1	Liquid.	
Frequency and duration of use/exposure	-	Covers exposure up to 4 hou	rs per day.
Other conditions affecting workers exposure	-	Indoor use. Process temperature: ≤40 °C).
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Saf Provide a good standard of g hour). (Efficiency of at least 3	ety Management System: Basic. eneral ventilation (not less than 3 to 5 air changes per 30% - Inhalation)
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate Minimise number of staff ex Segregation of the emitting Effective contaminant extract Good standard of general v Minimisation of manual pha Avoid contact with contamir Regular cleaning of equipm Management/supervision in correctly and OCs followed. Training for staff on good pr Good standard of personal 	e. posed. process. ction. entilation. ses. nated tools and objects nent and work area. place to check that the RMMs in place are being used ractice. hygiene.
Conditions and measures rel	ate	d to personal protection, hy	giene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropria the chemicals. Wear chemically resistant face when there is potential for dir Avoid contact with skin. Avoid immediately.	to EN374. (Efficiency of at least 80%) te barrier material based on potential for contact with ce shield, goggles or safety glasses with side shields ect contact. I contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 13: I	Non industrial spraying
Concentration of substance in mixture or article	:	Covers percentage substanc	e in the product up to 5%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to	8 hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C).
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Saf Provide a good standard of g hour). (Efficiency of at least 3 or: Ensure operation is under	ety Management System: Basic. eneral ventilation (not less than 3 to 5 air changes per 30% - Inhalation) taken outdoors
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate Minimise number of staff ex Segregation of the emitting Effective contaminant extract Good standard of general v Minimisation of manual pha Avoid contact with contamir Regular cleaning of equipm Management/supervision in correctly and OCs followed. Training for staff on good pr Good standard of personal 	e. posed. process. ction. entilation. ses. nated tools and objects nent and work area. place to check that the RMMs in place are being used ractice. hygiene.
-			

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Respiratory protection	1	Respiratory protection (Efficient	cy of at least 90%).
Contributing scenario contro	llin	g worker exposure for 14: No	n industrial spraying (AEROSOLS)
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 5%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a good standard of gen hour). (Efficiency of at least 309	y Management System: Basic. leral ventilation (not less than 3 to 5 air changes per % - Inhalation)
		or: Ensure operation is underta	ken outdoors.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exports Segregation of the emitting prime terrestriction of the emitting prime. Effective contaminant extractions Good standard of general verime. Minimisation of manual phases Avoid contact with contaminate. Regular cleaning of equipment. Management/supervision in places. Training for staff on good praces. Good standard of personal hypersection. 	used. ocess. on. tilation. s. ed tools and objects at and work area. ace to check that the RMMs in place are being used ctice. giene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Respiratory protection	1	Respiratory protection (Efficient	cy of at least 90%).
Contributing scenario contro	llin	g worker exposure for 15: Tre	eatment of articles by dipping and pouring
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 5%.
Physical state	4	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Basic. neral ventilation (1 to 3 air changes per hour).
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Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pro- Effective contaminant extraction Good standard of general vent Minimisation of manual phase Avoid contact with contaminatter Regular cleaning of equipmerter Management/supervision in placerectly and OCs followed. Training for staff on good prace- Good standard of personal hypersonal hyper	sed. ocess. on. tilation. s. ed tools and objects it and work area. ace to check that the RMMs in place are being used stice. giene.
Conditions and measures rela	te	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to a Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Contributing scenario control	lin	g worker exposure for 16: Us	e as laboratory reagent
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 5%.
Physical state	÷	Liquid.	
Frequency and duration of use/exposure	1	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Provide a basic standard of ger	y Management System: Basic. leral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pro- Effective contaminant extraction Good standard of general vent Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipment Management/supervision in pl correctly and OCs followed. Training for staff on good practice Good standard of personal hypervision 	sed. ocess. on. tilation. s. ed tools and objects at and work area. ace to check that the RMMs in place are being used stice. giene.
Conditions and measures rela	te	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to a Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
Contributing scenario contro	llin	g worker exposure for 17:	Manual activities involving hand contact
Concentration of substance in mixture or article	:	Covers percentage substant	ce in the product up to 5%.
Physical state Frequency and duration of	÷	Liquid. Covers exposure up to 1 hou	ırs per day.
use/exposure		Indeeruse	
workers exposure	Ċ	Process temperature: ≤40 °(D.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Sa Provide a good standard of g hour). (Efficiency of at least	fety Management System: Basic. general ventilation (not less than 3 to 5 air changes per 30% - Inhalation)
		or: Ensure operation is unde	rtaken outdoors.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriat Minimise number of staff et Segregation of the emitting Effective contaminant extra Good standard of general v Minimisation of manual pha Avoid contact with contami Regular cleaning of equipm Management/supervision in correctly and OCs followed. Training for staff on good p Good standard of personal 	e. xposed. process. ction. yentilation. ases. nated tools and objects nent and work area. n place to check that the RMMs in place are being used ractice. hygiene.
Conditions and measures rel	ate	d to personal protection, hy	vigene and health evaluation
Personal protection	:	Wear suitable gloves tested Skin coverage with appropria the chemicals. Wear chemically resistant fa when there is potential for di Avoid contact with skin. Avoi immediately.	to EN374. (Efficiency of at least 80%) ate barrier material based on potential for contact with ce shield, goggles or safety glasses with side shields rect contact. d contact with eyes. Wash off any skin contamination
Contributing scenario contro (AEROSOLS)	llin	g worker exposure for 18:	Manual activities involving hand contact
Concentration of substance in mixture or article	:	Covers percentage substand	ce in the product up to 5%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 1 hou	ırs per day.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °0	C.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Sa Provide a good standard of g hour). (Efficiency of at least	fety Management System: Basic. general ventilation (not less than 3 to 5 air changes per 30% - Inhalation)
		or: Ensure operation is unde	rtaken outdoors.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriat Minimise number of staff et Segregation of the emitting Effective contaminant extra Good standard of general v Minimisation of manual pha Avoid contact with contami Regular cleaning of equipm Management/supervision in correctly and OCs followed. Training for staff on good regular cleaning of good regular cleaning of staff on good regular cleaning of good regular cleaning clea	e. kposed. process. iction. ventilation. ases. nated tools and objects nent and work area. n place to check that the RMMs in place are being used place to check that the RMMs in place are being used
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 103/130

