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22

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

1.1 Product identifier

Product name Naphtha (petroleum), full-range straight-run

Product description V4045-Mogas / Naphtha sweetened-Naphtha (petroleum), full-range

straight-run

Trade Name Mogas / Naphtha sweetened

Product code NAPSWEET, V4045

CAS No. 64741-42-0 EC No. 265-042-6

REACH Registration No. 01-2119474679-18-xxxx

1.2 Relevant identified uses of the substance or mixture

and uses advised against

Identified Use(s) No **Exposure Scenario** Page: 1 Distribution of Naphtha (petroleum), full-range straight-run (0 -11 1 % benzene content) 2 Formulation and (re)packing of Naphtha (petroleum), full-range 14 straight-run (0 - 1 % benzene content) and Mixtures 3 Use of Gasoline (0 - 1 % benzene content) as a 17 fuel(Industrial) 4 Use of Gasoline (0 - 1 % benzene content) as a 19 fuel(Professional)

fuel(Consumer)

Anything other than the above.

5

1.3 Details of the supplier of the safety data sheet

Uses advised against

Company Identification Vitol SA

Place des Bergues 3 1201 Geneva Switzerland +31 10 498 7200 +31 10 452 9545 xreach@vitol.com

1.4 Emergency telephone number

E-mail (competent person)

Telephone

Fax

Emergency Phone No. +44 (0) 1235 239 670, 24/7
Languages spoken All official European languages.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation (EC) No. 1272/2008 (CLP) Flam. Liq. 1; H224

Asp. Tox. 1; H304 Skin Irrit. 2; H315 Muta. 1B; H340 Carc. 1B; H350 Repr. 2; H361fd

STOT SE 3; H336 (central nervous system, inhalation)

Use of Gasoline (0 - 1 % benzene content) as a

Aquatic Chronic 2; H411

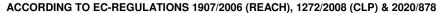
2.2 Label elements According to Regulation (EC) No. 1272/2008 (CLP)

Product description V4045-Mogas / Naphtha sweetened-Naphtha (petroleum), full-range

straight-run

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Hazard Pictogram(s)









Signal Word(s) Danger

Hazard Statement(s)

H224: Extremely flammable liquid and vapour.

H304: May be fatal if swallowed and enters airways.

H315: Causes skin irritation. H340: May cause genetic defects. H350: May cause cancer.

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

child.

H336: May cause drowsiness or dizziness. (central nervous system, inhalation)

H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement(s) P201: Obtain special instructions before use.

P210: Keep away from heat, hot surfaces, sparks, open flames and other

ignition sources. No smoking.

P273: Avoid release to the environment.

P280: Wear protective gloves/protective clothing/eye protection/face

protection/hearing protection.

P301+P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.

P331: Do NOT induce vomiting.

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

2.3 Other hazards May form explosive mixture with air. The vapour is heavier than air; beware of pits

and confined spaces. May cause irritation to eyes and air passages.

Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

SUBSTANCE	CAS No.	EC No.	%W/W
Naphtha (petroleum), full-range straight-run	64741-42-0	265-042-6	100

SECTION 4: FIRST AID MEASURES



4.1 Description of first aid measures

Self-protection of the first aider

Eliminate sources of ignition. If it is suspected that fumes are still present, the responder should wear an appropriate mask or self-contained breathing apparatus. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Avoid all contact. Do not ingest. If swallowed then seek immediate medical assistance.

Hydrogen sulphide (H2S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.

If there is any suspicion of inhalation: A self contained breathing apparatus should be worn. Remove to fresh air immediately.

H2S Warning:

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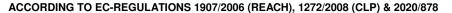
Skin contact

Eye contact

Ingestion

and delayed

4.2





inhalation IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical advice/attention if you

feel unwell

IF ON SKIN (or hair): Remove contaminated clothing immediately and wash affected skin with plenty of water or soap and water. If irritation (redness, rash, blistering) develops, get medical attention.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the lungs. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs. If unconscious, place in recovery position and get medical attention immediately. Do not give anything by mouth to an unconscious person. Get medical attention immediately. Do not wait for symptoms to appear. inhalation: May cause drowsiness or dizziness. Headache, nausea and vomiting.

Eye contact: Causes serious eye irritation.

Ingestion: Aspiration into the lungs may cause chemical pneumonitis, which can be fatal. Ingestion may cause irritation of the gastrointestinal tract. Nausea, Vomiting and Diarrhoea

Treat symptomatically..

Skin contact: Causes skin irritation.

4.3 Indication of any immediate medical attention and special treatment needed

Most important symptoms and effects, both acute

Notes to a physician:

IF INHALED: If unconscious, place in recovery position and get medical attention immediately. Administer oxygen if available and artificial respiration if necessary. IF SWALLOWED: Do not induce vomiting because of risk of aspiration into the lungs. If aspiration is suspected obtain immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs.

SECTION 5: FIREFIGHTING MEASURES

5.1 **Extinguishing media**

Suitable extinguishing media

Unsuitable extinguishing media

5.2 Special hazards arising from the substance or mixture

5.3 Advice for firefighters Extinguish with sand or dry chemical. Foam, Carbon dioxide, Water fog or dry

Do not use water jet. Direct water jet may spread the fire.

Extremely flammable liquid and vapour. Will float and can be reignited on surface water. Decomposes in a fire giving off toxic fumes: A mixture of solid and liquid particulates and gases including unidentified organic and inorganic compounds. May form explosive mixture with air. Prevent liquid entering sewers, basements and any watercourses. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. If sulphur compounds are present in appreciable amounts, combustion products may include also H2S and SOx (sulfur oxides) or sulfuric acid

Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid release to the environment. Dike fire control water for later disposal.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Caution - spillages may be slippery. Ensure operatives are trained to minimise exposures. Ensure suitable personal protection during removal of spillages. Eliminate sources of ignition. Shut off leaks if without risk. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid all contact with substance. Ensure adequate ventilation Do not breathe vapour. Do not ingest. If swallowed then seek immediate medical assistance. Do not use sparking tools. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems.

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H2S Warning: Product may release Hydrogen Sulphide. Exposure controls - These controls may include: Segregation of areas, Access only to authorised persons, Permit to work systems, Confined space working procedures, Area H2S alarms, Personal H2S alarms, Personal escape sets, H2S awareness training. Please see section 8 for appropriate personal protection equipment Small spillages: Wear flame-resistant antistatic protective clothing. Large spillages: Evacuate the area and keep personnel upwind. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. Avoid all contact. Wear chemical protection suit and breathing apparatus. See Also Section: 8. 6.2 Avoid release to the environment. Do not allow to enter drains, sewers or **Environmental precautions** watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body. If necessary: Dike area to contain the spill and prevent releases to sewers, drains, or other waterways. 6.3 Methods and material for containment and cleaning Provided it is safe to do so, isolate the source of the leak. Use non-sparking up equipment when picking up flammable spill. The vapour is heavier than air; beware of pits and confined spaces. Ensure that the equipment is adequately grounded. Allow small spillages to evaporate provided there is adequate ventilation. Wear flame-resistant antistatic protective clothing. Wear chemical protection suit and breathing apparatus. Spillages onto land: In case of soil contamination, remove contaminated soil and treat in accordance with local regulations. Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a lidded container for disposal or recovery. Dispose of this material and its container as hazardous waste Small spillages: Allow small spillages to evaporate provided there is adequate ventilation. Wear flame-resistant antistatic protective clothing. Large spillages: Cover spillage with foam to reduce evaporation. Do not use water jet. Collect as much as possible in clean container for reuse or disposal. Spillages on water or at sea: Small spillages: Contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. Large spillages: Open waters should be contained with floating barriers or other mechanical means and recovered, only if this is strictly necessary and if fire/explosion risks can be adequately prevented. Otherwise control the spreading of the spillage, and let the substance evaporate naturally.

