CHEMICAL SAFETY REPORT Part B

Low Boiling Point Naphthas (Gasolines)

Prepared by: CONCAWE

9. EXPOSURE ASSESSMENT

Table 9.1. Identified Use Description and Exposure Scenario Number Key

Specific Environmental Release Category (SpERC)	ESVOC SPERC 1.1.v1	ESVOC SPERC 1.1.v1	ESVOC SpERC 1.1.v1	ESVOC SPERC 1.1.v1
Environmental Release Category (ERC)	1, 4	4,4	1, 4	1,4
Process Category (PROC)	1, 2, 3, 4, 8a, 8b, 15	1, 2, 3, 8a, 8b, 15	1, 2, 3, 8a, 8b, 15	1, 2, 3, 8a, 8b, 15
Product Category (PC)	ΝΑ	ΝΑ	ΥN	Ą
Sector of Use (SU)	3, 8, 9	3, 8, 9	6 '8 'c	3, 8, 9
ES Number	ES 9.1.1a	ES 9.1.1b	ES 9.1.1c	ES 9.1.1d
Sector	Industrial	Industrial	Industrial	Industrial
Identified use name	01 – Manufacture of Substance (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	01 – Manufacture of Substances (classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene))	01 – Manufacture of Substances (classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 1% to 5% benzene))	01 – Manufacture of Substances (classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 5% to 20% benzene))
Category	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)
2	~	2	ဇ	4

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ESVOC SpERC 6.1a.v1	ESVOC SPERC 6.1a.v1	ESVOC SPERC 6.1a.v1	ESVOC SpERC 6.1a.v1	ESVOC SPERC 1.1b.v1	ESVOC SPERC 1.1b.v1
ба	ба	- Oa	ба	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7
1, 2, 3, 4, 8a, 8b, 15	1, 2, 3, 8a, 8b, 15	1, 2, 3, 8a, 8b, 15	1, 2, 3, 8a, 8b, 15	1, 2, 3, 4, 8a, 8b, 9, 15	1, 2, 3, 8a, 8b, 15
N A	NA N	NA NA	NA	NA	NA
တ ထ ဗ်	တ ဗ် ဗ်	တ ထ ဗ် ဗ်	တ ထ ဗ်	က	м
ES 9.2.1a	ES 9.2.1b	ES 9.2.1c	ES 9.2.1d	ES 9.3.1a	ES 9.3.1b
Industrial	Industrial	Industrial	Industrial	Industrial	Industrial
01b – Use of substance as intermediate (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	01b – Use of substance as intermediate (classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene))	01b – Use of substance as intermediate (classified as R45 and/or R46 and/or R63; (containing equal to or greater than 1% to 5% benzene))	01b – Use of substance as intermediate (classified as R45 and/or R62 and/or R63; (containing equal to or greater than 5% to 20% benzene))	01a – Distribution of substance (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	01a – Distribution of substance (classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene))
Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)
2	9	7	8	o	10

Low boiling point naphtha (Gasoline)	ona – Distribution of substance (classified as R45 and/or R46 and/or R62; (containing equal to or greater than 1% to 5% benzene))	Industrial	ES 9.3.1c	m m	N A AN	1, 2, 3, 8a, 8b, 15 1, 2, 3, 8a, 8b,	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	ESVOC SPERC 1.1b.v1 ESVOC SPERC
point naphtha (Gasoline)	substance (classified as R45 and/or R46 and/or R63; (containing equal to or greater than 5% to 20% benzene))					ن ن	6b, 6c, 6d, 7	1.1b.v .
Low boiling point naphtha (Gasoline)	02 – Formulation & (re)packing of substances and mixtures (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	Industrial	ES 9.4.1a	3, 10	Υ	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	2	ESVOC SPERC 2.2.v1
Low boiling point naphtha (Gasoline)	02 – Formulation & (re)packing of substances and mixtures (classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene))	Industrial	ES 9.4.1b	3, 10	NA	1, 2, 3, 8a, 8b, 15	2	ESVOC SPERC 2.2.v1
Low boiling point naphtha (Gasoline)	02 – Formulation & (re)packing of substances and mixtures (classified as R45 and/or R46 and/or R63; (containing equal to or greater than 1% to 5% benzene))	Industrial	ES 9.4.1c	3, 10	NA	1, 2, 3, 8a, 8b, 15	2	ESVOC SPERC 2.2.v1

