



SAFETY DATA SHEET

DIETHANOLAMINE SOLUTION =>80%

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

1.1. Product identifier

Product name	DIETHANOLAMINE SOLUTION =>80%
Product number	11829
Synonyms; trade names	DIETHANOLAMINE PURE 80%, DIETHANOLAMINE PURE 85%, DIETHANOLAMINE 90% SOLUTION, DIETHANOLAMINE SOLUTION 88%, DELA 92%, DIETHANOLAMINE 92% SOLUTION, DIETHANOLAMINE 80%, DIETANOLAMIN 99 LFG 85%, DIETANOLIAMIINI 99 LFG 85%, DIETHANOLAMINE 85%, DIETHANOLAMINE 88% SOL

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

Identified uses	Industrial application
	For further information, see attached Exposure Scenario.

1.3. Details of the supplier of the safety data sheet

Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com
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1.4. Emergency telephone number

Emergency telephone	SGS - +32 (0)3 575 55 55 (24h)
Sds No.	11829

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards	Not Classified
Health hazards	Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 Repr. 2 - H361fd STOT RE 2 - H373
Environmental hazards	Not Classified

2.2. Label elements

Hazard pictograms



Signal word	Danger
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Hazard statements	H302 Harmful if swallowed. H315 Causes skin irritation. H318 Causes serious eye damage. H361fd Suspected of damaging fertility. Suspected of damaging the unborn child. H373 May cause damage to organs through prolonged or repeated exposure.
Precautionary statements	P202 Do not handle until all safety precautions have been read and understood. P260 Do not breathe vapour/ spray. P301+P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell. P302+P352 IF ON SKIN: Wash with plenty of water. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P501 Dispose of contents/ container in accordance with national regulations.
Contains	DIETHANOLAMINE

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

DIETHANOLAMINE			80 - <100%
CAS number: 111-42-2	EC number: 203-868-0	REACH registration number: 01-2119488930-28-XXXX	
Classification Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 Repr. 2 - H361fd STOT RE 2 - H373			

The full text for all hazard statements is displayed in Section 16.

Composition comments The data shown are in accordance with the latest EC Directives.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move affected person to fresh air at once. Get medical attention if any discomfort continues.
Ingestion	Give a few small glasses of water or milk to drink. Never give anything by mouth to an unconscious person. Get medical attention.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if symptoms are severe or persist after washing.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention immediately. Continue to rinse.

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

Ingestion	Harmful if swallowed. May cause damage to organs (Blood, Liver, Kidneys) through prolonged or repeated exposure if swallowed.
Skin contact	Skin irritation.

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Eye contact Causes serious eye damage. May cause permanent damage if eye is not immediately irrigated.

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

Notes for the doctor Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards Control run-off water by containing and keeping it out of sewers and watercourses.

Hazardous combustion products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Nitrous gases (NO_x).

5.3. Advice for firefighters

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet. Avoid inhalation of vapours and contact with skin and eyes.

6.2. Environmental precautions

Environmental precautions Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Absorb spillage with inert, damp, non-combustible material. Flush contaminated area with plenty of water. Collect and place in suitable waste disposal containers and seal securely. For waste disposal, see Section 13. Avoid the spillage or runoff entering drains, sewers or watercourses.

6.4. Reference to other sections

Reference to other sections Wear protective clothing as described in Section 8 of this safety data sheet.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid inhalation of vapours/spray and contact with skin and eyes. Take precautionary measures against static discharges.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in tightly-closed, original container in a dry, cool and well-ventilated place. Unsuitable containers: copper, zinc, aluminium, copper alloy, zinc alloy, aluminium alloy. Avoid contact with acids.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

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SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

DIETHANOLAMINE (CAS: 111-42-2)

DNEL	Industry - Inhalation; Long term systemic effects: 1 mg/m³ Industry - Dermal; Long term systemic effects: 0.13 mg/kg/day Consumer - Inhalation; Long term systemic effects: 0.25 mg/m³ Consumer - Oral; Long term systemic effects: 0.06 mg/kg/day Consumer - Dermal; Long term systemic effects: 0.07 mg/kg/day
PNEC	- Fresh water; 0.02 mg/l - marine water; 0.002 mg/l - Intermittent release; 0.095 mg/l - Sediment (Marinewater); 0.092 mg/kg - Soil; 1.63 mg/kg - STP; 100 mg/l - Sediment (Marinewater); 0.0092 mg/kg

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients. Eye wash facilities and emergency shower must be available when handling this product.

Eye/face protection

The following protection should be worn: Chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.

Hand protection

The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection

Wear appropriate clothing to prevent any possibility of skin contact.

Hygiene measures

Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes contaminated. When using do not eat, drink or smoke. Take off immediately all contaminated clothing and wash it before reuse.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn. EN 136/140/141/145/143/149

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Clear liquid.
Colour	Colourless.
Odour	Ammonia.
Odour threshold	No information available.
pH	pH (concentrated solution): 12

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Melting point	<0°C
Initial boiling point and range	100°C
Flash point	> 180°C
Evaporation rate	No information available.
Evaporation factor	No information available.
Flammability (solid, gas)	No information available.
Upper/lower flammability or explosive limits	Data lacking.
Other flammability	No information available.
Vapour pressure	Data lacking.
Vapour density	Data lacking.
Relative density	1.08 - 1.09 @ 20°C
Bulk density	No information available.
Solubility(ies)	Soluble in water.
Partition coefficient	log Pow: -2.18
Auto-ignition temperature	Data lacking.
Decomposition Temperature	Data lacking.
Viscosity	Data lacking.
Explosive properties	Not considered to be explosive.
Oxidising properties	The mixture itself has not been tested but none of the ingredient substances meet the criteria for classification as oxidising.