See Section: 8,13

SECTION 7: HANDLING AND STORAGE

Reference to other sections

7.1 Precautions for safe handling

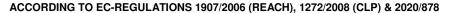
6.4

Obtain special instructions before use. Keep away from sources of ignition - No smoking. Use only outdoors or in a well-ventilated area. Prevent vapour build up by providing adequate ventilation during and after use. May form explosive mixtures with air. Take action to prevent static discharges. Use non-sparking tools. All parts of the plant and equipment should be electrically bonded together and connected to earth. Electrical continuity should be checked at regular intervals. Antistatic clothing and footwear should be used. The vapour is heavier than air; beware of pits and confined spaces. Avoid all contact with substance. Do not ingest. If swallowed then seek immediate medical assistance. Do not breathe vapour. See Section: 8. Keep good industrial hygiene. Wash hands thoroughly after handling. Contaminated clothing should be thoroughly cleaned.

Product may release Hydrogen Sulphide: A specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances. These controls may include: Segregation of areas, Access only to authorised persons, Permit to work systems, Confined space working procedures, Area H2S alarms, Personal H2S alarms, Personal escape sets, H2S awareness training.

H2S Warning:

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7.2 Conditions for safe storage, including any incompatibilities

Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Bund storage facilities to prevent soil and water pollution in the event of spillage. Keep only in original packaging. Keep containers properly sealed when not in use. Protect from sunlight. Containers of this material may be hazardous when empty since they retain product residue. Empty container may contain product residue which may result in flammable or explosive vapours inside the container.

Stable at ambient temperatures.

Suitable containers: Stainless steel, Mild steel

Do not store in: Synthetic materials Keep away from oxidising agents.

7.3 Specific end use(s) See Section: 1.2 and/or Exposure Scenario.

storage temperature Storage measures

Incompatible materials
7.3 Specific end use(s)

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational exposure limits

No Occupational Exposure Limit assigned. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

8.1.2 Biological Limit Value

Not established

8.1.3 PNECs and DNELs

PNEC: Not established Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Naphtha (petroleum), full-range straight-run Derived no effect level	oral	inhalation	dermal
Worker - Long Term - Systemic effects	-	1300 mg/m ³	-
Worker - Long Term - Local effects	-	840 mg/m ³	-
Worker - acute - Local effects	-	1100 mg/m ³	-
Consumer - Long Term - Systemic effects	-	1200 mg/m ³	-
Consumer - Long Term - Local effects	-	180 mg/m ³	-
Consumer - acute - Local effects	-	640 mg/m ³	-

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Guarantee that the eye flushing systems and safety showers are located close to the working place.

8.2.2 Individual protection measures, such as personal protective equipment

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Fuels are typically used, transferred and transported in closed systems. If exposure is likely (i.e. during sampling) the following advice may be appropriate. Keep good industrial hygiene. Always wash hands before smoking, eating and drinking. Do not eat, drink or smoke at the work place. Refer to annexes for exposure scenarios detailing use specific exposure controls

Use eye protection according to EN 166, designed to protect against liquid splashes.



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ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878





Hand protection: Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material:

refer to the information provided by the gloves' producer.

Recommended: Nitrile rubber.

Body protection: Wear anti-static clothing and shoes.

small scale: Wear suitable coveralls to prevent exposure to the skin.

large scale: Chemical protection suit

Respiratory protection



When the product is heated/In case of inadequate ventilation wear respiratory protection. The use of a high efficiency filter (EN143) is recommended. Filter type

Closed system(s): Not normally required.

Thermal hazards not applicable

8.2.3 **Environmental exposure controls** Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

> Physical state Liquid Colour Colourless Odour Hydrocarbon Melting point/freezing point < - 60 °C Boiling point or initial boiling point and boiling range < 35 °C

not applicable - Liquid

Flammability

Lower and upper explosion limit Flammable Limits (Lower) (%v/v) 1

Flammable Limits (Upper) (%v/v) 10 < -40 °C Flash point

Auto-ignition temperature > 220 °C Decomposition temperature Not established рΗ Not established <1 mm²/s @ 20 °C Kinematic viscosity

Immiscible with water. Solubility

Partition coefficient: n-octanol/water (log value) not applicable. Substance is complex UVCB.

4 - 240 kPa @ 37.8°C Vapour pressure 0.62 - 0.88 g/cm3 @ 15 °C

Density and/or relative density

> 2 Relative vapour density

Particle characteristics Not established

9.2 Other information None Known

SECTION 10: STABILITY AND REACTIVITY

10.4

10.1 Reactivity Stable under normal conditions Reacts with - Strong oxidising agents 10.2 Chemical stability Stable under normal conditions Hazardous polymerisation will not occur.

Product may release Hydrogen Sulphide.

10.3 Possibility of hazardous reactions Extremely flammable liquid and vapour. May form explosive mixture with air.

Vapours are heavier than air and may travel considerable distances to a source

of ignition and flashback. Product may release Hydrogen Sulphide. Conditions to avoid

Elevated temperature. Keep away from heat, hot surfaces, sparks, open flames

and other ignition sources. No smoking. Keep away from direct sunlight.

10.5 Incompatible materials Keep away from oxidising agents. Strong Acids and Alkalis.

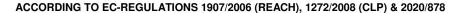
10.6 Hazardous decomposition products A mixture of solid and liquid particulates and gases including unidentified

organic and inorganic compounds. Decomposes in a fire giving off toxic fumes:

COx, H2S, SOx,

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SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in

Regulation (EC) No 1272/2008

Acute toxicity - Ingestion

Acute toxicity - Inhalation

Acute toxicity - Skin contact

Skin corrosion/irritation

Serious eye damage/irritation

Respiratory or skin sensitisation

Germ cell mutagenicity

Carcinogenicity

Reproductive toxicity

STOT - Single Exposure

STOT - Repeated Exposure

Aspiration hazard

11.2 Information on other hazards11.2.1 Endocrine disrupting properties

11.2.2 Other information

All test data taken from existing ECHA registrations for the substances

mentioned.

Based upon the available data, the classification criteria are not met.

LD50 > 5000 mg/kg bw/day (rat) (OECD 401)

Based upon the available data, the classification criteria are not met.