ESVOC SPERC 2.2.v1	ESVOC SpERC 4.3a.v1	ESVOC SPERC 4.3a.v1	ESVOC SPERC 8.3b.v1	ESVOC SpERC 4.4a.v1	ESVOC SpERC 4.4a.v1
0	4	4	8a, 8d	4	4
1, 2, 3, 8a, 8b, 15	1, 2, 3, 4, 5, 7, 8a, 8b, 10, 13, 15	1, 2, 3, 8a, 8b, 15	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19	1, 2, 3, 4, 7, 8a, 8b, 10, 13	1, 2, 3, 8a, 8b
Ą	Ϋ́	NA	NA	NA	ΝΑ
3, 10	င	င	22	င	ဇ
ES 9.4.1d	ES 9.5.1a	ES 9.5.1b	ES 9.6.1	ES 9.7.1a	ES 9.7.1b
Industrial	Industrial	Industrial	Professional	Industrial	Industrial
02 – Formulation & (re)packing of substances and mixtures (classified as R45 and/or R46 and/or R63; (containing equal to or greater than 5% to 20% benzene))	03a – Uses in Coatings: Industrial (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	03a – Uses in Coatings: Industrial (classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene))	03b – Uses in Coatings: Professional (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	04a – Use in Cleaning Agents: Industrial (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	04a – Use in Cleaning Agents: Industrial (classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene))
Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)
9	17	18	19	20	21

ESVOC SpERC 8.4b.v1	ESVOC SpERC 8.4c.v1	ESVOC SPERC 7.12a.v1	ESVOC SpERC 7.12a.v1	ESVOC SpERC 9.12b.v1	ESVOC SPERC 9.12b.v1
8a, 8d	8a, 8d	7	7	9a, 9b	9a, 9b
1, 2, 3, 4, 8a, 8b, 10, 11, 13	Υ V	1, 2, 3, 8a, 8b, 16	1, 2, 3, 8a, 8b, 16	1, 2, 3, 8a, 8b, 16	1, 2, 3, 8a, 8b, 16
∀ Z	3, 4, 9a, 24, 35, 38	Ϋ́	Ϋ́	ΝΑ	NA
52	21	ന	က	22	22
ES 9.8.1	ES 9.9.1	ES 9.10.1a	ES 9.10.1b	ES 9.11.1a	ES 9.11.1b
Professional	Consumer	Industrial	Industrial	Professional	Professional
04b – Use in Cleaning Agents: Professional (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	04c – Use in Cleaning Agents: Consumer (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	12a – Use as a fuel: Industrial (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	12a – Use as a fuel: Industrial (classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene))	12b – Use as a fuel: Professional (NOT classified as R45, R46, R62 or R63; (containing less than 0.1% benzene))	12b – Use as a fuel: Professional (classified as R45 and/or R46 and/or R63; (containing 0% to 1% benzene))
Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)	Low boiling point naphtha (Gasoline)
22	23	24	25	26	27

ESVOC SpERC 9.12c.v1			ESVOC SpERC	9.12c.v1					ESVOC SpERC	4.19.v1					ESVOC SpERC	4.19.v1					
9a, 9b			9a, 9b						1, 4, 6d						1, 4, 6d						
Ϋ́			VΑ						1, 2, 3, 4, 5, 6,	7, 8a, 8b, 9,	13, 14, 15, 21				1, 2, 3, 8a, 8b,	9, 15					
13			13						۷N						۷N						
21			21						3, 10, 11						3, 10, 11						
ES 9.12.1a			ES	9.12.1b					ES	9.13.1a					ES	9.13.1b					
Consumer			Consumer						Industrial						Industrial						
12c – Use as a fuel: Consumer (NOT	classified as R45, R46,	Roz or Ros; (containing less than 0.1% benzene))	12c – Use as a fuel:	Consumer (classified as	R45 and/or R46 and/or	R62 and/or R63;	(containing 0% to 1%	benzene))	19 – Rubber production	and processing:	Industrial (NOT classified	as R45, R46, R62 or	R63; (containing less	than 0.1% benzene))	19 – Rubber production	and processing:	Industrial (classified as	R45 and/or R46 and/or	R62 and/or R63;	(containing 0% to 1%	benzene))
Low boiling point naphtha	(Gasoline)		Low boiling	point naphtha	(Gasoline)				Low boiling	point naphtha	(Gasoline)				Low boiling	point naphtha	(Gasoline)				
28			29						30						31						