9.2. Other information

Other information	Not determined.
Refractive index	No information available.
Particle size	No information available.
Molecular weight	No information available.
Volatility	No information available.
Saturation concentration	No information available.
Critical temperature	No information available.
Volatile organic compound	No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	There are no known reactivity hazards associated with this product.
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10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended.
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10.3. Possibility of hazardous reactions

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Possibility of hazardous reactions Exothermic reaction with acids

10.4. Conditions to avoid

Conditions to avoid Avoid excessive heat for prolonged periods of time.

10.5. Incompatible materials

Materials to avoid Strong oxidising agents. Hydrocarbons - halogenated. Strong acids. Organic nitrites. Inorganic nitrites.

10.6. Hazardous decomposition products

Hazardous decomposition products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Nitrous gases (NOx).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

ATE oral (mg/kg) 1,777.78

Skin corrosion/irritation

Skin corrosion/irritation Skin irritation.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage.

Respiratory sensitisation

Respiratory sensitisation No information available.

Skin sensitisation

Skin sensitisation No information available.

Germ cell mutagenicity

Genotoxicity - in vitro No information available.

Carcinogenicity

Carcinogenicity No information available.

Reproductive toxicity

Reproductive toxicity - fertility Suspected of damaging fertility.

Reproductive toxicity - development Suspected of damaging the unborn child.

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

Aspiration hazard No information available.

Inhalation Gas or vapour in high concentrations may irritate the respiratory system.

Ingestion Harmful if swallowed. May cause stomach pain or vomiting. May cause damage to organs (Blood, Liver, Kidneys) through prolonged or repeated exposure if swallowed.

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Skin contact Causes skin irritation.

Eye contact Risk of serious damage to eyes. A single exposure may cause the following adverse effects:
Corneal damage.

Toxicological information on ingredients.**DIETHANOLAMINE****Acute toxicity - oral**

Acute toxicity oral (LD₅₀ mg/kg) 1,600.0

Species Rat

Notes (oral LD₅₀) OECD 401

ATE oral (mg/kg) 1,600.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 12,970.0

Species Rabbit

Acute toxicity - inhalation

Notes (inhalation LC₅₀) LC₅₀ 3.35 mg/l, Inhalation, Rat

Skin corrosion/irritation

Skin corrosion/irritation Causes skin irritation. Rabbit

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage. Irreversible effect. Rabbit

Respiratory sensitisation

Respiratory sensitisation No information available.

Skin sensitisation

Skin sensitisation Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro This substance has no evidence of mutagenic properties.

Carcinogenicity

Carcinogenicity Based on available data the classification criteria are not met.
NOAEL 32 mg/kg/day, Dermal, Rat 103 weeks
LOAEL 40 mg/kg/day, Dermal, Rat

IARC carcinogenicity IARC Group 2B Possibly carcinogenic to humans.

Reproductive toxicity

Reproductive toxicity - fertility Suspected of damaging the unborn child.

Reproductive toxicity - development Suspected of damaging fertility.

Specific target organ toxicity - single exposure

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STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Causes damage to organs (Blood, Kidneys, Liver) through prolonged or repeated exposure if swallowed.

Target organs Blood Kidneys Liver

Aspiration hazard

Aspiration hazard Based on available data the classification criteria are not met.

Inhalation Gas or vapour in high concentrations may irritate the respiratory system.

Ingestion Harmful if swallowed.

Skin contact Irritating to skin.

Eye contact Risk of serious damage to eyes. Risk of corneal damage.

SECTION 12: Ecological information

Ecotoxicity The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Ecological information on ingredients.

DIETHANOLAMINE

Ecotoxicity The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

12.1. Toxicity

Toxicity Not considered toxic to fish.

Ecological information on ingredients.

DIETHANOLAMINE

Toxicity Not considered toxic to fish.

Acute aquatic toxicity

Acute toxicity - fish LC₅₀, 96 hours: 1460 mg/l, Pimephales promelas (Fat-head Minnow)

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: 55 mg/l, Daphnia magna
NOEC, 504 hour: 0.78 mg/l, Daphnia magna
LOEC, 504 hour: 1.56 mg/l, Daphnia magna

Acute toxicity - aquatic plants EC₅₀, 72 hours: 9.5 mg/l, Pseudokirchneriella subcapitata

Acute toxicity - microorganisms EC₂₀, 30 minutes: >1000 mg/l, Activated sludge

Chronic aquatic toxicity

Chronic toxicity - aquatic invertebrates EC10, 21 days: 1.05 mg/l, Daphnia magna
OECD 202

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12.2. Persistence and degradability

Persistence and degradability The product is readily biodegradable.

Ecological information on ingredients.

DIETHANOLAMINE

Persistence and degradability	The product is readily biodegradable.
Biodegradation	- Degradation 93%: 28 day OECD 301F
Biological oxygen demand	885 mg/g
Chemical oxygen demand	1352 mg/g

12.3. Bioaccumulative potential

Bioaccumulative potential Bioaccumulation is unlikely.

Partition coefficient log Pow: -2.18

Ecological information on ingredients.

DIETHANOLAMINE

Bioaccumulative potential	The product does not contain any substances expected to be bioaccumulating.
Partition coefficient	log Kow: -2.18

12.4. Mobility in soil

Mobility The product is soluble in water.

Ecological information on ingredients.

DIETHANOLAMINE

Mobility	The product is soluble in water.
Henry's law constant	0.000004 Pa m ³ /mol @ 25°C

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

Ecological information on ingredients.

DIETHANOLAMINE

Results of PBT and vPvB assessment	This substance is not classified as PBT or vPvB according to current EU criteria.
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12.6. Other adverse effects

Other adverse effects No information required.

Ecological information on ingredients.