LC50 Vapour $> 5600 \text{ mg/m}^3 \text{ Air (rat) (OECD 403)}$

Based upon the available data, the classification criteria are not met.

LD50 > 2000 mg/kg bw/day (rabbit) (OECD 402)

Skin Irrit. 2; Causes skin irritation.
Irritating to skin. (rabbit) (OECD 404)

Based upon the available data, the classification criteria are not met.

Not irritating to eyes (rabbit) (OECD 405)

Based upon the available data, the classification criteria are not met.

Sensitisation (guinea pig) - Negative (OECD 406)

Muta. 1B; May cause genetic defects. Harmonised Classification.

ECHA Registration Endpoint summary: According to EU CLP Classification (EC no. 1272/2008), there is a regulatory requirement to classify gasoline and naphtha streams as hazardous for this endpoint when they contain >0.1%

benzene

Carc. 1B; May cause cancer. Harmonised Classification.

ECHA Registration Endpoint summary: According to EU CLP Classification (EC no. 1272/2008), there is a regulatory requirement to classify gasoline and naphtha streams as hazardous for this endpoint when they contain >0.1%

benzene

Repr. 2; Suspected of damaging fertility or the unborn child.

ECHA Registration Endpoint summary: According to EU CLP Classification (EC no. 1272/2008), there is a regulatory requirement to classify gasoline and naphtha streams as hazardous for this endpoint when they contain >0.1%

Toluene and/Or n-Hexane

STOT SE 3; May cause drowsiness or dizziness.

Weight of evidence approach

Based upon the available data, the classification criteria are not met.

oral: No adverse effect observed (rat) (Halder CA, et al. (1985))

inhalation: No adverse effect observed (rat) (OECD 453)

Chronic - Systemic effects NOAEC 1402 mg/m $^{\rm 3}$ No adverse effect observed. (Mouse) (OECD TG 410)

dermal: Chronic - Systemic effects NOAEL 375 mg/kg bw/day

Asp. Tox. 1; May be fatal if swallowed and enters airways. Harmonised

Classification.

Viscosity: <1 mm²/s @ 20 °C

This substance does not have endocrine disrupting properties with respect to

humans.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity Aquatic Chronic 2; Toxic to aquatic life with long lasting effects.

Short Term (acute): LL50 (Fish) (96hr) 10 mg/l (OCED 203)

Long Term (Chronic):

According to the EU CLP Regulation (EC No. 1272/2008) criteria, substances in the low boiling point naphtha category are classified as Chronic Category 2 (H411) for the environment based on acute invertebrate and alga toxicity.

12.2 Persistence and degradability Readily biodegradable. (OECD 301F)

12.3 Bioaccumulative potential Substance is complex UVCB. The BCF (fish) of this substance components is

well below the criteria for bioaccumulation. Therefore, this substance is not considered as bioaccumulative substance.(ECHA registration dossier: PBT

assessment 2)

12.4 Mobility in soil The product is predicted to have low mobility in soil. Immiscible with water.

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ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878



12.5 Results of PBT and vPvB assessment Substance is complex UVCB. This substance does not contain PBT constituents

included in the SVHC candidate list at concentrations above 0.1%.

12.6 **Endocrine disrupting properties** This substance does not have endocrine disrupting properties with respect to

non-target organisms.

12.7 Other adverse effects None Known

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods Dispose of this material and its container as hazardous waste Do not empty into

> drains, dispose of this material and its container at hazardous or special waste collection point. Disposal should be in accordance with local, state or national legislation. Containers of this material may be hazardous when empty since they retain product residue. Containers must not be punctured or destroyed by burning, even when empty. Allocation of a waste code number, according to the

European Waste Catalogue, should be carried out in agreement with the

regional waste disposal company. Waste code: 13 07 01 EU Waste Codes: HP3, HP4, HP7, HP10, HP11, HP14 Waste classification according to Directive 2008/98/EC

(Waste Framework Directive)

SECTION 14: TRANSPORT INFORMATION

		ADR/RID	IMDG/ADN
14.1	UN number	UN 1268	UN 1268

14.2 **Proper Shipping Name** PETROLEUM DISTILLATES N.O.S. PETROLEUM DISTILLATES N.O.S.

14.3 Transport hazard class(es) 3+(N2, CMR,F) 14.4 Packing group

Environmental hazards MILIEUGEVAARLIJK / ENVIRONMENTALLY HAZARDOUS/ UMWELTGEFÄHREND 14.5

/DANGEREUX POUR/ L'ENVIRONNEMENT

Special precautions for user 14.6 See Section: 2

Maritime transport in bulk according This product is being carried under the scope of MARPOL Annex 1. Special Precautions: Refer to 14.7

to IMO instruments Chapter 7 'Handling and Storage' for special precautions which a user needs to be aware of, or

needs to comply with, in connection with transport.

Additional information 14.8 ADR HIN: 33 EmS: F-E, S-E

> Tunnel restriction code: 3 (D/E) Limited Quantity: 500ml

Limited Quantity: 500 ml

Special Provisions 664

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental

regulations/legislation specific for the substance or

mixture

15.1.1 **EU** regulations

> Seveso Upper Tier: 25000 tonnes

> > Lower Tier: 2500 tonnes

Annex XVII (Restrictions) In accordance with REACH Annex XVII entry 30 (c) this substance is exempt from

Entry 28 and 29 of REACH Annex XVII as it is to be sold as a fuel in a closed

15.1.2 **National regulations**

Germany Wassergefährdungsklasse (Germany). WGK number: 3

Chemical Safety Assessment A REACH chemical safety assessment (CSA) has been carried out. Refer to 15.2

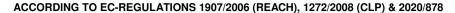
annexes for exposure scenarios detailing use specific exposure controls.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: New SDS Regulation 2020/878 format, all sections have been updated to include new information. Please review SDS with care.

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References:

Existing ECHA registration(s) for Naphtha (petroleum), full-range straight-run (CAS No. 64741-42-0) and Chemical Safety Report.

Literature References:

1. Halder CA, et al., 1985, Hydrocarbon nephropathy in male rats: identification of the nephrotoxic components of unleaded gasoline., Toxicol. Ind. Health 1:67-87

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

Legend

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road **ADR** ADN ADN: European Agreement on the International Transport of Dangerous Goods by Inland Waterways CLP Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures

DNEL Derived no effect level

IATA IATA: International Air Transport Association **ICAO** ICAO: International Civil Aviation Organization **IMDG** IMDG: International Maritime Dangerous Goods

I TFI Long term exposure limit

PBT PBT: Persistent. Bioaccumulative and Toxic

PNEC Predicted No Effect Concentration

REACH Registration, Evaluation, Authorisation and Restriction of Chemicals

RID RID: Regulations concerning the international railway transport of dangerous goods

STEL Short term exposure limit

vPvB vPvB: very Persistent and very Bioaccumulative

OECD Organisation for Economic Cooperation and Development

FS Exposure Scenario

NOAEC no observed adverse effect concentration NOAEL No Observed Adverse Effect Level

Hazard classification / Classification code:

Flam. Liq. 1, Flammable liquid, Category 1 Asp. Tox. 1, Aspiration Toxicity, Category 1 Skin Irrit. 2, Skin irritation, Category 2

Muta. 1B, Germ cell mutagen, Sub-category 1B

Carc. 1B, Carcinogen, Category 1B Repr. 2, Reproductive toxicant, Category 2

STOT SE 3, Specific target organ toxicity - Single exposure, Category 3

Aquatic Chronic 2, Hazardous to the aquatic environment (Chronic),

Category 2

Hazard Statement(s)

H224: Extremely flammable liquid and vapour. H304: May be fatal if swallowed and enters airways.