The process of mapping uses and characterising risks has often identified a series of supporting measures that may further contribute to the management of exposure. The measures are identified in *blue* text in the Appendices contained in section 10. These measures are not contained within the Exposure Scenarios (ES) as they do not need to be implemented in order to achieve satisfactory exposure control. However, they are identified within the CSA in order that stakeholders are able to benefit from access to other exposure control information that has been obtained during the process of CSA/ES development.

9.1. Manufacture of Low Boiling Point Naphthas (Gasoline) – Industrial

9.1.1a. Exposure Scenario

as R45, R46, R62 or R63; (Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is <u>NOT</u> classified as R45, R46, R62 or R63; (containing less than 0.1% benzene)							
Title								
Manufacture of substances								
Use Descriptor								
Sector(s) of Use		3, 8, 9						
Process Categories		1, 2, 3, 4, 8a, 8b, 15						
		Further information on the mapping and allocation of						
		PROC codes is contained in Table 9.1						
Environmental Release Cate	egories	1, 4						
Specific Environmental Rele	<u> </u>	ESVOC SpERC 1.1.v1						
		LOVOO OPERO 1.1.V1						
Processes, tasks, activitie		and the selection of the effect of the selection						
contained systems. Includes	incidental exposured laboratory activities	ess chemical or extraction agent within closed or es during recycling/ recovery, material transfers, ies, maintenance and loading (including marine						
Assessment Method								
See Section 3.								
Section 2 Operational con	ditions and risk m	nanagement measures						
Section 2.1 Control of wo	rker exposure							
Product characteristics	<u> </u>							
Physical form of product	Liquid, vapour pres	ssure > 10 kPa at STP OC5.						
Concentration of substance		e substance in the product up to 100 % (unless stated						
in product	differently) G13.							
Amount used	Not applicable							
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2.							
use/exposure	Covere daily expec	sured up to a ricura (urnosa stated unforthly) 62.						
Human factors not	Not applicable							
influenced by risk	Trot applicable							
management								
Other Operational	Operation is carrie	d out at elevated temperature (> 20°C above ambient						
Conditions affecting		7. Assumes a good basic standard of occupational						
exposure	hygiene is impleme							
Contributing Scenarios		nagement Measures and Operating Conditions						
General Measures (skin	Avoid direct skin c	ontact with product. Identify potential areas for indirect						
irritants). G19.		gloves (tested to EN374) if hand contact with						
111tants). 615.		Clean up contamination/spills as soon as they occur.						
		amination immediately. Provide basic employee						
		/ minimise exposures and to report any skin effects						
	that may develop.							
CS15 General exposures	·	neasures identified. El20.						
(closed systems).	LAO OTHEL SPECIIIC II	noasares lacritilica. LIZV.						
CS15 General exposures	No other specific n	neasures identified. El20.						
(closed systems) + CS56	LAO OTHEL SPECIILO II	noasares lacitulica. LIZV.						
With sample collection.								
CS16 General exposures	Drovido ovtroot vo	ntilation to points where emissions occur. E54.						
(open systems).	I TOVIGE EXITAGE VE	miliation to points where emissions occur. E34.						
	No other enecific n	neasures identified. El20.						
CS29 Mixing operations	INO Other Specific II	nicasures iucitinicu. EIZU.						

(closed systems).
CS2 Process sampling

No other specific measures identified. El20.