Diethylenetriamine, DETA	Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
	- Good standard of personal h	ygiene.
Conditions and measures related	ed to personal protection, hyg	iene and health evaluation
Personal protection :	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid o immediately.	EN374. (Efficiency of at least 80%) e barrier material based on potential for contact with e shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination

Section 3 - Exposure estimation and reference to its source

Exposure estimation and r foam production	eference to its source - Environment: 1: Use as a polyurethane curing agent for rigid				
Exposure assessment (environment):	: EUSES 2.1.2				
Exposure estimation	: Freshwater: 0.00874 mg/l. Risk characterisation ratio (PEC/PNEC): 0.016.				
	Freshwater sediment: 0.033 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.				
	Marine water: 0.000821 mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.				
	Marine water sediment: 0.00308 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.				
	Sewage Treatment Plant: 0.00556 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.				
	Soil: 0.00729 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.				
	Air: 0.00000151 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.				
Remark	: Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR < 1).				
Exposure estimation and r	eference to its source - Environment: 2: Use as a polyurethane curing agent for rigid				
Exposure assessment (environment):	: EUSES 2.1.2				
Exposure estimation	: Freshwater: 0.00874 mg/l. Risk characterisation ratio (PEC/PNEC): 0.016.				
	Freshwater sediment: 0.033 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.				
	Marine water: 0.000821 mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.				
	Marine water sediment: 0.00308 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.				
	Sewage Treatment Plant: 0.00556 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.				
	Soil: 0.00729 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.				
Date of issue/Date of revision	: 26/01/2018 Version : 12 / en 104/130				

Diethylenetriamine, DETA	Exposure Scer	nario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
	Air: 0.0000015 Risk characteri	1 mg/m³. isation ratio ((PEC/PNEC): Not available.
Remark	: Based on the a (RCR < 1).	applied RMN	Is the risk towards environment is sufficiently controlled
Exposure estimation and reprocess without likelihood	ference to its sourc of exposure or proc	ce - Workers cesses with	s: 3: Chemical production or refinery in closed equivalent containment conditions
Exposure assessment (human):	: ECETOC TRA	worker v3	
Exposure estimation	: Worker - inhal Risk characteri	lative, long- isation ratio:	term - systemic: 0.0086 mg/m³. <0.01.
	Worker - derm Risk characteri	nal, long-ter isation ratio:	m - systemic: 0.00136 mg/kg bw/day. <0.01.
	Worker - coml	bined, long	term - systemic: <0.01.
Remark	: Based on the a < 1).	applied RMM	Is the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re continuous process with o	ference to its source to its s	ce - Workers l exposure	s: 4: Chemical production or refinery in closed or processes with equivalent containment conditions
Exposure assessment (human):	: ECETOC TRA	worker v3	
Exposure estimation	: Worker - inhal Risk characteri	lative, long- isation ratio:	term - systemic: 4.299 mg/m³. 0.279.
	Worker - derm Risk characteri	nal, long-ter isation ratio:	m - systemic: 0.055 mg/kg bw/day. <0.01.
	Worker - coml	bined, long	-term - systemic: 0.284.
Remark	: Based on the a < 1).	applied RMN	Is the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re industry in closed batch pr containment condition	ference to its sourc ocesses with occas	ce - Workers ional contro	s: 5: Manufacture or formulation in the chemical olled exposure or processes with equivalent
Exposure assessment (human):	: ECETOC TRA	worker v3	
Exposure estimation	: Worker - inhal Risk characteri	lative, long- isation ratio:	term - systemic: 2.579 mg/m³. 0.168.
	Worker - derm Risk characteri	nal, long-ter isation ratio:	m - systemic: 0.028 mg/kg bw/day. <0.01.
	Worker - coml	bined, long	term - systemic: 0.17.
Remark	: Based on the a < 1).	applied RMM	Is the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re exposure arises	ference to its sourc	ce - Workers	s: 6: Chemical production where opportunity for
Exposure assessment (human):	: ECETOC TRA	worker v3	

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.39	n - systemic: 6.018 mg/m³.)1.
		Worker - dermal, long-term - Risk characterisation ratio: 0.02	systemic: 0.274 mg/kg bw/day. 24.
		Worker - combined, long-tern	n - systemic: 0.415.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and reference exposure arises (AEROSOLS	erei 6)	nce to its source - Workers: 7:	Chemical production where opportunity for
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.80	n - local: 0.7 mg/m³.)5.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe	ere	nce to its source - Workers: 8:	Mixing or blending in batch processes
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.39	n - systemic: 6.018 mg/m³. 91.
		Worker - dermal, long-term - Risk characterisation ratio: 0.04	systemic: 0.548 mg/kg bw/day. I8.
		Worker - combined, long-tern	n - systemic: 0.439.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and reformation (AEROSOLS)	erei	nce to its source - Workers: 9:	Mixing or blending in batch processes
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.80	n - local: 0.7 mg/m³.)5.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe discharging) at non-dedicate	ere d fa	nce to its source - Workers: 10 acilities): Transfer of substance or mixture (charging and
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.83	n - systemic: 12.9 mg/m³. 37.
		Worker - dermal, long-term - Risk characterisation ratio: 0.04	systemic: 0.548 mg/kg bw/day. I8.
		Worker - combined, long-tern	n - systemic: 0.886.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
Exposure estimation and re discharging) at dedicated fa	eferer aciliti	nce to its source - Workers	: 11: Transfer of substance or mixture (charging and
Exposure assessment	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: (t erm - systemic: 8.597 mg/m³. 0.558.
		Worker - dermal, long-terr Risk characterisation ratio: (n - systemic: 0.548 mg/kg bw/day. 0.048.
		Worker - combined, long-t	term - systemic: 0.606.
Remark	:	Based on the applied RMMs < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re	ferer	ice to its source - Workers	: 12: Roller application or brushing
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: (t erm - systemic: 9.027 mg/m³. 0.586.
		Worker - dermal, long-terr Risk characterisation ratio: (n - systemic: 1.097 mg/kg bw/day. 0.096.
		Worker - combined, long-	term - systemic: 0.682.
Remark	:	Based on the applied RMMs < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re	ferer	nce to its source - Workers	: 13: Non industrial spraying
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: (t erm - systemic: 6.018 mg/m³. 0.391.
		Worker - dermal, long-terr Risk characterisation ratio: (n - systemic: 4.286 mg/kg bw/day. 0.376.
		Worker - combined, long-	term - systemic: 0.767.
Remark	:	Based on the applied RMMs < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re	ferer	nce to its source - Workers	: 14: Non industrial spraying (AEROSOLS)
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: (t erm - local: 0.28 mg/m³. 0.322.
Remark	- :	Based on the applied RMMs < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re	ferer	nce to its source - Workers	: 15: Treatment of articles by dipping and pouring
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-t Risk characterisation ratio: (t erm - systemic: 8.597 mg/m³. 0.558.
		Worker - dermal, long-terr Risk characterisation ratio: (n - systemic: 0.548 mg/kg bw/day. 0.048.
		Worker - combined, long-t	term - systemic: 0.606.
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 107/130