H315: Causes skin irritation. H340: May cause genetic defects.

H350: May cause cancer.

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

H336: May cause drowsiness or dizziness. (central nervous system, inhalation)

H411: Toxic to aquatic life with long lasting effects.

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

Disclaimers

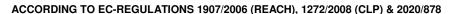
Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vitol SA gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vitol SA accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

Annex to the extended Safety Data Sheet (eSDS)

See below -

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Naphtha (petroleum), full-range straight-run (0 -1% benzene content)

CAS Number 64741-42-0 EC Number 265-042-6

Summary of Parameters

Physical Parameters				
Vapour pressure (Pa)			4 – 240 @ 37.8 °C (Value used for exposure assessment = 340)	
Partition Coefficient	t (log K _{ow})		2.00 - 20.43	
Aqueous solubility	(mg L ⁻¹)		1.6E+03 - 5.1E-18 (Value used for exposure assessment = 2.0E+02)	
Molecular weight			not applicable	
Biodegradability			Not defined	
Human Health parameter (DNELs)				
	Short term	inhalation (mg/m³)	1100	
Markey	Short term	dermal (mg/kg bw/day)	not applicable	
Worker	Lang Tayer	inhalation (mg/m³)	3.2 (= 1 ppm)*	
Long Term		dermal (mg/kg bw/day)	0.234*	
inhalation (mg/m³)		inhalation (mg/m³)	0.0032 (=1 ppb)* (0.93 mg/kg bw/day)	
Consumer		dermal (mg/kg bw/day)	0.234*	
		oral (mg/kg bw/day)	8.8	

Environmental parameter (PNECs)

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

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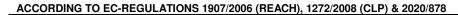
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Contributing Scenarios

Workers

Concentration: benzene (Worst case assumption. Contains benzene. @1%).

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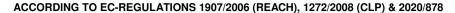


PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with
PROC2	equivalent containment conditions
PROC2 (Storage)	Use in closed, continuous process with occasional controlled exposure.
Phooz (Storage)	Bulk product storage.
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.
PROC3 (Sampling)	Use in closed, continuous process with occasional exposure. Sample collection
PROC8a (Maintenance)	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Clean down and maintenance of vessels and containers.
PROC8b (bulk)	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Bulk transfer in a closed system
PROC8b (Drum)	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Drum or batch transfers.
PROC8b (Refueling)	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Refueling vehicles, light aircraft or marine craft
PROC8b (aircraft)	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Refuelling aircraft
PROC15	Use as laboratory reagent.
PROC16	Using material as fuel sources, limited exposure to unburned product to be expected.
PROC16 (Additive)	Using material as fuel sources, limited exposure to unburned product to be expected. Use as a fuel additive.
Environment	
ERC1	Manufacture of substance
ERC2	Formulation of preparations
ERC3	Formulation in materials
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC5	Industrial use resulting in inclusion into or onto a matrix
ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b	Industrial use of reactive processing aids
ERC6c	Industrial use of monomers for manufacture of thermoplastics
ERC6d ERC7	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers Industrial use of substances in closed systems
ERC9a	Wide dispersive indoor use of substances in closed systems
ERC9b	Wide dispersive indoor use of substances in closed systems Wide dispersive outdoor use of substances in closed systems
Consumer	white dispersive outdoor use or substances in closed systems
PC13	Fuels
	(Liquid: Automotive Refuelling)
	(Liquid Scooter Refuelling)
	(Liquid: Garden equipment - Refuelling)
	(Liquid, Garden equipment - Use)
	(—1900)

Exposure Scenario 1 – Distribution of Naphtha (petroleum), full-range straight-run (0 – 1 % benzene content)

1.0 Contributing Scenarios	
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC3 (Sampling) PROC8a (Maintenance) PROC8b (bulk) PROC15
Chemical product category [PC]	not applicable
Article categories [AC]	not applicable
Environmental release categories [ERC]	ERC1 ERC2 ERC3 ERC4 ERC5 ERC6a ERC6a ERC6b ERC6c

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	ERC7
Specific Environmental Release Categories SPERC	ESVOC SpERC 1.1b v.1

2.0 Operational conditions and risk management measures					
2.1 Control of worker exposure					
Product characteristics					
Physical form of product	Liquid with high volatility.				
Concentration of substance in product	Covers concentrations up to 10	00% (≤ 1 % benzene content)			
Human factors not influenced by risk manage	gement				
Potential exposure area	Not defined	Not defined			
Frequency and duration of use					
Exposure duration per day	exposure duration per day Covers daily exposures up to 8 hours (unless stated differently).				
Frequency of use (days per year)	300	300			
Other operational conditions affecting work	er exposure				
PROC3, PROC2 (Storage) Outdoor		Outdoor			
Area of use	All other PROC's Not defined (default = Indoor)				
Characteristics of the surroundings	Not defined	Not defined			
Canada managuran amulianbla ta all pativities					

General measures applicable to all activities

Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

General measures (skin irritants)

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General measures (carcinogens)

Flow rate of receiving surface water (m3/d):

Local freshwater dilution factor:

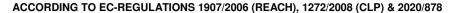
Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

Technical conditions of use					
PROC1, PROC2, PROC3	Handle substance within a closed system.				
PROC8b (bulk)	Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 90 %)				
PROC15	Use fume cupboard. (E	Efficiency of	at least 90 %)		
Organisational measures					
PROC3 (Sampling)	Sample via a closed lo	op or other	system to avoid exposure. (Efficiency of at least 95 %)		
PROC8a (Maintenance)	Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (inhalation - efficiency of at least 90 %)				
Risk management measures related to human healt	h				
Respiratory protection	No special measures a	are required.			
	PROC2		Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)		
Hand and/or Skin protection	PROC8a (Maintenance)		Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90 %)		
Eye Protection	No special measures a	are required.			
Other operational conditions affecting worker expos	sure				
Wear suitable coveralls to prevent exposure to the skin.	. Clear transfer lines prior	r to de-coupl	ing. Avoid dip sampling.		
2.2 Control of environmental exposure					
Amounts used					
Fraction of EU tonnage used in region:		0.1			
Regional use tonnage (tons/year):		3.1E+06			
Fraction of Regional tonnage used locally: tons/year 2.0E-03					
Annual site tonnage (tons/year):		62,000			
Average daily use (kg/day)			210,000		
Environment factors not influenced by risk management					

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Not defined (default = 18,000)