DIETHANOLAMINE

Other adverse effects	None known.
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DIETHANOLAMINE SOLUTION =>80%**SECTION 13: Disposal considerations****13.1. Waste treatment methods**

General information	Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty.
Disposal methods	Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

General	The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).
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14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

EU legislation	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended). Commission Regulation (EU) No 2015/830 of 28 May 2015.
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15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

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Abbreviations and acronyms used in the safety data sheet

ATE: Acute Toxicity Estimate.
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
 ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
 CAS: Chemical Abstracts Service.
 DNEL: Derived No Effect Level.
 IATA: International Air Transport Association.
 IMDG: International Maritime Dangerous Goods.
 Kow: Octanol-water partition coefficient.
 LC₅₀: Lethal Concentration to 50 % of a test population.
 LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
 PBT: Persistent, Bioaccumulative and Toxic substance.
 PNEC: Predicted No Effect Concentration.
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
 RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
 vPvB: Very Persistent and Very Bioaccumulative.
 IARC: International Agency for Research on Cancer.
 MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
 cATpE: Converted Acute Toxicity Point Estimate.
 BCF: Bioconcentration Factor.
 BOD: Biochemical Oxygen Demand.
 EC₅₀: 50% of maximal Effective Concentration.
 LOAEC: Lowest Observed Adverse Effect Concentration.
 LOAEL: Lowest Observed Adverse Effect Level.
 NOAEC: No Observed Adverse Effect Concentration.
 NOAEL: No Observed Adverse Effect Level.
 NOEC: No Observed Effect Concentration.
 LOEC: Lowest Observed Effect Concentration.
 DMEL: Derived Minimal Effect Level.
 EL50: Exposure Limit 50
 hPa: Hectopascal
 LL50: Lethal Loading fifty
 OECD: Organisation for Economic Co-operation and Development
 POW: Octanol-water partition coefficient
 SCBA: self-contained breathing apparatus
 STP: Sewage Treatment Plant
 VOC: Volatile Organic Compounds

Classification abbreviations and acronyms

Acute Tox. = Acute toxicity
 Aquatic Acute = Hazardous to the aquatic environment (acute)
 Aquatic Chronic = Hazardous to the aquatic environment (chronic)

Key literature references and sources for data

Supplier's information.

Revision comments

NOTE: Lines within the margin indicate significant changes from the previous revision.

Revision date

04/10/2021

Version number

3.000

Supersedes date

29/10/2019

SDS number

11829

DIETHANOLAMINE SOLUTION =>80%**SDS status**

Approved.

Hazard statements in full

H302 Harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.

H373 May cause damage to organs through prolonged or repeated exposure.

H373 May cause damage to organs (Blood, Kidneys, Liver, Nervous system) through prolonged or repeated exposure.

Signature

Jitendra Panchal



Exposure scenario

Formulation & (re)packing of substances and mixtures - Industrial

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Formulation & (re)packing of substances and mixtures - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC2 Formulation into mixture
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Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
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Formulation & (re)packing of substances and mixtures - Industrial

Concentration details Covers concentrations up to 100 %.

Amounts used

Annual amount per site: 2300000 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (initial release prior to RMM): 0%

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.002%

Emission factor - soil Release fraction to soil from process (initial release prior to RMM): 0%

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100
Receiving surface water flow: 18000 m³/day

Risk management measures

STP type Municipal STP.

STP details Assumed onsite sewage treatment plant flow: 2000 m³/day

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Waste gas treatment by thermal oxidation. Exhaust air scrubber.

Water Aerobic biological treatment

Soil Do not apply industrial sludge to natural soils.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Sewage sludge incineration.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities and processes are carried out at a temperature of 20°C.

Technical conditions and measures at process level (source) to prevent release

Formulation & (re)packing of substances and mixtures - Industrial

Technical protective measures PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 95

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Avoid contact with skin.

Risk management measures

Use suitable eye protection.
Wear suitable gloves tested to EN374.

Additional advice Avoid splashing. Avoid frequent contact with substance.
Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental exposure freshwater sediment: Exposure 0.000123 mg/kg, PNEC 0.092 mg/kg, RCR 0.061492
Risk from environmental exposure is driven by freshwater sediment. Msafe: 124678 tonne/day

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA modified version: use of gloves has been considered additionally.

Formulation & (re)packing of substances and mixtures - Industrial

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Worker - dermal, long-term - systemic: Exposure 0.0034 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.026374

Worker - inhalation, long-term - systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473

Worker - inhalation, long-term - systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

Worker - dermal, long-term - systemic: Exposure 0.00343 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.263736

Worker - inhalation, long-term - local and systemic: Exposure 0.4381 mg/m³, DNEL 1 mg/m³, RCR 0.4381

PROC4 Chemical production where opportunity for exposure arises

Worker - dermal, long-term - systemic: Exposure 0.095 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.730769

Worker - inhalation, long-term - systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC5 Mixing or blending in batch processes

Worker - dermal, long-term - systemic: Exposure 0.095 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.730769

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.098 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.753846

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.106 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.815385

Worker - inhalation, long-term - local and systemic: Exposure 0.0219 mg/m³, DNEL 1 mg/m³, RCR 0.0219

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Worker - dermal, long-term - systemic: Exposure 0.103 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.792308

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra> <http://www.tno.nl> and search for riskofderm.



Exposure scenario Use as an intermediate

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as an intermediate
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC6a Use of intermediate
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Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Use as an intermediate

Amounts used

Annual amount per site: 2300000 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.002%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0%

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Receiving surface water flow: 18000 m³/day
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Risk management measures

STP type	Municipal STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m³/day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 87%

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Waste gas treatment by thermal oxidation. Exhaust air scrubber.
Water	Anaerobic biological treatment
Soil	Do not apply industrial sludge to natural soils. Sealing of all relevant soil surfaces.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor.
Temperature	Assumes activities and processes are carried out at a temperature of 20°C.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Provide extract ventilation to points where emissions occur. PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 95
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Organisational measures to prevent/limit releases, dispersion and exposure

Use as an intermediate

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposure. Avoid contact with skin.