Diethylenetriamine, DETA		Exposure Scenario: 7	Widespread use by professional workers - Use as a polyurethane curing agent for rigid foam production.
Remark	:	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re-	ferer	nce to its source - Workers:	16: Use as laboratory reagent
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	: Worker - inhalative, long-term - systemic: 4.299 mg/m ³ . Risk characterisation ratio: 0.279.	
		Worker - dermal, long-term Risk characterisation ratio: <	n - systemic: 0.014 mg/kg bw/day. 0.01.
		Worker - combined, long-t	erm - systemic: 0.28.
Remark	:	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re-	ferer	nce to its source - Workers:	17: Manual activities involving hand contact
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-te Risk characterisation ratio: 0	erm - systemic: 3.009 mg/m³. .195.
		Worker - dermal, long-term Risk characterisation ratio: 0	n - systemic: 5.657 mg/kg bw/day. .496.
		Worker - combined, long-t	erm - systemic: 0.692.
Remark	:	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re (AEROSOLS)	ferer	nce to its source - Workers:	18: Manual activities involving hand contact
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-te Risk characterisation ratio: 0	e rm - local: 0.14 mg/m³. .161.
Remark	:	Based on the applied RMMs < 1).	the risk towards humans is sufficiently controlled (RCR

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

General	: The immediate downstream user is required to evaluate whether the operational conditions and risk management measures described in the exposure scenario fit to his use. If other OC/RMM are adopted, the user has to ensure that risks are managed to at least equivalent levels. The risk assessment methods/tools given in section 3 may be used for this evaluation.
Environment	: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).


Annex to the extended Safety Data Sheet (eSDS)

Professional

dentification of the substance or mixture				
Product definition	:	Mono-constituent substance		
Product name	:	Diethylenetriamine, DETA		
Section 1 - Title				
Short title of the exposure scenario	:	Widespread use by professional workers - Use as an epoxy curing agent.		
List of use descriptors	:	Identified use name: ES8: Widespread use by professional workers - Use as an epoxy curing agent: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC10, PROC11, PROC13, PROC15, PROC19; ERC08c, ERC08f Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC10, PROC11, PROC13, PROC15, PROC04 Subsequent service life relevant for that use: No. Environmental Release Category: ERC08c, ERC08f		
Environmental contributing scenarios	:	Epoxy curing agent - ERC08c Epoxy curing agent - ERC08f		
Health Contributing scenarios	:	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions - PROC01 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions - PROC02 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition - PROC03		
		Chemical production where opportunity for exposure arises - PROC04 Chemical production where opportunity for exposure arises (AEROSOLS) - PROC04		
		Mixing or blending in batch processes - PROC05 Mixing or blending in batch processes (AEROSOLS) - PROC05 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - PROC08a		
		Transfer of substance or mixture (charging and discharging) at dedicated facilities - PROC08b		
		Non industrial spraying - PROC10		
		Non industrial spraying (AEROSOLS) - PROC11		
		I reatment of articles by dipping and pouring - PROC13		
		Manual activities involving hand contact - PROC19		
		Manual activities involving hand contact (AEROSOLS) - PROC19		
Number of the ES	:	8		

Section 2 - Exposure controls

Г

Contributing scenario contro	olling environmental exposure for 1: Epox	xy curing agent
Amounts used	: Daily local widespread use amount: ≤0.	0059 tonnes/day.
Other conditions affecting environmental exposure	: Release to waste water from process: Release factor after on-site risk manage Local release rate: 0.088 kg/day.	ement: 1.5%. (FEICA 8c.3.v2)
	Release to air from process: Release factor after on-site risk manage	ement: 0%. (FEICA 8c.3.v2)
	Release to soil from process: Release factor after on-site risk manage	ement: 0%. (FEICA 8c.3.v2)
Date of issue/Date of revision	: 26/01/2018	Version : 12 / en 109/130

Diethylenetriamine, DETA		Exposure Scenario: 8Widespread use by professional workers - Use as an epoxy curing agent.
Organisational measures to prevent/limit release from site	:	Application of solvent-borne or water-borne products. (FEICA) Covers indoor and outdoor use. (FEICA) Equipment cleaned with organic solvent, washings are collected and disposed of as solvent waste. (FEICA) Process with efficient use of raw materials. (FEICA)
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. (Efficiency of at least 87.34%)
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the waste treatment operations.
Contributing scenario contro	llin	g environmental exposure for 2: Epoxy curing agent
Amounts used	:	Daily local widespread use amount: ≤0.0059 tonnes/day.
Other conditions affecting environmental exposure	:	Release to waste water from process: Release factor after on-site risk management: 1.5%. (FEICA 8c.3.v2) Local release rate: 0.088 kg/day.
		Release to air from process: Release factor after on-site risk management: 0%. (FEICA 8c.3.v2)
		Release to soil from process: Release factor after on-site risk management: 0%. (FEICA 8c.3.v2)
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. (Efficiency of at least 87.34%)
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the waste treatment operations. Dispose of waste product or used containers according to local regulations.
Contributing scenario contro without likelihood of exposur	llin 'e (g worker exposure for 3: Chemical production or refinery in closed process or processes with equivalent containment conditions
Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 50%.
Physical state	1	Liquid.
Frequency and duration of use/exposure	-	Covers daily exposures up to 8 hours.
Other conditions affecting workers exposure	÷	Indoor use. Process temperature: ≤40 °C.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety Management System: Basic. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene.
Conditions and measures rela	ate	d to personal protection, hygiene and health evaluation