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Local marine water dilution factor:	100			
operational conditions				
Emission days (days/year):	300			
Release fraction to air from process (initial release prior to RMM):	1.0E-03			
Release fraction to wastewater from process (initial release prior to RMM):	1.0E-05			
Release fraction to soil from process (initial release prior to RMM):	1.0E-05			
Technical onsite conditions and measures to reduce or limit discharges, a	ir emissions and releases to soil			
Treat air emission to provide a typical removal efficiency of (%):	90			
If there is no discharge to domestic sewage treatment plant, Treat onsite				
wastewater (prior to receiving water discharge) to provide the required	0			
removal efficiency of (%):				
If discharging to domestic sewage treatment plant, provide the required onsite	0			
wastewater removal efficiency of (%):	0			
Treat soil emission to provide a typical removal efficiency of (%):				
Common practices vary across sites thus conservative process release estimates used. If discharging to domestic sewage treatment plant, no onsite				
wastewater treatment required.				
Organisational measures to prevent/limit release from site				
Do not apply industrial sludge to natural soils. Sludge should be incinerated, con	ntained or reclaimed.			
Conditions and measures related to municipal sewage treatment plant				
Size of municipal sewage system/treatment plant (m³/d)	2000			
Degradation effectiveness (%) 95.7				
Conditions and measures related to external treatment of waste for disposal				
External treatment and disposal of waste should comply with applicable local and/or national regulations.				
Substance release quantities after risk management measures				
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 530,0000				
wastewater treatment removal (ng/a).				

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

	inha	lation	der	Combined	
Process category [PROC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (Storage)	0.35	0.35	0.14	0.57	0.94
PROC3	0.70	0.70	0.03	0.15	0.85
PROC3 (Sampling)	0.05	0.05	0.03	0.15	0.20
PROC8a (Maintenance)	0.25	0.25	0.14	0.57	0.84
PROC8b (bulk)	0.15	0.15	0.07	0.30	0.45
PROC15	0.05	0.05	0.00	0.01	0.06

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)

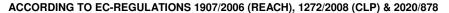
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	4.6E-03 mg/L	3.6E-03 mg/L	4.6E-05 mg/L	1,68E-4 mg/kg ww	0.15 mg/kg ww	4.6E-03 mg/kg ww

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	Risk characterisation ratio (RCR)	2.8E-04	1.2E-02	1.3E-04	2.3E-05	6.0E-03	1.9E-04	
Human exposi	luman exposure prediction:							
	Route	e of Exposure	Expos	ure (μg/kg ⁻¹ day	r¹)	Risk characterisation r (RCR)	atio	
		oral		3.9		3.9E-02		
		inhalation		0.68		7.3F-04		

4.0 Evaluation guidance to downstream user					
For scaling see	are managed to at least eq Available hazard data do no Further details on scaling a industries-libraries.html). Exposure calculated for be	Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). Exposure calculated for benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling may be possible if the batch contains < 1 % benzene			
Exposure assessment	Worker	ECETOC TRA			
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.			

Exposure Scenario 2 – Formulation and (re)packing of Naphtha (petroleum), full-range straight-run (0 – 1 % benzene content)

1.0 Contributing Scenarios	
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC3 (Sampling) PROC8a (Maintenance) PROC8b (bulk) PROC8b (Drum/batch transfers) PROC15
Chemical product category [PC]	not applicable
Article categories [AC]	not applicable
Environmental release categories [ERC]	ERC2
Specific Environmental Release Categories SPERC	ESVOC SPERC 2.2.v1

2.0 Operational conditions and risk manage	ement measures					
2.1 Control of worker exposure						
Product characteristics						
Physical form of product	Liquid with high volatility.					
Concentration of substance in product	Covers concentrations up	to 100% (≤ 1 % benzene content)				
Human factors not influenced by risk mana	gement					
Potential exposure area	Not defined	Not defined				
Frequency and duration of use						
Exposure duration per day	Covers daily exposures u	Covers daily exposures up to 8 hours (unless stated differently).				
Frequency of use (days per year)	300					
Other operational conditions affecting work	er exposure					
Average	PROC3	Outdoor				
Area of use	All other PROC's	Not defined (default = Indoor)				
Characteristics of the surroundings	Not defined	Not defined				
General measures applicable to all activities						

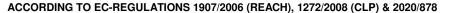
Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

General measures (skin irritants)

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General measures (carcinogens)

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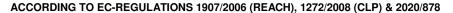
Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

based health surveillance.						
Technical conditions of use						
PROC1, PROC2, PROC2 (Storage), PROC3	Handle substance wi	thin a closed	system.			
PROC3 (Sampling)			system to avoid exposure. (Efficiency of at least 95 %)			
PROC8b (bulk), PROC8b (Drum/batch transfers)	Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 97 %)					
PROC15	Use fume cupboard.	(Efficiency of	f at least 90 %)			
Organisational measures	'	<u>, , , , , , , , , , , , , , , , , , , </u>	,			
PROC8a (Maintenance) Drain down and flush system prior to equipment break-in or maintenance. Retain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (Efficiency of at least 90 %)			disposal or for subsequent recycle. Clear spills			
Risk management measures related to human hea						
Respiratory protection	No special measures	are required				
	PROC2, PROC2 (Sto	orage)	Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)			
Hand and/or Skin protection	PROC8a (Maintenan	,	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90 %)			
Eye Protection	No special measures	are required	l			
Other operational conditions affecting worker exp						
Wear suitable coveralls to prevent exposure to the sk	in. Clear transfer lines pr	ior to de-cou	pling. Avoid dip sampling.			
2.2 Control of environmental exposure						
Amounts used						
Fraction of EU tonnage used in region:		0.1				
Regional use tonnage (tons/year):		4.0E+05				
Fraction of Regional tonnage used locally: (tons/year)		7.4E-02				
Annual site tonnage (tons/year):		3.0E+04				
Average daily use (kg/day):		1.0E+05				
Environment factors not influenced by risk manage	gement					
Flow rate of receiving surface water (m³/d):		Not define	ed (default = 18,000)			
Local freshwater dilution factor:		10				
Local marine water dilution factor:		100				
operational conditions						
Emission days (days/year):		300				
Release fraction to air from process (initial release pri		2.5E-02				
Release fraction to wastewater from process (initial re		1.1E-03				
Release fraction to soil from process (initial release process) Technical onsite conditions and measures to reduce the solutions and measures to reduce the solutions.		1.0E-04				
			ns and releases to soll			
Treat air emission to provide a typical removal efficier		0				
If there is no discharge to domestic sewage treatment		05.0				
wastewater (prior to receiving water discharge) to pro	vide tile required	95.3				
removal efficiency of (%):						
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):						
Treat soil emission to provide a typical removal efficiency of (%):						
	• ()		discharging to domestic sewage treatment plant, no onsite			
wastewater treatment required.		aios useu. II	alounding to domostic sewage treatment plant, no onsite			
Organisational measures to prevent/limit release		ontoin - d - · · ·	aglaimad			
Do not apply industrial sludge to natural soils. Sludge Conditions and measures related to municipal set		ontained of f	eciaimeu.			
Size of municipal sewage system/treatment plant (m³)		2000				
Degradation effectiveness (%)						
	mont of wasts for dism	95.7				
Conditions and measures related to external treatment of waste for disposal						

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External treatment and disposal of waste should comply with applicable local and/or national regulations.