Risk management measures

Use suitable eye protection.

Wear suitable gloves tested to EN374.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method ECETOC TRA v2.0 Environment

Environmental exposure freshwater sediment: Exposure 0.00566 mg/l, PNEC 0.092 mg/l, RCR 0.061492

Risk from environmental exposure is driven by freshwater sediment. Msafe: 124678 kg/day

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA modified version: use of gloves has been considered additionally.

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Worker - dermal, long-term - systemic: Exposure 0.0034 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.026374

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

Worker - dermal, long-term - systemic: Exposure 0.0343 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.263736

Worker - inhalation, long-term - local and systemic: Exposure 0.4381 mg/m³, DNEL 1 mg/m³, RCR 0.4381

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.098 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.753846

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.106 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.815385

Worker - inhalation, long-term - local and systemic: Exposure 0.0219 mg/m³, DNEL 1 mg/m³, RCR 0.0219

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Worker - dermal, long-term - systemic: Exposure 0.103 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.792308

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

4. Guidance to check compliance with the exposure scenario (Health 1)

Use as an intermediate

For scaling see <http://www.ecetoc.org/tra> <http://www.tno.nl> and search for riskofderm.
<http://www.advancedreachtool.com>



Exposure scenario

Use in construction chemicals, Use in concrete and cement - Professional

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in construction chemicals, Use in concrete and cement - Professional
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8f Widespread use leading to inclusion into/onto article (outdoor)
<u>Worker</u>	
Process category	PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Annual amount used in the EU: 700000 kg

Frequency and duration of use

Use in construction chemicals, Use in concrete and cement - Professional

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 1%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 3.7%

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Receiving surface water flow: 18000 m ³ /day
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Risk management measures

STP type	Municipal STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m ³ /day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 87%

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Concentration of substance in product: 25% PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. Concentration of substance in product: 5%

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor/outdoor use.
Temperature	Assumes activities and processes are carried out at a temperature of 20°C.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	PROC11 Non industrial spraying Ensure operation is undertaken outdoors. , or: Wear a respirator conforming to EN140 with Type A/P2 filter or better. Efficiency of at least 90% PROC10 Roller application or brushing Ensure operation is undertaken outdoors. , or: Wear a respirator conforming to EN140 with Type A/P2 filter or better. Efficiency of at least 95%
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
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Risk management measures

Use suitable eye protection.
Wear suitable gloves tested to EN374.
Wear suitable coveralls to prevent exposure to the skin.

Additional advice	Avoid contact with skin.
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Use in construction chemicals, Use in concrete and cement - Professional

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	Used ECETOC TRA model.
Environmental exposure	freshwater sediment: Exposure 0.00509 mg/kg, PNEC 0.092 mg/kg, RCR 0.005529 Msafe: 69.4 kg/day Risk from environmental exposure is driven by freshwater sediment.

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
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Use in construction chemicals, Use in concrete and cement - Professional

Exposure

PROC5 Mixing or blending in batch processes

Indoor.

Worker - dermal, long-term - systemic: Exposure 0.071 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.546154

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

PROC5 Mixing or blending in batch processes

Outdoor.

Worker - dermal, long-term - systemic: Exposure 0.071 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.546154

Worker - inhalation, long-term - local and systemic: Exposure 0.0767 mg/m³, DNEL 1 mg/m³, RCR 0.0767

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Indoor.

Worker - dermal, long-term - systemic: Exposure 0.098 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.753846

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Outdoor.

Worker - dermal, long-term - systemic: Exposure 0.098 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.753846

Worker - inhalation, long-term - local and systemic: Exposure 0.0767 mg/m³, DNEL 1 mg/m³, RCR 0.0767

PROC10 Roller application or brushing

Indoor.

Worker - dermal, long-term - systemic: Exposure 0.099 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.761538

Worker - inhalation, long-term - local and systemic: Exposure 0.025 mg/m³, DNEL 1 mg/m³, RCR 0.025

PROC10 Roller application or brushing

Outdoor.

Worker - dermal, long-term - systemic: Exposure 0.099 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.761538

Worker - inhalation, long-term - local and systemic: Exposure 0.091 mg/m³, DNEL 1 mg/m³, RCR 0.091

PROC11 Non industrial spraying

Indoor.

Worker - dermal, long-term - systemic: Exposure 0.053 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.407692

Worker - inhalation, long-term - local and systemic: Exposure 0.25 mg/m³, DNEL 1 mg/m³, RCR 0.25

PROC11 Non industrial spraying

Outdoor.

Worker - dermal, long-term - systemic: Exposure 0.086 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.661538

Worker - inhalation, long-term - local and systemic: Exposure 0.24 mg/m³, DNEL 1 mg/m³, RCR 0.24

PROC13 Treatment of articles by dipping and pouring.

Indoor.

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473

Worker - inhalation, long-term - local and systemic: Exposure 0.0219 mg/m³, DNEL 1 mg/m³,

Use in construction chemicals, Use in concrete and cement - Professional

RCR 0.0219

PROC13 Treatment of articles by dipping and pouring.

Outdoor.

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day,

RCR 0.527473

Worker - inhalation, long-term - local and systemic: Exposure 0.0153 mg/m³, DNEL 1 mg/m³,

RCR 0.0153

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra>



Exposure scenario

Use in gas treatment - Industrial

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in gas treatment - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC7 Use of functional fluid at industrial site
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Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Annual amount per site: 400000 kg

Frequency and duration of use

Use in gas treatment - Industrial

Emission days: 350 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.002%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0%

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Receiving surface water flow: 18000 m ³ /day
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Risk management measures

STP type	Municipal STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m ³ /day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 87%

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Waste gas treatment by thermal oxidation. Exhaust air scrubber.
Water	Aerobic biological treatment
Soil	No application of sludge to soil. Sewage sludge incineration. Sealing of all relevant soil surfaces.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor.
Temperature	Assumes activities and processes are carried out at a temperature of 20°C.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Provide extract ventilation to points where emissions occur. PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 95
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure operatives are trained to minimise exposures.
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Risk management measures

Use suitable eye protection.
Wear suitable gloves tested to EN374.