0000111 1 11111	Ti							
CS36 Laboratory activities	Handle in a fume cupboard or under extract	ventilation. E83.						
CS14 Bulk transfers	No other specific measures identified. El20.							
CS8 Drum/batch transfers	No other specific measures identified. El20.							
CS5 Equipment	No other specific measures identified. El20.							
maintenance								
CS67 Storage.	No other specific measures identified. El20.							
	the basis for the allocation of the identifie	ed OCs and RMMs is						
contained in Appendices 1	to 3							
Section 2.2 Control of env	rironmentai exposure							
Product characteristics								
-	3 [PrC3]. Predominantly hydrophobic [PrC4a	IJ.						
Amounts used								
Fraction of EU tonnage used	_	0.1						
Regional use tonnage (tonne	• ,	1.87E7						
Fraction of Regional tonnage	e used locally	0.032						
Annual site tonnage (tonnes	/year)	6.0e5						
Maximum daily site tonnage	(kg/day)	2.0e6						
Frequency and duration of	f use							
Continuous release [FD2].								
Emission days (days/year)		300						
Environmental factors not influenced by risk management								
Local freshwater dilution factor 10								
Local marine water dilution factor 100								
Other given operational conditions affecting environmental exposure								
Release fraction to air from process (initial release prior to RMM) 0.05								
Release fraction to wastewater from process (initial release prior to RMM) 0.003								
Release fraction to soil from process (initial release prior to RMM) 0.0001								
Technical conditions and	measures at process level (source) to pre	vent release						
	oss sites thus conservative process release e							
Technical onsite condition	ns and measures to reduce or limit discha							
releases to soil	-l d lt t	an ITODA Al. Diala france						
	olved substance to or recover from wastewat Iriven by humans via indirect exposure (prima							
Onsite wastewater treatmen								
	e a typical removal efficiency of (%)	99.0						
	or to receiving water discharge) to provide	95.2						
the required removal efficien	• • • • • • • • • • • • • • • • • • • •							
	ewage treatment plant, provide the required	80.4						
onsite wastewater removal e								
Organisation measures to	prevent/limit release from site							
Do not apply industrial sludg reclaimed [OMS3].	e to natural soils [OMS2]. Sludge should be	incinerated, contained or						
	related to municipal sewage treatment pla	ant						
Estimated substance remove	al from wastewater via domestic sewage	95.5						
treatment (%)	ai iroini wasiewater via domestic sewage	33.3						
	om wastewater after onsite and offsite	99.1						
(domestic treatment plant) R								
Maximum allowable site toni		2.0e6						
Assumed domestic sewage	· · · · · ·	10000						
	related to external treatment of waste for	disposal						
	ste of the substance is generated [ETW4].							

Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated [ERW2].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4]. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file in IUCLID section 13 – "Site-Specific Production" worksheet [DSU6]. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific safety assessment is required [DSU8]. Measured data have been used to demonstrate that the PETRORISK predicted fence-line concentrations in air are overestimated. These data support the conclusion that no refineries have RCRs>1 (Appendix 4 and PETRORISK file in IUCLID section 13 – "Site-Specific Production & Tier II worksheets")

9.1.1b. Exposure Scenario

3.1.1b. Exposure oceriano	
Section 1 Exposure Scenario Title Low b	oiling point naphthas (Gasoline) that is classified as
R45 and/or R46 and/or R62 and/or R63; (co	ontaining 0% to 1% benzene)
Title	
Manufacture of substances	
Use Descriptor	
Sector(s) of Use	3, 8, 9
Process Categories	1, 2, 3, 8a, 8b, 15
	Further information on the mapping and allocation of
	PROC codes is contained in Table 9.1
Environmental Release Categories	1, 4
Specific Environmental Release Category	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	•
Manufacture of the culture of the cu	and a housing or authorities are structured in alcoad or

Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

Assessment Method

See Section 3.