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Substance release quantities after risk management measures					
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	1.1E+05				

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	1.1E+05

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model)

ECETOC TRA (benzene content)

		inhalation		dermal	Combined
Process category [PROC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (Storage)	0.50	0.50	0.03	0.12	0.62
PROC3	0.70	0.70	0.03	0.15	0.85
PROC3 (Sampling)	0.05	0.05	0.03	0.15	0.20
PROC8a (Maintenance)	0.25	0.25	0.14	0.59	0.84
PROC8b (bulk)	0.05	0.05	0.07	0.30	0.35
PROC8b (Drum/batch transfers)	0.05	0.05	0.07	0.30	0.35
PROC15	0.05	0.05	0.00	0.01	0.06

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	2.4 mg/L	0.24 mg/L	2.4E-02 mg/L	1.67E-03 mg/kg ww	9.4E-01 mg/kg ww	9.4E-02 mg/kg ww
Risk characterisation ratio (RCR)	0.14	0.66	0.066	4.6E-03	0.91	0.091

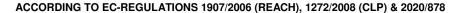
Human exposure prediction:

Route of Exposure	Exposure (μg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
oral	9.8	0.098
inhalation	1700	0.18

4.0 Evaluation guidance to downstream user				
For scaling see	are managed to at least equivalent Available hazard data do not Further details on scaling and industries-libraries.html).	support the need for a DNEL to be established for other health effects. It control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-ene and assumes that the substance contains 1 % benzene. Arithmetic scaling may		
Exposure assessment	Worker	ECETOC TRA		
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.		

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Exposure Scenario 3 – Use of Gasoline (0 – 1 % benzene content) as a fuel- Industrial

1.0 Contributing Scenarios	
Sector of uses SU	SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC8a (Maintenance) PROC8b (bulk) PROC8b (Drum/batch transfers) PROC8b (Refuelling) PROC8b (Refuelling aircraft) PROC16 PROC16 (Additive)
Chemical product category [PC]	not applicable
Article categories [AC]	not applicable
Environmental release categories [ERC]	ERC7
Specific Environmental Release Categories SPERC	ESVOC SPERC 7.12a.v1

2.0 Operational conditions and risk manager	ment measures		
2.1 Control of worker exposure			
Product characteristics			
Physical form of product	Liquid with high volatility.		
Concentration of substance in product	Covers concentrations up	to 100% (≤ 1 % benzene content)	
Human factors not influenced by risk manag	ement		
Potential exposure area	Not defined		
Frequency and duration of use			
Exposure duration per day	Covers daily exposures up	to 8 hours (unless stated differently).	
Frequency of use (days per year)	300		
Other operational conditions affecting works	er exposure		
Average	PROC3	Outdoor	
Area of use	All other PROC's	Not defined (default = Indoor)	
Characteristics of the surroundings	Not defined		

General measures applicable to all activities

Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

General measures (skin irritants)

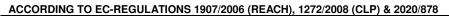
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

General measures (carcinogens)

Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

Technical conditions of use		
PROC1, PROC2, PROC2 (Storage), PROC3, PROC16, PROC16 (Additive)	Handle substance within a closed s	system.
PROC8b (bulk), PROC8b (Drum/batch transfers), PROC8b (Refuelling), PROC8b (Refuelling aircraft)	Ensure material transfers are unde 90 %)	er containment or extract ventilation. (Efficiency of at least
Organisational measures		
PROC8a (Maintenance)		to equipment break-in or maintenance. Retain drain downs or for subsequent recycle. Clear spills immediately.
Risk management measures related to human health	h	
Respiratory protection	No special measures are required.	
Hand and/or Skin protection	PROC2	Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)

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	PROC8a (Maintenance	e)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 90 %)
Eye Protection	No special measures a	are required.	
Other operational conditions affecting worker expos	sure		
Wear suitable coveralls to prevent exposure to the skin.	Clear transfer lines prior	r to de-coupl	ling. Avoid dip sampling.
2.2 Control of environmental exposure			
Amounts used			
Fraction of EU tonnage used in region:		0.1	
Regional use tonnage (tons/year):		2.5E+05	
Fraction of Regional tonnage used locally: (tons/year)		1	
Annual site tonnage (tons/year):		2.5E+05	
Average daily use (kg/day):		8.2E+05	
Environment factors not influenced by risk manager	ment		
Flow rate of receiving surface water (m³/d):		Not define	d (default = 18,000)
Local freshwater dilution factor:		10	· · · · · · · · · · · · · · · · · · ·
Local marine water dilution factor:		100	
operational conditions			
Emission days (days/year):		300	
Release fraction to air from process (initial release prior	to RMM):	5.00E-02	
Release fraction to wastewater from process (initial rele		1.0E-05	
Release fraction to soil from process (initial release prio		0	
Technical onsite conditions and measures to reduce		ir emission	s and releases to soil
Treat air emission to provide a typical removal efficiency	y of (%):	95.0	
If there is no discharge to domestic sewage treatment p			
wastewater (prior to receiving water discharge) to provice removal efficiency of (%):	de the required	42.3	
If discharging to domestic sewage treatment plant, provivastewater removal efficiency of (%):	ide the required onsite	0	
Treat soil emission to provide a typical removal efficience	cv of (%):	0	
	. ,	-	discharging to domestic sewage treatment plant, no onsite
Organisational measures to prevent/limit release fro	om site		
Do not apply industrial sludge to natural soils. Sludge sh	nould be incinerated, con	tained or red	claimed.
Conditions and measures related to municipal sewa	ige treatment plant		
Size of municipal sewage system/treatment plant (m³/d)		2000	
Degradation effectiveness (%)	<u> </u>	95.7	
Conditions and measures related to external treatme	ent of waste for dispos	al	
External treatment and disposal of waste should comply	with applicable local an	d/or national	regulations.
Substance release quantities after risk management			
Maximum allowable site tonnage (MSafe) based on rele wastewater treatment removal (kg/d):	ease following total	4.30E+06	

	3.	Exposure es	timation and	d reference	to its source
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3.1 Human exposure prediction

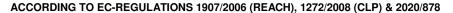
Exposure assessment (method/calculation model)

ECETOC TRA (benzene content)

	inha	lation	der	mal	Combined
Process category [PROC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (Storage)	0.35	0.35	0.14	0.59	0.94
PROC3	0.70	0.70	0.03	0.15	0.85
PROC8a (Maintenance)	0.35	0.35	0.14	0.59	0.94
PROC8b (bulk)	0.09	0.09	0.07	0.30	0.39
PROC8b	0.15	0.15	0.07	0.30	0.45