Use in gas treatment - Industrial

Additional advice

Avoid contact with skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method

Used ECETOC TRA model.

Environmental exposure

freshwater sediment: Exposure 0.001164 mg/l, PNEC 0.092 mg/l, RCR 0.01265

Msafe: 90345.7 kg/day Risk from environmental exposure is driven by freshwater sediment.

3. Exposure estimation (Health 1)

Assessment method

Used ECETOC TRA model.

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Worker - dermal, long-term - systemic: Exposure 0.0034 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.026374

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

Worker - dermal, long-term - systemic: Exposure 0.0343 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.263736

Worker - inhalation, long-term - local and systemic: Exposure 0.4381 mg/m³, DNEL 1 mg/m³, RCR 0.4381

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.106 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.815385

Worker - inhalation, long-term - local and systemic: Exposure 0.0219 mg/m³, DNEL 1 mg/m³, RCR 0.0219

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra>



Exposure scenario

Use in Lubricants, Use in Functional Fluids - Industrial

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Lubricants, Use in Functional Fluids - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Process category	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Use in Lubricants, Use in Functional Fluids - Industrial

Annual amount per site: 280000 kg

Frequency and duration of use

Emission days: 100 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.002%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.00%

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10
	Local marine water dilution factor: 100
	Receiving surface water flow: 18000 m ³ /day

Risk management measures

STP type	Municipal STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m ³ /day

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Waste gas treatment by thermal oxidation. Exhaust air scrubber.
Water	Aerobic biological treatment
Soil	Do not apply industrial sludge to natural soils. Sealing of all relevant soil surfaces.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sewage sludge incineration.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Concentration of substance in product: 2.5% PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions Concentration of substance in product: 0.25%

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor.
Temperature	Assumes activities and processes are carried out at a temperature of 20°C.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure operatives are trained to minimise exposures.
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Risk management measures

Use in Lubricants, Use in Functional Fluids - Industrial

Wear suitable coveralls to prevent exposure to the skin.

Use suitable eye protection.

Wear suitable gloves tested to EN374.

Additional advice

Avoid contact with skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental exposure freshwater sediment: Exposure 0.00231 mg/kg, PNEC 0.092 mg/kg, RCR 0.025056

Msafe: 111747.9 kg/day Risk from environmental exposure is driven by freshwater sediment.

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

Use in Lubricants, Use in Functional Fluids - Industrial

Exposure

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - dermal, long-term - systemic: Exposure 0.0034 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.026374

Worker - inhalation, long-term - local and systemic: Exposure 0.011 mg/m³, DNEL 1 mg/m³, RCR 0.010952

PROC5 Mixing or blending in batch processes

Worker - dermal, long-term - systemic: Exposure 0.007 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.053846

Worker - inhalation, long-term - local and systemic: Exposure 0.011 mg/m³, DNEL 1 mg/m³, RCR 0.011

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.007 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.053846

Worker - inhalation, long-term - local and systemic: Exposure 0.011 mg/m³, DNEL 1 mg/m³, RCR 0.011

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.008 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.061538

Worker - inhalation, long-term - local and systemic: Exposure 0.011 mg/m³, DNEL 1 mg/m³, RCR 0.011

PROC10 Roller application or brushing

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473

Worker - inhalation, long-term - local and systemic: Exposure 0.0028 mg/m³, DNEL 1 mg/m³, RCR 0.0028

PROC13 Treatment of articles by dipping and pouring.

Worker - dermal, long-term - systemic: Exposure 0.0343 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.263736

Worker - inhalation, long-term - local and systemic: Exposure 0.0011 mg/m³, DNEL 1 mg/m³, RCR 0.0011

PROC17 Lubrication at high energy conditions in metal working operations

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473

Worker - inhalation, long-term - local and systemic: Exposure 0.0084 mg/m³, DNEL 1 mg/m³, RCR 0.0084

PROC18 General greasing/lubrication at high kinetic energy conditions

Worker - dermal, long-term - systemic: Exposure 0.0343 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.263736

Worker - inhalation, long-term - local and systemic: Exposure 0.0084 mg/m³, DNEL 1 mg/m³, RCR 0.0084

Worst case assumption

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra>



Exposure scenario

Use in laboratories - Industrial

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in laboratories - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Process category	PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
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Amounts used

Annual amount per site: 36.5 kg

Frequency and duration of use

Emission days: 20 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 2.5%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 2%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.01%

Use in laboratories - Industrial

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Receiving surface water flow: 18000 m ³ /day
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Risk management measures

STP type	Municipal STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m ³ /day

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Aerobic biological treatment
Soil	Sealing of all relevant soil surfaces.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sewage sludge incineration. No application of sludge to soil.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 30 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Unless otherwise stated.