Diethylenetriamine, DETA		Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 4: Che	mical production or refinery in closed continuous
process with occasional com	roi	Covers percentage substance	in the product up to 50%
substance in mixture or article		Covers percentage substance	
Physical state	4	Liquid.	
Frequency and duration of use/exposure	-	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of gei	y Management System: Basic. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting presentation of the emitting presentation of the emitting presentation. Good standard of general vere Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in presentation of staff on good prace Good standard of personal hypersentation. 	osed. rocess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. <i>r</i> giene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 5: Mar	nufacture or formulation in the chemical industry in
closed batch processes with condition	ос	casional controlled exposure	or processes with equivalent containment
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 50%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source	:	Occupational Health and Safet Provide a good standard of ger hour). (Efficiency of at least 30	y Management System: Basic. neral ventilation (not less than 3 to 5 air changes per % - Inhalation)
lowarus life worker		or: Ensure operation is underta	ken outdoors.

Diethylenetriamine, DETA		Exposure Scenario: 8	<i>Widespread use by professional workers - Use as an epoxy curing agent.</i>
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pr Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipment Management/supervision in place Correctly and OCs followed. Training for staff on good prace Good standard of personal hypervision 	osed. ocess. on. itilation. is. ed tools and objects ed tools and objects it and work area. ace to check that the RMMs in place are being used ctice. igiene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. ontact with eyes. Wash off any skin contamination
Contributing scenario contro arises	llin	g worker exposure for 6: Che	mical production where opportunity for exposure
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 50%.
Physical state	4	Liquid.	
Frequency and duration of use/exposure	1	Covers exposure up to 4 hours	per day.
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Basic. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pr Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipment Management/supervision in place Correctly and OCs followed. Training for staff on good prace Good standard of personal hypervision 	osed. ocess. on. tilation. es. ed tools and objects at and work area. lace to check that the RMMs in place are being used ctice. giene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields et contact. ontact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
Contributing scenario contro arises (AEROSOLS)	ollin	g worker exposure for 7: Ch	emical production where opportunity for exposure
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 50%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 1 hours	s per day.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safe Provide a basic standard of ge	ty Management System: Basic. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exp Segregation of the emitting p Effective contaminant extract Good standard of general ver Minimisation of manual phase Avoid contact with contaminar Regular cleaning of equipme Management/supervision in p correctly and OCs followed. Training for staff on good prag Good standard of personal h 	osed. rocess. ion. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. ygiene.
Conditions and measures rel	ate	d to personal protection, hyg	iene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for dire Avoid contact with skin. Avoid o immediately.	EN374. (Efficiency of at least 80%) e barrier material based on potential for contact with e shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 8: Mix	ing or blending in batch processes
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 50%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 1 hours	s per day.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	-	Occupational Health and Safe Provide a basic standard of ge	ty Management System: Basic. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exp. Segregation of the emitting p Effective contaminant extract Good standard of general verestimation of manual phase. Avoid contact with contaminant Regular cleaning of equipmerestimation of management/supervision in procorrectly and OCs followed. Training for staff on good prase. 	osed. rocess. ion. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. ygiene.
Date of issue/Date of revision	ate	a to personal protection, hyg	
Date of issue/Date of revision		. 20/01/2010	

Diethylenetriamine, DETA		Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields at contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 9: Mix	ing or blending in batch processes (AEROSOLS)
Concentration of substance in mixture or article	-	Covers percentage substance	in the product up to 50%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 1 hours	per day.
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	-	Occupational Health and Safet Provide a basic standard of ger	y Management System: Basic. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting presentation of the emitting presentation. Effective contaminant extraction. Good standard of general vertex. Minimisation of manual phase. Avoid contact with contaminate. Regular cleaning of equipment. Management/supervision in procorrectly and OCs followed. Training for staff on good prace. Good standard of personal hypervision. 	osed. occess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. <i>r</i> giene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid of immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields at contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro discharging) at non-dedicate	llin d fa	g worker exposure for 10: Tracilities	ansfer of substance or mixture (charging and
Concentration of substance in mixture or article	:	Covers percentage substance	in the product up to 50%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Basic. heral ventilation (1 to 3 air changes per hour).

Diethylenetriamine, DETA		Exposure Scenario: 8	<i>Widespread use by professional workers - Use as an epoxy curing agent.</i>
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting presentation of the emitting presentation. Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipmerer Management/supervision in ple correctly and OCs followed. Training for staff on good prace Good standard of personal hypervision in ple correctly and presentation. 	sed. occess. on. tilation. s. ed tools and objects at and work area. ace to check that the RMMs in place are being used stice. giene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to I Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Respiratory protection	1	Respiratory protection (Efficience	cy of at least 90%).
Contributing scenario controlling worker exposure for 11: Transfer of substance or mixture (charging and discharging) at dedicated facilities			
Concentration of substance in mixture or article	:	Covers percentage substance i	n the product up to 50%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 4 hours	per day.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Basic. leral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. Good standard of general ventilation. Minimisation of manual phases. Avoid contact with contaminated tools and objects Regular cleaning of equipment and work area. Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed. Training for staff on good practice. Good standard of personal hygiene. 	
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
Contributing scenario contro	llin	g worker exposure for 12:	Roller application or brushing
Concentration of substance in mixture or article	:	Covers percentage substant	ce in the product up to 50%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	1	Covers exposure up to 4 ho	urs per day.
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °	С.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Sa Provide a good standard of hour). (Efficiency of at least	afety Management System: Basic. general ventilation (not less than 3 to 5 air changes per 30% - Inhalation)
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriat Minimise number of staff e Segregation of the emitting Effective contaminant extra Good standard of general Minimisation of manual phate Avoid contact with contaminat Regular cleaning of equipter Management/supervision in correctly and OCs followed. Training for staff on good personal 	te. xposed. g process. action. ventilation. ases. inated tools and objects ment and work area. n place to check that the RMMs in place are being used practice. I hygiene.
Conditions and measures rel	ate	d to personal protection, h	ygiene and health evaluation
Personal protection	:	Wear suitable gloves tested Skin coverage with appropri the chemicals. Wear chemically resistant fa when there is potential for d Avoid contact with skin. Avoi immediately.	to EN374. (Efficiency of at least 80%) ate barrier material based on potential for contact with ace shield, goggles or safety glasses with side shields irect contact. id contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 13:	Non industrial spraying
Concentration of substance in mixture or article	:	Covers percentage substant	ce in the product up to 50%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to	o 8 hours.
Other conditions affecting workers exposure	-	Indoor use. Process temperature: ≤40 °	С.
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Sa Provide a good standard of hour). (Efficiency of at least Local exhaust ventilation - e	afety Management System: Basic. general ventilation (not less than 3 to 5 air changes per 30% - Inhalation) fficiency of at least 80% (Inhalation, Dermal).
		or: Ensure operation is unde	ertaken outdoors.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriat Minimise number of staff e Segregation of the emitting Effective contaminant extra Good standard of general Minimisation of manual phate Avoid contact with contaminat Regular cleaning of equipter Management/supervision in correctly and OCs followed. Training for staff on good p Good standard of personal 	te. xposed. g process. action. ventilation. ases. inated tools and objects ment and work area. n place to check that the RMMs in place are being used practice. I hygiene.
Date of issue/Date of revision		. 26/01/2018	Version : 12 / en 116/130