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(Drum/batch transfers)					
PROC8b (Refuelling)	0.15	0.15	0.07	0.30	0.45
PROC8b (Refuelling aircraft)	0.15	0.15	0.07	0.30	0.45
PROC16	0.25	0.25	0.03	0.15	0.40
PROC16 (Additive)	0.25	0.25	0.03	0.15	0.40

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	0.18 mg/L	0.018 mg/L	1.8E-03 mg/L	4.7E-03 mg/kg ww	0.22 mg/kg ww	7.2E-03 mg/kg ww
Risk characterisation ratio (RCR)	0.011	0.051	5.1E-03	3.6E-03	0.074	7.0E-03

Human exposure prediction:

Route of Exposure	Exposure (µg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
oral	4.6	0.046
inhalation	1.3E+02	0.15

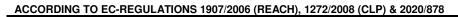
4.0 Evaluation guidance to downs	stream user	
		nt measures/operational conditions are adopted, then users should ensure that risks
	are managed to at least equiv	
	Available hazard data do not	support the need for a DNEL to be established for other health effects.
For scaling see	Further details on scaling and industries-libraries.html).	control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-
	· · · · · · · · · · · · · · · · · · ·	ene and assumes that the substance contains 1 % benzene. Arithmetic scaling may
	be possible if the batch contain	ins < 1 % benzene
Exposure assessment	Worker	ECETOC TRA
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Exposure Scenario 4 – Use of Gasoline (0 – 1 % benzene content) as a fuel- Professional

1.0 Contributing Scenarios	
Sector of uses SU	SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category [PROC]	PROC1 PROC2 PROC2 (Storage) PROC3 PROC8a (Maintenance) PROC8b (bulk) PROC8b (Drum/batch transfers) PROC8b (Refuelling) PROC16
Chemical product category [PC]	not applicable
Article categories [AC]	not applicable
Environmental release categories [ERC]	ERC9a

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Specific Environmental Release Categories ESVOC SPERC 9.12b.v1
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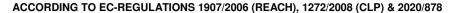
Specific Environmental Release Categories SPERC	ESVOC SPERC 9.12b.v1				
2.0 Operational conditions and risk manage	ement me	asures			
2.1 Control of worker exposure					
Product characteristics					
Physical form of product		Liquid with high volatility.			
Concentration of substance in product		Covers concentrations up to 100%	(≤ 1 % benzene content)		
Human factors not influenced by risk mana	igement				
Potential exposure area		Not defined			
Frequency and duration of use					
Exposure duration per day		Covers daily exposures up to 8 ho	urs (unless stated differently).		
Frequency of use (days per year)		300			
Other operational conditions affecting work	ker expos				
Avec of use		PROC3	Outdoor		
Area of use		All other PROC's	Not defined (default = Indoor)		
Characteristics of the surroundings		Not defined			
General measures applicable to all activitie Assumes a good basic standard of occupation		e is implemented. Assumes activities	s are at ambient temperature (unless stated differently).		
General measures (skin irritants)	arriygiciic	o lo implemented. Accumes delivities	vare at ambient temperature (amoss stated amorentay).		
	, potential	areas for indirect skin contact. We	ar gloves (tested to EN374) if hand contact with substance		
			nination immediately. Provide basic employee training to		
prevent/minimise exposures and to report any	,	•	,		
General measures (carcinogens)	•				
Consider technical advances and process upo	arades (inc	cluding automation) for the elimination	on of releases. minimise exposure using measures such as		
closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking					
containment. Clean/flush equipment, where possible, prior to maintenance Where there is potential for exposure: restrict access to authorised persons;					
provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory					
protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste safely. Ensure safe systems of					

protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

Technical conditions of use				
PROC1, PROC2, PROC2 (Storage), PROC3, PROC16	Handle substance within a closed system.			
PROC2 (Storage)	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. (Efficiency of at least 30 %)			
PROC8b (bulk), PROC8b (Drum/batch transfers), PROC8b (Refuelling)	Ensure material transfers are under containment or extract ventilation. (Efficiency of at least 90 %)			
Organisational measures	•			
PROC8a (Maintenance)	Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Clear spills immediately. (Efficiency of at least 83 %)			
Risk management measures related to human hea				
Respiratory protection	No special measures are requ	ired.		
	PROC2	Wear suitable gloves tested to EN374. (Efficiency of at least 80 %)		
Hand and/or Skin protection	PROC8a (Maintenance)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency of at least 98 %)		
Eye Protection	No special measures are required.			
Other operational conditions affecting worker expe	osure			
Wear suitable coveralls to prevent exposure to the skir		coupling. Avoid dip sampling.		

The state of the s				
2.2 Control of environmental exposure				
Amounts used				
Fraction of EU tonnage used in region:	0.1			
Regional use tonnage (tons/year):	6.9E+04			
Fraction of Regional tonnage used locally: (tons/year)	5.0E-04			
Annual site tonnage (tons/year):	350			
Average daily use (kg/day): 950				
Environment factors not influenced by risk management	·			
Flow rate of receiving surface water (m³/d):	Not defined (default = 18,000)			

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Local freshwater dilution factor:	10	
Local marine water dilution factor:	100	
operational conditions		
Emission days (days/year):	365	
Release fraction to air from process (initial release prior to RMM):	1.0E-02	
Release fraction to wastewater from process (initial release prior to RMM):	1.0E-05	
Release fraction to soil from process (initial release prior to RMM):	1.0E-05	
Technical onsite conditions and measures to reduce or limit discharges, a	ir emissions and releases to soil	
Treat air emission to provide a typical removal efficiency of (%):	not applicable	
If there is no discharge to domestic sewage treatment plant, Treat onsite		
wastewater (prior to receiving water discharge) to provide the required	0	
removal efficiency of (%):		
If discharging to domestic sewage treatment plant, provide the required onsite		
wastewater removal efficiency of (%):	0	
Treat soil emission to provide a typical removal efficiency of (%):	0	
Common practices vary across sites thus conservative process release estima wastewater treatment required.	ites used. If discharging to domestic sewage treatment plant, no onsite	
Organisational measures to prevent/limit release from site		
Do not apply industrial sludge to natural soils. Sludge should be incinerated, con	ntained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant		
Size of municipal sewage system/treatment plant (m³/d)	2000	
Degradation effectiveness (%)	95.7	
Conditions and measures related to external treatment of waste for dispos	sal	
External treatment and disposal of waste should comply with applicable local ar	nd/or national regulations.	
Substance release quantities after risk management measures	-	
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	2.4E+03	

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model) EC

ECETOC TRA (benzene content)

	inha	lation	der	mal	Combined
Process category [PROC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1	0.00	0.00	0.03	0.15	0.15
PROC2	0.50	0.50	0.03	0.12	0.62
PROC2 (Storage)	0.35	0.35	0.14	0.59	0.94
PROC3	0.70	0.70	0.03	0.15	0.85
PROC8a (Maintenance)	0.85	0.85	0.03	0.12	0.97
PROC8b (bulk)	0.25	0.25	0.07	0.30	0.55
PROC8b (Drum/batch transfers)	0.25	0.25	0.07	0.30	0.55
PROC8b (Refuelling)	0.25	0.25	0.07	0.30	0.55
PROC16	0.50	0.50	0.03	0.15	0.65