Human factors not influenced by risk management

Potentially exposed body parts	Both hands. Covers skin contact area up to 820 cm ² .
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Other given operational conditions affecting workers exposure

Setting	Indoor.
Temperature	Assumes activities and processes are carried out at a temperature of <25°C.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Local exhaust ventilation - efficiency of at least [%]: 80
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Limit the substance content in the product to 25%. SU22 Professional uses PROC15 Use as laboratory reagent. Avoid carrying out operation for more than 4 hours.
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Risk management measures

Use suitable eye protection.
Wear suitable face shield.
Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.
Efficiency of at least 90%

Additional advice	Avoid splashing. Avoid frequent contact with substance. Assumes a good basic standard of occupational hygiene is implemented.
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Use in laboratories - Industrial

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental exposure freshwater sediment: Exposure 0.00163 mg/kg, PNEC 0.092 mg/kg, RCR 0.017757

Risk from environmental exposure is driven by freshwater sediment. Msafe: 102.8 kg/day

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

Exposure Worker - dermal, long-term - systemic: Exposure 0.0103 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.079121
Worker - inhalation, long-term - local and systemic: Exposure 0.1314 mg/m³, DNEL 1 mg/m³, RCR 0.1314

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra>



Exposure scenario

Formulation & (re)packing of substances and mixtures - Professional

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Formulation & (re)packing of substances and mixtures - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
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Worker

Process category	PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

No exposure assessment presented for the environment.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Formulation & (re)packing of substances and mixtures - Professional

Physical state Liquid

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities and processes are carried out at a temperature of 20°C.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Local exhaust ventilation - efficiency of at least [%]: 80
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 90

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Avoid contact with skin.

Risk management measures

Use suitable eye protection.
Wear suitable gloves tested to EN374.

Additional advice Avoid splashing. Avoid frequent contact with substance.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA modified version: use of gloves has been considered additionally.

Formulation & (re)packing of substances and mixtures - Professional

Exposure

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473

Worker - inhalation, long-term - local and systemic: Exposure 0.0876 mg/m³, DNEL 1 mg/m³, RCR 0.0876

PROC4 Chemical production where opportunity for exposure arises

Worker - dermal, long-term - systemic: Exposure 0.096 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.738462

Worker - inhalation, long-term - systemic: Exposure 0.0876 mg/m³, DNEL 1 mg/m³, RCR 0.0876

PROC5 Mixing or blending in batch processes

Worker - dermal, long-term - systemic: Exposure 0.096 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.738462

Worker - inhalation, long-term - local and systemic: Exposure 0.0876 mg/m³, DNEL 1 mg/m³, RCR 0.0876

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.097 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.746154

Worker - inhalation, long-term - local and systemic: Exposure 0.0876 mg/m³, DNEL 1 mg/m³, RCR 0.0876

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.106 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.815385

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Worker - dermal, long-term - systemic: Exposure 0.086 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.661538

Worker - inhalation, long-term - local and systemic: Exposure 0.0876 mg/m³, DNEL 1 mg/m³, RCR 0.0876

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra> <http://www.tno.nl> and search for riskofderm.



Exposure scenario

Use in construction chemicals, Use in concrete and cement - Industrial

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in construction chemicals, Use in concrete and cement - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC5 Use at industrial site leading to inclusion into/onto article
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Worker

Process category	PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Annual amount per site: 250000 kg

Use in construction chemicals, Use in concrete and cement - Industrial

Frequency and duration of use

Emission days: 100 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.002%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0%

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Receiving surface water flow: 18000 m ³ /day
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Risk management measures

STP type	Municipal STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m ³ /day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs: 87%

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Waste gas treatment by thermal oxidation. Exhaust air scrubber.
Water	Aerobic biological treatment
Soil	No application of sludge to soil. Sewage sludge incineration. Sealing of all relevant soil surfaces.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	PROC7 Industrial spraying PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. Covers concentrations up to 5 %. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC15 Use as laboratory reagent. Covers concentrations up to 25 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor/outdoor use.
Temperature	Assumes activities and processes are carried out at a temperature of 20°C.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure operatives are trained to minimise exposures. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
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Risk management measures

Use suitable eye protection.
Wear suitable gloves tested to EN374.

Additional advice	Avoid contact with skin.
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Use in construction chemicals, Use in concrete and cement - Industrial

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	Used ECETOC TRA model.
Environmental exposure	freshwater sediment: Exposure 0.002171 mg/kg, PNEC 0.0952 mg/kg, RCR 0.02281 Msafe: 109599.3 kg/day Risk from environmental exposure is driven by freshwater sediment.

3. Exposure estimation (Health 1)

Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
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Use in construction chemicals, Use in concrete and cement - Industrial

Exposure

PROC7 Industrial spraying

Indoor.

Worker - dermal, long-term - systemic: Exposure 0.052 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.4

Worker - inhalation, long-term - local and systemic: Exposure 0.56 mg/m³, DNEL 1 mg/m³, RCR 0.56

PROC7 Industrial spraying

Outdoor.

Worker - dermal, long-term - systemic: Exposure 0.084 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.646154

Worker - inhalation, long-term - local and systemic: Exposure 0.17 mg/m³, DNEL 1 mg/m³, RCR 0.17

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Indoor/outdoor use.

Worker - dermal, long-term - systemic: Exposure 0.098 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.753846

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.0767 mg/m³, DNEL 1 mg/m³, RCR 0.0767

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Indoor/outdoor use.

Worker - dermal, long-term - systemic: Exposure 0.079 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.607692

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.0767 mg/m³, DNEL 1 mg/m³, RCR 0.0767

PROC10 Roller application or brushing

Indoor/outdoor use.

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473

PROC10 Roller application or brushing

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.057 mg/m³, DNEL 1 mg/m³, RCR 0.057

PROC10 Roller application or brushing

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.091 mg/m³, DNEL 1 mg/m³, RCR 0.091

PROC13 Treatment of articles by dipping and pouring.

Indoor/outdoor use.

Worker - dermal, long-term - systemic: Exposure 0.0343 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.263736

Use in construction chemicals, Use in concrete and cement - Industrial

PROC13 Treatment of articles by dipping and pouring.

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.0219 mg/m³, DNEL 1 mg/m³, RCR 0.0219

PROC13 Treatment of articles by dipping and pouring.

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.0153 mg/m³, DNEL 1 mg/m³, RCR 0.0153

PROC14 Tableting, compression, extrusion, pelletisation, granulation

Indoor/outdoor use.