Diethylenetriamine, DETA		Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear chemical-resistant gloves training. (Efficiency of at least 9 Skin coverage with appropriate the chemicals. Wear chemically resistant face	s (tested to EN374) in combination with specific activity 5%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields
		when there is potential for direct Avoid contact with skin. Avoid co immediately.	t contact. ontact with eyes. Wash off any skin contamination
Respiratory protection	:	Respiratory protection (Efficien	cy of at least 90%).
Contributing scenario contro	llin	g worker exposure for 14: No	n industrial spraying (AEROSOLS)
Concentration of substance in mixture or article	:	Covers percentage substance	n the product up to 50%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a good standard of ger hour). (Efficiency of at least 30°	y Management System: Basic. Ieral ventilation (not less than 3 to 5 air changes per % - Inhalation)
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pr Effective contaminant extractionation of general vert Minimisation of manual phase Avoid contact with contaminate Regular cleaning of equipment Management/supervision in procorrectly and OCs followed. Training for staff on good prace Good standard of personal hypersection 	osed. ocess. on. tilation. s. ed tools and objects nt and work area. ace to check that the RMMs in place are being used ctice. giene.
Conditions and measures rel	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields t contact. ontact with eyes. Wash off any skin contamination
Respiratory protection	1	Respiratory protection (Efficien	cy of at least 90%).
Contributing scenario contro	llin	g worker exposure for 15: Tre	eatment of articles by dipping and pouring
Concentration of substance in mixture or article	:	Covers percentage substance	n the product up to 50%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers exposure up to 4 hours	per day.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a good standard of ger hour). (Efficiency of at least 30 ^o	y Management System: Advanced. eral ventilation (not less than 3 to 5 air changes per % - Inhalation)
Date of issue/Date of revision		: 26/01/2018	Version : 12 / en 117/130

Diethylenetriamine, DETA		Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff exports. Segregation of the emitting presentation of the emitting presentation. Effective contaminant extraction. Good standard of general verts. Minimisation of manual phase. Avoid contact with contaminatt. Regular cleaning of equipmert. Management/supervision in place. Training for staff on good prace. Good standard of personal hypers. 	osed. rocess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. rgiene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direc Avoid contact with skin. Avoid c immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination
Contributing scenario contro	llin	g worker exposure for 16: Us	e as laboratory reagent
Concentration of substance in mixture or article	:	Covers percentage substance i	in the product up to 50%.
Physical state	÷	Liquid.	
Frequency and duration of use/exposure	-	Covers daily exposures up to 8	hours.
Other conditions affecting workers exposure	1	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safet Provide a basic standard of ger	y Management System: Basic. neral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff export Segregation of the emitting pr Effective contaminant extraction Good standard of general vert Minimisation of manual phase Avoid contact with contaminatt Regular cleaning of equipment Management/supervision in place Training for staff on good prace Good standard of personal hyperiation 	osed. rocess. on. ntilation. es. ted tools and objects nt and work area. lace to check that the RMMs in place are being used ctice. <i>y</i> giene.
Conditions and measures rela	ate	d to personal protection, hygi	ene and health evaluation
Personal protection	:	Wear suitable gloves tested to Skin coverage with appropriate the chemicals. Wear chemically resistant face when there is potential for direct Avoid contact with skin. Avoid co immediately.	EN374. (Efficiency of at least 80%) barrier material based on potential for contact with shield, goggles or safety glasses with side shields ct contact. contact with eyes. Wash off any skin contamination

Diethylenetriamine, DETA		Exposure Scenario: 8	Videspread use by professional workers - Use as n epoxy curing agent.
Contributing scenario contro	llin	g worker exposure for 17: Manu	ual activities involving hand contact
Concentration of substance in mixture or article	:	Covers percentage substance in t	the product up to 50%.
Physical state	1	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 ho	burs.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety N Provide a basic standard of gener	Management System: Basic. ral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff expose Segregation of the emitting proc Effective contaminant extraction Good standard of general ventile Minimisation of manual phases. Avoid contact with contaminated Regular cleaning of equipment a Management/supervision in place correctly and OCs followed. Training for staff on good practice Good standard of personal hygic 	ed. cess. ation. I tools and objects and work area. ce to check that the RMMs in place are being used ce. ene.
Conditions and measures relations	ate	d to personal protection, hygien	e and health evaluation
Personal protection	-	Wear chemical-resistant gloves (f training. (Efficiency of at least 95% Skin coverage with appropriate ba the chemicals. Wear chemically resistant face sh when there is potential for direct of Avoid contact with skin. Avoid con immediately.	tested to EN374) in combination with specific activity %) arrier material based on potential for contact with hield, goggles or safety glasses with side shields contact. htact with eyes. Wash off any skin contamination
Respiratory protection	:	Respiratory protection (Efficiency	of at least 90%).
Contributing scenario contro (AEROSOLS)	llin	g worker exposure for 18: Manu	ual activities involving hand contact
Concentration of substance in mixture or article	:	Covers percentage substance in t	the product up to 50%.
Physical state	:	Liquid.	
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 ho	burs.
Other conditions affecting workers exposure	:	Indoor use. Process temperature: ≤40 °C.	
Technical conditions and measures to control dispersion from source towards the worker	:	Occupational Health and Safety M Provide a basic standard of gener	Management System: Basic. ral ventilation (1 to 3 air changes per hour).
Organisational measures to prevent/limit releases, dispersion and exposure	:	 Containment as appropriate. Minimise number of staff expose Segregation of the emitting proce Effective contaminant extraction Good standard of general ventila Minimisation of manual phases. Avoid contact with contaminated Regular cleaning of equipment a Management/supervision in place correctly and OCs followed. Training for staff on good practice 	ed. ation. I tools and objects and work area. ce to check that the RMMs in place are being used ce.