Product characteristics Physical form of product Li	
	iguid von our procours > 10 kDo et CTD OCE
On a name of the state of the s	iquid, vapour pressure > 10 kPa at STP OC5
	Covers percentage substance in the product up to 100 % (unless stated
	lifferently) G13
	Not applicable
	Covers daily exposures up to 8 hours (unless stated differently) G2
use/exposure	
	Not applicable
influenced by risk	
management Other Operational O	Operation is carried out at elevated temperature (> 20°C above ambient
	emperature). OC7. Assumes a good basic standard of occupational
	hygiene is implemented G1.
Contributing Scenarios S	Specific Risk Management Measures and Operating Conditions
Community Community	promo men managomon monomo ana opoming comment
irritants). G19.	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with
l W	Substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee raining to prevent / minimise exposures and to report any skin effects
	hat may develop. E3
	Consider technical advances and process upgrades (including
	automation) for the elimination of releases. Minimise exposure using
	neasures such as closed systems, dedicated facilities and suitable
	general / local exhaust ventilation. Drain down systems and clear transfer
	ines prior to breaking containment. Clean / flush equipment, where
po	possible, prior to maintenance.
l w	Where there is potential for exposure: Restrict access to authorised staff;
pı	provide specific activity training to operators to minimise exposures; wear
	suitable gloves (tested to EN374) and coveralls to prevent skin
	contamination; wear respiratory protection when its use is identified for
	certain contributing scenarios; clear up spills immediately and dispose of
w	vastes safely.
	Degularly inspect test and maintain all central massures
	Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
	Handle substance within closed systems. E47.
	Sample via a closed loop or other system intended to avoid exposure. E8.
` ,	Wear suitable gloves tested to EN374. PPE15.
	Handle substance within a closed system. E47.
(closed systems). + CS54	• • • • • • • • • • • • • • • • • • •
Continuous process.	
CS15 General exposures H	Handle substance within a closed system. E47.
	Ensure operation is undertaken outdoors. E69.
Batch process.	
	Handle within a fume cupboard or implement suitable equivalent methods o minimise exposure. E12.
CS14 Bulk transfers E	Ensure material transfers are under containment or extract ventilation.
	E66. Drain down and flush system prior to equipment break-in or maintenance.
	E55.
R	Retain drain downs in sealed storage pending disposal or for subsequent ecycle. ENVT4.
	Clear spills immediately. C&H13.
l W	Vear chemically resistant gloves (tested to EN374) in combination with
'b	basic' employee training. PPE16.

	Ensure operation is undertaken outdoors. E						
Store substance within a closed system. E84. Additional information on the basis for the allocation of the identified OCs and RMMs is contained in Appendices 1 to 3							
Section 2.2 Control of envi							
Product characteristics	Tommental exposure						
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].							
Amounts used							
Fraction of EU tonnage used		0.1					
Regional use tonnage (tonne	s/year)	1.87E7					
Fraction of Regional tonnage	used locally	0.03					
Annual site tonnage (tonnes/	year)	6.0e5					
Maximum daily site tonnage	(kg/day)	2.0e6					
Frequency and duration of							
Continuous release [FD2].							
Emission days (days/year)		300					
	influenced by risk management						
Local freshwater dilution fact		10					
Local marine water dilution fact		100					
Other given operational conditions affecting environmental exposure							
Release fraction to air from r	process (initial release prior to RMM)	0.05					
	. ,	0.003					
RMM)							
Release fraction to soil from process (initial release prior to RMM) 0.0001							
Technical conditions and measures at process level (source) to prevent release							
	ss sites thus conservative process release e						
	s and measures to reduce or limit discha	rges, air emissions and					
releases to soil							
environmental exposure is dr	olved substance to or recover from wastewariven by humans via indirect exposure (prima						
Onsite wastewater treatment		Too 0					
	a typical removal efficiency of (%)	99.0					
**	or to receiving water discharge) to provide	95.2					
the required removal efficient		00.4					
onsite wastewater removal e		80.4					
	prevent/limit release from site						
Do not apply industrial sludge reclaimed [OMS3].	e to natural soils [OMS2]. Sludge should be	incinerated, contained or					
Conditions and measures i	related to municipal sewage treatment pla	ant					
Estimated substance remova treatment (%)	al from wastewater via domestic sewage	95.5					
	om wastewater after onsite and offsite	99.1					
Maximum allowable site tonn		2.0e6					
Assumed domestic sewage t		10000					
	related to external treatment of waste for	disposal					
During manufacturing no was	ste of the substance is generated [ETW4].						
Conditions and measures	related to external recovery of waste						
	ste of the substance is generated [ERW2].						
	the basis for the allocation of the indentif	ied OCs and RMMs is					

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

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Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4]. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file in IUCLID section 13 – "Site-Specific Production" worksheet [DSU6]. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required [DSU8]. Measured data have been used to demonstrate that the PETRORISK predicted fence-line concentrations in air are overestimated. These data support the conclusion that no refineries have RCRs>1 (Appendix 4 and PETRORISK file in IUCLID section 13 – "Tier II worksheet").