Worker - dermal, long-term - systemic: Exposure 0.0086 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.065934

PROC14 Tableting, compression, extrusion, pelletisation, granulation

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.0219 mg/m³, DNEL 1 mg/m³, RCR 0.0219

PROC14 Tableting, compression, extrusion, pelletisation, granulation

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 0.0153 mg/m³, DNEL 1 mg/m³, RCR 0.0153

PROC15 Use as laboratory reagent.

Worker - dermal, long-term - systemic: Exposure 0.0086 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.065934

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra> <http://www.tno.nl> and search for riskofderm.
<http://www.advancedreachtool.com>



Exposure scenario

Use in Lubricants, Use in functional Fluids - Professional

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Lubricants, Use in functional Fluids - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
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Worker

Process category	PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions PROC20 Use of functional fluids in small devices
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Use in Lubricants, Use in functional Fluids - Professional

Annual amount used in the EU: 500000 kg

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.5%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 5%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 5%

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Receiving surface water flow: 18000 m³/day
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Risk management measures

STP type	Municipal STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m³/day

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Aerobic biological treatment
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Concentration of substance in product: 2.5% PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions Concentration of substance in product: 0.25%

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor.
Temperature	Assumes activities and processes are carried out at a temperature of 20°C.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure operatives are trained to minimise exposures.
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Risk management measures

Wear suitable coveralls to prevent exposure to the skin.
Use suitable eye protection.
Wear suitable gloves tested to EN374.

Additional advice	Avoid contact with skin. Assumes a good basic standard of occupational hygiene is implemented.
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Use in Lubricants, Use in functional Fluids - Professional

3. Exposure estimation (Environment 1)

Assessment method	Used ECETOC TRA model.
Environmental exposure	freshwater sediment: Exposure 0.000495 mg/kg, PNEC 0.092 mg/kg, RCR 0.005376 Msafe: 12.7 kg/day Risk from environmental exposure is driven by freshwater sediment.

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
Exposure	PROC5 Mixing or blending in batch processes Worker - dermal, long-term - systemic: Exposure 0.007 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.053846 Worker - inhalation, long-term - local and systemic: Exposure 0.011 mg/m³, DNEL 1 mg/m³, RCR 0.011 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - dermal, long-term - systemic: Exposure 0.007 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.053846 Worker - inhalation, long-term - local and systemic: Exposure 0.011 mg/m³, DNEL 1 mg/m³, RCR 0.011 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Worker - dermal, long-term - systemic: Exposure 0.008 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.061538 Worker - inhalation, long-term - local and systemic: Exposure 0.011 mg/m³, DNEL 1 mg/m³, RCR 0.011 PROC10 Roller application or brushing Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473 Worker - inhalation, long-term - local and systemic: Exposure 0.0064 mg/m³, DNEL 1 mg/m³, RCR 0.0064 PROC13 Treatment of articles by dipping and pouring. Worker - dermal, long-term - systemic: Exposure 0.0343 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.263736 Worker - inhalation, long-term - local and systemic: Exposure 0.011 mg/m³, DNEL 1 mg/m³, RCR 0.011 PROC17 Lubrication at high energy conditions in metal working operations Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.527473 Worker - inhalation, long-term - local and systemic: Exposure 0.013 mg/m³, DNEL 1 mg/m³, RCR 0.013 PROC18 General greasing/lubrication at high kinetic energy conditions Worker - dermal, long-term - systemic: Exposure 0.0343 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.263736 Worker - inhalation, long-term - local and systemic: Exposure 0.013 mg/m³, DNEL 1 mg/m³, RCR 0.013 PROC20 Use of functional fluids in small devices Worker - dermal, long-term - systemic: Exposure 0.0043 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.032967 Worker - inhalation, long-term - local and systemic: Exposure 0.0011 mg/m³, DNEL 1 mg/m³, RCR 0.0011

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra>



Exposure scenario

Use in polyurethane synthesis - Industrial

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in polyurethane synthesis - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC5 Use at industrial site leading to inclusion into/onto article ERC6c Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
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Worker

Process category	PROC5 Mixing or blending in batch processes PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Use in polyurethane synthesis - Industrial

Physical state Liquid

Concentration details Covers concentrations up to 100 %.

Amounts used

ERC5 Use at industrial site leading to inclusion into/onto article

Annual amount per site: 500000 kg

ERC6c Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)

ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

Annual amount per site: 125000 kg

Frequency and duration of use

ERC5 Use at industrial site leading to inclusion into/onto article

Emission days: 100 days/year

ERC6c Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)

ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

Emission days: 20 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (initial release prior to RMM): 0%

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.002%

Emission factor - soil Release fraction to soil from process (initial release prior to RMM): 0.00%

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100
Receiving surface water flow: 18000 m³/day

Risk management measures

STP type Municipal STP.

STP details Assumed onsite sewage treatment plant flow: 2000 m³/day

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Waste gas treatment by thermal oxidation. Exhaust air scrubber.

Water Aerobic biological treatment

Soil Do not apply industrial sludge to natural soils. Sealing of all relevant soil surfaces.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Sewage sludge incineration.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Use in polyurethane synthesis - Industrial

Concentration details PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.
Concentration of substance in product: 25%
PROC7 Industrial spraying PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. Concentration of substance in product: 10%

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities and processes are carried out at a temperature of 20°C.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Risk management measures

Wear suitable coveralls to prevent exposure to the skin.

Use suitable eye protection.

Wear suitable gloves tested to EN374.