Diethylenetriamine, DETA	Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
	- Good standard of persona	l hygiene.
Conditions and measures rela	ted to personal protection, h	ygiene and health evaluation
Personal protection	: Wear chemical-resistant glo employee training. (Efficience Skin coverage with appropri the chemicals. Wear chemically resistant fa when there is potential for d Avoid contact with skin. Avoi immediately.	oves (tested to EN374) in combination with 'basic' cy of at least 90%) ate barrier material based on potential for contact with ace shield, goggles or safety glasses with side shields irect contact. id contact with eyes. Wash off any skin contamination
Respiratory protection	: Respiratory protection (Effic	iency of at least 90%).

Section 3 - Exposure estimation and reference to its source

Exposure estimation and re	eference to its source - Environment: 1: Epoxy curing agent
Exposure assessment (environment):	: EUSES 2.1.2
Exposure estimation	: Freshwater: 0.00874 mg/l. Risk characterisation ratio (PEC/PNEC): 0.016.
	Freshwater sediment: 0.033 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Marine water: 0.000821 mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.
	Marine water sediment: 0.00308 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Sewage Treatment Plant: 0.00556 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.
	Soil: 0.00729 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Air: 0.00000151 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.
Remark	 Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR < 1).
Exposure estimation and re	eference to its source - Environment: 2: Epoxy curing agent
Exposure assessment (environment):	: EUSES 2.1.2
Exposure estimation	: Freshwater: 0.00874 mg/l. Risk characterisation ratio (PEC/PNEC): 0.016.
	Freshwater sediment: 0.033 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Marine water: 0.000821 mg/l. Risk characterisation ratio (PEC/PNEC): 0.015.
	Marine water sediment: 0.00308 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Sewage Treatment Plant: 0.00556 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.
	Soil: 0.00729 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.
	Air: 0.00000151 mg/m³.
Date of issue/Date of revision	: 26/01/2018 Version : 12 / en 120/130

Diethylenetriamine, DETA		Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
		Risk characterisation ratio (PEC/PNEC): Not available.
Remark	:	Based on the applied RMM (RCR < 1).	s the risk towards environment is sufficiently controlled
Exposure estimation and re	ferer of ex	ice to its source - Workers	s: 3: Chemical production or refinery in closed equivalent containment conditions
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long- with modifications). Risk characterisation ratio:	term - systemic: 0.02 mg/m³ (ECETOC TRA worker v3 <0.01.
		Worker - dermal, long-term Risk characterisation ratio:	m - systemic: 0.0068 mg/kg bw/day. <0.01.
		Worker - combined, long-	term - systemic: <0.01.
Remark	:	Based on the applied RMM < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re continuous process with oc	ferer casi	nce to its source - Workers onal controlled exposure (s: 4: Chemical production or refinery in closed or processes with equivalent containment conditions
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long- with modifications). Risk characterisation ratio:	term - systemic: 10.75 mg/m³ (ECETOC TRA worker v3 0.698.
		Worker - dermal, long-tern Risk characterisation ratio:	m - systemic: 0.274 mg/kg bw/day. 0.024.
		Worker - combined, long-	term - systemic: 0.722.
Remark	:	Based on the applied RMM < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re industry in closed batch pro containment condition	ferer oces:	ice to its source - Workers ses with occasional contro	s: 5: Manufacture or formulation in the chemical olled exposure or processes with equivalent
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long- with modifications). Risk characterisation ratio:	term - systemic: 4.51 mg/m³ (ECETOC TRA worker v3 0.293.
		Worker - dermal, long-tern Risk characterisation ratio:	m - systemic: 0.138 mg/kg bw/day. 0.012.
		Worker - combined, long-	term - systemic: 0.305.
Remark	:	Based on the applied RMM < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re exposure arises	ferer	nce to its source - Workers	s: 6: Chemical production where opportunity for
Exposure assessment (human):	:	ECETOC TRA worker v3	

Diethylenetriamine, DETA		Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
Exposure estimation	:	Worker - inhalative, long-tern with modifications). Risk characterisation ratio: 0.83	n - systemic: 12.9 mg/m³ (ECETOC TRA worker v3 38.
		Worker - dermal, long-term - Risk characterisation ratio: 0.07	systemic: 0.823 mg/kg bw/day. 72.
		Worker - combined, long-terr	n - systemic: 0.91.
Remark	:	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and reference exposure arises (AEROSOLS)	re	nce to its source - Workers: 7	Chemical production where opportunity for
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.57	n - local: 0.5 mg/m³. 75.
Remark	:	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refer	re	nce to its source - Workers: 8	Mixing or blending in batch processes
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-term with modifications). Risk characterisation ratio: 0.27	n - systemic: 4.3 mg/m³ (ECETOC TRA worker v3 79.
		Worker - dermal, long-term - Risk characterisation ratio: 0.04	systemic: 0.548 mg/kg bw/day. I8.
		Worker - combined, long-terr	n - systemic: 0.327.
Remark	:	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and reference (AEROSOLS)	re	nce to its source - Workers: 9	Mixing or blending in batch processes
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.57	n - local: 0.5 mg/m³. ′5.
Remark	:	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and reference discharging) at non-dedicated	rei I fa	nce to its source - Workers: 10 acilities): Transfer of substance or mixture (charging and
Exposure assessment (human):	;	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-tern with modifications). Risk characterisation ratio: 0.34	n - systemic: 5.37 mg/m³ (ECETOC TRA worker v3 I9.
		Worker - dermal, long-term - Risk characterisation ratio: 0.24	systemic: 2.742 mg/kg bw/day. I1.
		Worker - combined, long-terr	n - systemic: 0.589.
Remark	:	Based on the applied RMMs th < 1).	e risk towards humans is sufficiently controlled (RCR