3.2 Environmental exposure prediction

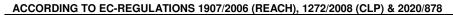
Exposure assessment (method/calculation model)

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental	2.1E-05 mg/L	3.1E-03 mg/L	1.1E-05 mg/L	3.5E-03 mg/kg ww	0.15 mg/kg ww	4.4E-03 mg/kg ww

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Exposure (PEC)						
Risk characterisation ratio (RCR)	1.3E-06	0.011	3.1E-05	2.3E-05	4.3E-03	1.2E-03

Human exposure prediction:

Route of Exposure	Exposure (μg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)
oral	3.8	0.038
inhalation	0.54	5.8E-04

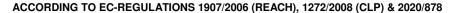
4.0 Evaluation guidance to d	ownstream user		
For scaling see	are managed to at least Available hazard data Further details on scal industries-libraries.htm Exposure calculated for	Where other risk management measures/operational conditions are adopted, then users should ensure that risk are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for industries-libraries.html). Exposure calculated for benzene and assumes that the substance contains 1 % benzene. Arithmetic scaling ma be possible if the batch contains < 1 % benzene	
Exposure assessment	Worker	ECETOC TRA	
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	

Exposure Scenario 5 – Use of Gasoline (0 – 1 % benzene content) as a fuel- Consumer

1.0 Contributing Scenarios	
Sector of uses SU	SU21 Consumer uses: Private households (= general public = consumers)
Process category [PROC]	not applicable
Chemical product category [PC]	PC13 PC13 (Liquid: Automotive Refuelling) PC13 (Liquid Scooter Refuelling) PC13 (Liquid: Garden equipment - Refuelling) PC13 (Liquid, Garden equipment - Use)
Article categories [AC]	not applicable
Environmental release categories [ERC]	ERC9a ERC9b
Specific Environmental Release Categories SPERC	ESVOC SPERC 9.12c.v1

2.0 Operational conditions and risk management measures					
2.1 Control of worker exposure					
Product characteristics					
Physical form of product	Liquid with h	nigh volatility.			
Concentration of substance in product	Covers cond	centrations up to 100% (≤ 1 % benzene content	1)		
Human factors not influenced by risk manager	nent				
Potential exposure area (Skin contact)	PC13	Liquid: Automotive Refuelling Liquid Scooter Refuelling	210 cm ²		
	POIS	Liquid, Garden equipment - Use; Liquid: Garden equipment - Refuelling	420 cm ²		
Frequency and duration of use					
Function (house/Funct)	PC13	Liquid: Automotive Refuelling; Liquid Scooter Refuelling	0.05		
Exposure duration (hours/Event)	PC13	Liquid, Garden equipment - Use	0.03		
		Liquid: Garden equipment - Refuelling	2.00		
Frequency of use (days per year)	PC13	Liquid: Automotive Refuelling; Liquid Scooter Refuelling	52 (Covers frequency up to: weekly use)		
	FO13	Liquid, Garden equipment - Use; Liquid: Garden equipment - Refuelling	26 (Covers frequency up to: once in two weeks.)		
Amounts used (g/Event)	PC13	Liquid: Automotive Refuelling Liquid Scooter Refuelling	37500 3750		

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		Liquid, Garden equipment - Use; Liquid: Garden equipment - Refuelling 750			
Other operational conditions affecting worker exposure					
Area of use	Not defined				
Characteristics of the surroundings	PC13	Liquid: Automotive Refuelling; Liquid Scooter Refuelling; Liquid, Garden equipment - Use			
		Liquid: Garden equipment - Refuelling 34 m³			
risk management measures					
Respiratory protection		sures identified.			
Hand and/or Skin protection		sures identified.			
Eye Protection	No specific mea	sures identified.			
2.2 Control of environmental exposure					
Amounts used					
Fraction of EU tonnage used in region:		0.1			
Regional use tonnage (tons/year):		8.7E+04			
Fraction of Regional tonnage used locally: (tons/year)		5.0E-04			
Annual site tonnage (tons/year):		4.4E+01			
Average daily use (kg/day):		1.2E+02			
Environment factors not influenced by risk manage	ement				
Flow rate of receiving surface water (m³/d):	Not defined (default = 18,000)				
Local freshwater dilution factor:		10			
Local marine water dilution factor:		100			
operational conditions		•			
Emission days (days/year):		365			
Release fraction to air from process (initial release price	or to RMM):	1.0E-02			
Release fraction to wastewater from process (initial rel					
Release fraction to soil from process (initial release pri		1.0E-05			
Conditions and measures related to municipal sew					
Size of municipal sewage system/treatment plant (m³/d	d)	2000			
Degradation effectiveness (%)		95.7			
Conditions and measures related to external treatment		•			
External treatment and disposal of waste should comply with applicable local and/or national regulations.					
Substance release quantities after risk management					
Maximum allowable site tonnage (MSafe) based on rewastewater treatment removal (kg/d):	ease following total	31000			

3. Exposure estimation and reference to its source

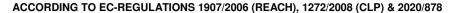
3.1 Human exposure prediction

Yearly Use (Chronic)

Chemical	inhalation		dermal		Combined	
product category [PC]	inhalation exposure (mg/m³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)	
PC13 (Liquid: Automotive Refuelling)	0.002	0.69	0.00	0.01	0.70	
PC13 (Liquid Scooter Refuelling)	0.001	0.46	0.00	0.01	0.47	
PC13 (Liquid, Garden equipment - Use)	0.003	0.87	0.00	0.00	0.87	
PC13 (Liquid: Garden equipment - Refuelling)	0.001	0.18	0.00	0.02	0.20	

3.2 Environmental exposure prediction

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Exposure assessment (method/calculation model) The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Naphtha (petroleum), full-range straight-run is a hydrocarbon UVCB. The hydrocarbon block method is used in PETRORISK to calculate the environmental toxicity (HC5) of each group of components in the substance. These are used to estimate the environmental risk for the substance. Therefore individual environmental compartments PNECs are not available for this product.

Environmental exposure	STP	freshwater	marine water	soil	freshwater sediment	marine sediment
Predicted Environmental Exposure (PEC)	2.6E-05 mg/L	3.1E-03 mg/L	1.1E-05 mg/L	3.5E-03 mg/kg ww	0.15 mg/kg ww	4.5E-03 mg/kg ww
Risk characterisation ratio (RCR)	1.6E-06	0.011	3.1E-05	2.4E-05	4.3E-03	1.2E-05

Human exposure prediction:

Route of Exposure	Exposure (μg/kg ⁻¹ day ⁻¹)	Risk characterisation ratio (RCR)	
oral	3.8	0.038	
inhalation	0.54	5.8E-04	

4.0 Evaluation guidance to downstream user				
For scaling see	are managed to at least eq Available hazard data do n Further details on scaling a industries-libraries.html). Exposure calculated for be	Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-		
Exposure assessment	Consumer	ECETOC TRA		
instrument/tool/method	Environment	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.		