Additional advice Avoid contact with skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental exposure ERC5 Use at industrial site leading to inclusion into/onto article
freshwater sediment: Exposure 0.00382 mg/kg, PNEC 0.092 mg/kg, RCR 0.041527
ERC6c Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
freshwater sediment: Exposure 0.00468 mg/kg, PNEC 0.092 mg/kg, RCR 0.050886

Risk from environmental exposure is driven by freshwater sediment.
ERC5 Use at industrial site leading to inclusion into/onto article Msafe: 120403.1 kg/day
ERC6c Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article) Msafe: 122824.6 kg/day

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

Use in polyurethane synthesis - Industrial

Exposure

PROC5 Mixing or blending in batch processes

Worker - dermal, long-term - systemic: Exposure 0.071 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.546154

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

PROC7 Industrial spraying

Worker - dermal, long-term - systemic: Exposure 0.071 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.546154

Worker - inhalation, long-term - local and systemic: Exposure 0.23 mg/m³, DNEL 1 mg/m³, RCR 0.23

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.098 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.753846

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - dermal, long-term - systemic: Exposure 0.079 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.607692

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Worker - dermal, long-term - systemic: Exposure 0.0857 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.659341

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

PROC10 Roller application or brushing

Worker - dermal, long-term - systemic: Exposure 0.082 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.630769

Worker - inhalation, long-term - local and systemic: Exposure 0.11 mg/m³, DNEL 1 mg/m³, RCR 0.11

PROC13 Treatment of articles by dipping and pouring.

Worker - dermal, long-term - systemic: Exposure 0.098 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.753846

Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438

PROC14 Tableting, compression, extrusion, pelletisation, granulation

Worker - dermal, long-term - systemic: Exposure 0.0857 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.659341

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

PROC15 Use as laboratory reagent.

Worker - dermal, long-term - systemic: Exposure 0.0086 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.065934

Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

Worst case assumption

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra>



Exposure scenario

Use in polyurethane synthesis - Professional

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in polyurethane synthesis - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8f Widespread use leading to inclusion into/onto article (outdoor)
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Worker

Process category	PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Use in polyurethane synthesis - Professional

Annual amount used in the EU: 500000 kg

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 15%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 1%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0.5%

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10
	Local marine water dilution factor: 100
	Receiving surface water flow: 18000 m³/day

Risk management measures

STP type	Municipal STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m³/day

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Aerobic biological treatment
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Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Sewage sludge incineration.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent. Concentration of substance in product: 25% PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. Concentration of substance in product: 10%

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor.
Temperature	Assumes activities and processes are carried out at a temperature of 20°C.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure operatives are trained to minimise exposures.
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Risk management measures

Wear suitable coveralls to prevent exposure to the skin.
Use suitable eye protection.
Wear suitable gloves tested to EN374.

Additional advice	Avoid contact with skin.
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Use in polyurethane synthesis - Professional

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	Used ECETOC TRA model.
Environmental exposure	freshwater sediment: Exposure 0.000471 mg/kg, PNEC 0.092 mg/kg, RCR 0.005119 Risk from environmental exposure is driven by freshwater sediment. Msafe: 53.5 kg/day

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
Exposure	PROC5 Mixing or blending in batch processes Worker - dermal, long-term - systemic: Exposure 0.071 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.546154 Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - dermal, long-term - systemic: Exposure 0.098 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.753846 Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Worker - dermal, long-term - systemic: Exposure 0.079 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.607692 Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095 PROC10 Roller application or brushing Worker - dermal, long-term - systemic: Exposure 0.088 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.676923 Worker - inhalation, long-term - local and systemic: Exposure 0.051 mg/m³, DNEL 1 mg/m³, RCR 0.051 PROC11 Non industrial spraying Worker - dermal, long-term - systemic: Exposure 0.076 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.584615 Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095 PROC13 Treatment of articles by dipping and pouring. Worker - dermal, long-term - systemic: Exposure 0.098 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.753846 Worker - inhalation, long-term - local and systemic: Exposure 0.0438 mg/m³, DNEL 1 mg/m³, RCR 0.0438 PROC14 Tableting, compression, extrusion, pelletisation, granulation Worker - dermal, long-term - systemic: Exposure 0.0857 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.659341 Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095 PROC15 Use as laboratory reagent. Worker - dermal, long-term - systemic: Exposure 0.0086 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.065934 Worker - inhalation, long-term - local and systemic: Exposure 0.1095 mg/m³, DNEL 1 mg/m³, RCR 0.1095

Use in polyurethane synthesis - Professional

Worst case assumption

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see <http://www.ecetoc.org/tra>



Exposure scenario

Use in laboratories - Professional

Identification

Product name	Diethanolamine
REACH registration number	01-2119488930-28-XXXX
CAS number	111-42-2
EC number	203-868-0
EU index number	603-071-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in laboratories - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
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Worker

Process category	PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
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Amounts used

Annual amount used in the EU: 2000 kg

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 50%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 50%
Emission factor - soil	Release fraction to soil from process (initial release prior to RMM): 0%

Use in laboratories - Professional

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10
	Local marine water dilution factor: 100
	Receiving surface water flow: 18000 m ³ /day

Risk management measures

STP type	Municipal STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m ³ /day

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Aerobic biological treatment
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Concentration details	Covers concentrations up to 30 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor.
Temperature	Assumes activities and processes are carried out at a temperature of 20°C.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure operatives are trained to minimise exposures.
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Risk management measures

Use suitable eye protection.
Wear suitable gloves tested to EN374.
Wear suitable coveralls to prevent exposure to the skin.

Additional advice	Avoid contact with skin.
	Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Environment 1)

Assessment method	Used ECETOC TRA model.
Environmental exposure	freshwater sediment: Exposure 0.000381 mg/kg, PNEC 0.092 mg/kg, RCR 0.004145
	Risk from environmental exposure is driven by freshwater sediment. Msafe: 0.066099 kg/day

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
Exposure	Worker - dermal, long-term - systemic: Exposure 0.0103 mg/kg/day, DNEL 0.13 mg/kg/day, RCR 0.079121
	Worker - inhalation, long-term - local and systemic: Exposure 0.1314 mg/m ³ , DNEL 1 mg/m ³ , RCR 0.1314

4. Guidance to check compliance with the exposure scenario (Health 1)

Use in laboratories - Professional

For scaling see <http://www.ecetoc.org/tra>