Diethylenetriamine, DETA	Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
Exposure estimation and readischarging) at dedicated fa	ference to its source - Workers cilities	: 11: Transfer of substance or mixture (charging and
Exposure assessment (human):	: ECETOC TRA worker v3	
Exposure estimation	: Worker - inhalative, long- with modifications). Risk characterisation ratio:	term - systemic: 12.9 mg/m³ (ECETOC TRA worker v3 0.838.
	Worker - dermal, long-tern Risk characterisation ratio:	m - systemic: 1.645 mg/kg bw/day. 0.144.
	Worker - combined, long-	term - systemic: 0.982.
Remark	: Based on the applied RMM < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and ref	ference to its source - Workers	: 12: Roller application or brushing
Exposure assessment (human):	: ECETOC TRA worker v3	
Exposure estimation	: Worker - inhalative, long- with modifications). Risk characterisation ratio:	term - systemic: 3.76 mg/m³ (ECETOC TRA worker v3 0.244.
	Worker - dermal, long-tern Risk characterisation ratio:	m - systemic: 3.292 mg/kg bw/day. 0.289.
	Worker - combined, long-	term - systemic: 0.533.
Remark	: Based on the applied RMM < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and ret	ference to its source - Workers	s: 13: Non industrial spraying
Exposure assessment (human):	: ESIG ESVOC 3	
Exposure estimation	: Worker - inhalative, long- Risk characterisation ratio:	term - systemic: 3.02 mg/m³. 0.196.
	Worker - dermal, long-tern Risk characterisation ratio:	m - systemic: 1.07 mg/kg bw/day. 0.094.
	Worker - combined, long-	term - systemic: 0.29.
Remark	: Based on the applied RMM < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re	ference to its source - Workers	: 14: Non industrial spraying (AEROSOLS)
Exposure assessment (human):	: ESIG ESVOC 3	
Exposure estimation	: Worker - inhalative, long- Risk characterisation ratio:	term - local: 0.7 mg/m³. 0.805.
Remark	: Based on the applied RMM < 1).	s the risk towards humans is sufficiently controlled (RCR
Exposure estimation and re	ference to its source - Workers	: 15: Treatment of articles by dipping and pouring
Exposure assessment (human):	: ECETOC TRA worker v3	

Diethylenetriamine, DETA		Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.
Exposure estimation	:	Worker - inhalative, long-term with modifications). Risk characterisation ratio: 0.58	n - systemic: 9.03 mg/m³ (ECETOC TRA worker v3 36.
		Worker - dermal, long-term - Risk characterisation ratio: 0.14	systemic: 1.645 mg/kg bw/day. 14.
		Worker - combined, long-terr	n - systemic: 0.731.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe	rer	nce to its source - Workers: 16	6: Use as laboratory reagent
Exposure assessment (human):	:	ECETOC TRA worker v3	
Exposure estimation	:	Worker - inhalative, long-tern with modifications). Risk characterisation ratio: 0.6§	n - systemic: 10.75 mg/m³ (ECETOC TRA worker v3 98.
		Worker - dermal, long-term - Risk characterisation ratio: <0.0	systemic: 0.068 mg/kg bw/day.)1.
		Worker - combined, long-terr	n - systemic: 0.704.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe	rer	nce to its source - Workers: 1	7: Manual activities involving hand contact
Exposure assessment (human):	:	ECETOC TRA worker v3 with r	nodifications
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.34	n - systemic: 5.37 mg/m³. 49.
		Worker - dermal, long-term - Risk characterisation ratio: 0.62	systemic: 7.07 mg/kg bw/day. 2.
		Worker - combined, long-terr	n - systemic: 0.969.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR
Exposure estimation and refe (AEROSOLS)	rer	nce to its source - Workers: 1	8: Manual activities involving hand contact
Exposure assessment (human):	:	ESIG ESVOC 3	
Exposure estimation	:	Worker - inhalative, long-tern Risk characterisation ratio: 0.28	n - local: 0.25 mg/m³. 37.
Remark	:	Based on the applied RMMs the < 1).	e risk towards humans is sufficiently controlled (RCR

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

General	: The immediate downstream user is required to evaluate whether the operational conditions and risk management measures described in the exposure scenario fit to his use. If other OC/RMM are adopted, the user has to ensure that risks are managed to at least equivalent levels. The risk assessment methods/tools given in section 3 may be used for this evaluation.
Environment	: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

Diethylenetriamine, DETA	Exposure Scenario: 8	Widespread use by professional workers - Use as an epoxy curing agent.



Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the subs	sta	ince or mixture
Product definition	:	Mono-constituent substance
Product name	:	Diethylenetriamine, DETA
Section 1 - Title		
Short title of the exposure scenario	:	Consumer use - Use as an epoxy and polyurethane curing agent.
List of use descriptors	:	Identified use name: ES9: Consumer use - Use as an epoxy and polyurethane curing agent: PC01; ERC08c, ERC08f Subsequent service life relevant for that use: No. Environmental Release Category: ERC08c, ERC08f Market sector by type of chemical product: PC01
Environmental contributing scenarios	:	Epoxy curing agent - ERC08c Epoxy curing agent - ERC08f
Health Contributing scenarios	:	Adhesives, sealants - PC01
Number of the ES	;	9

Section 2 - Exposure controls

Contributing scenario contro	llin	g environmental exposure for 1: Epoxy curing agent				
Amounts used	:	Daily local widespread use amount: ≤0.0059 tonnes/day.				
Other conditions affecting environmental exposure	:	Release to waste water from process: Release factor after on-site risk management: 5%. (ERC08f) Local release rate: 0.293 kg/day.				
		Release to air from process: Release factor after on-site risk management: 15%. (ERC08f)				
		Release to soil from process: Release factor after on-site risk management: 0.5%. (ERC08f)				
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. (Efficiency of at least 87.34%)				
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the waste treatment operations.				
Contributing scenario contro	llin	g environmental exposure for 2: Epoxy curing agent				
Amounts used	1	Daily local widespread use amount: ≤0.0059 tonnes/day.				
Other conditions affecting environmental exposure	:	Release to waste water from process: Release factor after on-site risk management: 30%. (ERC08c) Local release rate: 1.756 kg/day.				
		Release to air from process: Release factor after on-site risk management: 15%. (ERC08c)				
		Release to soil from process: Release factor after on-site risk management: 0%. (ERC08c)				
Conditions and measures related to sewage treatment plant	:	Sewage Treatment Plant: Yes. (Efficiency of at least 87.34%)				
Conditions and measures related to external treatment of waste for disposal	:	Particular considerations on the waste treatment operations.				
Date of issue/Date of revision		: 26/01/2018 Version	;	: 12	/ en	126/130

Diethylenetriamine, DETA

Date of issue/Date of revision

Exposure Scenario: 9

Consumer use - Use as an epoxy and polyurethane curing agent.

Contributing scenario contro	olling consumer exposure for 3: Adhesives, sealants
Product characteristics	: Inhalation exposure: Yes. Dermal exposure: Yes.
Concentration of substance in mixture or article	: Covers percentage substance in the product up to 35%.
Physical state	: Liquid.
Amounts used	: Amount per use: ≤5 g/event. Skin contact: ≤0.1 g/event.
Frequency and duration of use/exposure	: Exposure duration: 6 h/event. Infrequent, 1 events per day
	Inhalation exposure: ≤10 min/event. Application duration: ≤30 min.
Other given operational conditions affecting consumers exposure	 Assumes that potential dermal contact is limited to inside hands / one hand / palm of hands. Inhalation factor: 1. Dermal transfer factor: 1. Covers skin contact area up to 43 cm². Room volume: ≥20 m³. Ventilation rate: ≥0.6 ach (air changes per hour). Release area: ≤0.05 m². Adult/Child assumed: Adult.
Area of use:	: Indoor use.

Section 3 - Exposure estimation and reference to its source

: 26/01/2018

Exposure estimation and r	reference to its source - Environment: 1: Epoxy curing agent	
Exposure assessment (environment):	: EUSES 2.1.2	
Exposure estimation	: Freshwater: 0.01 mg/l. Risk characterisation ratio (PEC/PNEC): 0.018.	
	Freshwater sediment: 0.038 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Marine water: 0.000951 mg/l. Risk characterisation ratio (PEC/PNEC): 0.017.	
	Marine water sediment: 0.00357 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Sewage Treatment Plant: 0.019 mg/l. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Soil: 0.00733 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01.	
	Air: 0.00000151 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.	
-		
Exposure estimation and r Exposure assessment (environment):	: EUSES 2.1.2	

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Diethylenetriamine, DETA		Exposure Scenario: 9	Consumer use - Use as an epoxy and polyurethane curing agent.		
Exposure estimation	:	Freshwater: 0.019 mg/l. Risk characterisation ratio (F	PEC/PNEC): 0.034.		
		Freshwater sediment: 0.073 Risk characterisation ratio (F	mg/kg dwt. PEC/PNEC): <0.01.		
		Marine water: 0.00188 mg/l. Risk characterisation ratio (PEC/PNEC): 0.034			
		Marine water sediment: 0.00705 mg/kg dwt. Risk characterisation ratio (PEC/PNEC): <0.01. Sewage Treatment Plant: 0.111 mg/l. Risk characterisation ratio (PEC/PNEC): 0.019.			
		Soil: 0.00767 mg/kg dwt. Risk characterisation ratio (F	PEC/PNEC): <0.01.		
	Air: 0.00000151 mg/m³. Risk characterisation ratio (PEC/PNEC): Not available.				
Exposure estimation and re	ferei	nce to its source - Consum	ers: 3: Adhesives, sealants		
Exposure assessment (human):	:	ConsExpo web 1.0.1			
Exposure estimation	:	Consumer - inhalative, Ion Risk characterisation ratio: 0	g-term - systemic: 2.8 mg/m³. .609.		
		Consumer - dermal, long-t Risk characterisation ratio: 0	erm - systemic: 0.5 mg/kg bw/day. 0.103.		
		Consumer - combined, lon	ig-term - systemic: 0.711.		
L					

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

General Environment Not applicable.Not applicable.



Consumer

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture **Product definition** : Mono-constituent substance Product name : Diethylenetriamine, DETA Section 1 - Title Short title of the exposure : Ashless dispersant (Consumer) scenario : Identified use name: Further information - Identified uses (Consumer): List of use descriptors Ashless dispersant (Consumer): PC24; ERC08a, ERC08d Substance supplied to that use in form of: In a mixture Subsequent service life relevant for that use: No. Environmental Release Category: ERC08a, ERC08d Market sector by type of chemical product: PC24 Widespread use of non-reactive processing aid (no inclusion into or onto **Environmental contributing** τ. article, indoor) - ERC08a scenarios Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) - ERC08d **Health Contributing** : Lubricants, greases, release products - PC24 scenarios Additional information : Function: Intermediate (precursor). Remark: No exposure scenario developed - Concentrations of substance <0.1% in these products.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

Not available.

Contributing scenario controlling environmental exposure for 2: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

Not available.

Contributing scenario controlling consumer exposure for 3: Lubricants, greases, release products Not available.

Section 3 - Exposure estimation and reference to its source

Exposure estimation and reference to its source - Environment: 1: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)				
Exposure assessment (environment):	: No environmental risk assessment was performed.			
Exposure estimation	:			
Exposure estimation and read aid (no inclusion into or on	eference to its source - Environment: 2: Widespread use of non-reactive processing to article, outdoor)			
Exposure assessment (environment):	: No environmental risk assessment was performed.			
Environment and the states				

Diethylenetriamine, DETA	Exposure Scenario:	Ashless dispersant (Consumer)		
Exposure estimation and reference to its source - Consumers: 3: Lubricants, greases, release products				
Exposure assessment (human):	: No human health risk ass	sessment was performed.		
Exposure estimation	:			

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

General

: Not applicable.