9.1.1c. Exposure Scenario

5.1.1c. Exposure Scenario					
		ling point naphthas (Gasoline) that is classified as taining equal to or greater than 1% to 5% benzene)			
Title					
Manufacture of substances					
Use Descriptor					
Sector(s) of Use		3, 8, 9			
Process Categories		1, 2, 3, 8a, 8b, 15			
		Further information on the mapping and allocation of			
		PROC codes is contained in Table 9.1			
Environmental Release Cate	egories	1, 4			
Specific Environmental Rele	Specific Environmental Release Category ESVOC SpERC 1.1.v1				
Processes, tasks, activitie	s covered				
Manufacture of the substance	ce within closed or	contained systems. Includes incidental exposures			
during recycling / recovery, r	material transfers, s	storage, sampling, associated laboratory activities,			
maintenance and loading (in	cluding marine ves	ssel/barge, road/rail car and bulk container).			
Assessment Method					
See Section 3.					
Section 2 Operational con	ditions and risk n	nanagement measures			
Section 2.1 Control of wor	rker exposure				
Product characteristics					
Physical form of product		ssure > 10 kPa at STP OC5			
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated			

in product	differently) G13
Amount used	Not applicable
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2
use/exposure	
Human factors not	Not applicable
influenced by risk	
management	
Other Operational	Operation is carried out at elevated temperature (> 20°C above ambient
Conditions affecting	temperature). OC7. Assumes a good basic standard of occupational
exposure	hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General Measures (skin	Avoid direct skin contact with product. Identify potential areas for indirect
irritants). G19.	skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General Measures (carcinogens). G18.	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 staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.
	Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
CS15 General exposures	Handle substance within closed systems. E47.
(closed systems). + CS56	Sample via a closed loop or other system intended to avoid exposure. E8.
With sample collection.	Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures	Provide extract ventilation to points where emissions occur. E54.
(closed systems).	Handle substance within closed systems. E47.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods
CS14 Bulk transfers	to minimise exposure. E12. Ensure material transfers are under containment or extract ventilation.
OS 14 DUIK (Idf1SIEIS	Easure material transfers are under containment or extract ventilation.
CS39 Equipment cleaning	Drain down and flush system prior to equipment break-in or maintenance.
and maintenance	E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18.
CS67 Storage.	Store substance within a closed system. E84. Wear suitable gloves tested to EN374. PPE15.
	the basis for the allocation of the identified OCs and RMMs is
contained in Appendices	
Section 2.2 Control of env	vironmental exposure
Product characteristics	
Substance is complex UVCI	B [PrC3]. Predominantly hydrophobic [PrC4a].
Amounts used	

Fraction of EU tonnage used in region	0.1		
Regional use tonnage (tonnes/year)	1.87E7		
Fraction of Regional tonnage used locally	0.03		
Annual site tonnage (tonnes/year) 6.0e5			
Maximum daily site tonnage (kg/day) 2.0e6			
Frequency and duration of use			
Continuous release [FD2].			
Emission days (days/year)	300		
Environmental factors not influenced by risk management			
Local freshwater dilution factor	10		
Local marine water dilution factor	100		
Other given operational conditions affecting environmental exposu			
outer given operational containions unlocking environmental exposu			
Release fraction to air from process (initial release prior to RMM)	0.05		
Release fraction to wastewater from process (initial release prior to	0.003		
RMM)			
Release fraction to soil from process (initial release prior to RMM)	0.0001		
Technical conditions and measures at process level (source) to pre			
Common practices vary across sites thus conservative process release			
Technical onsite conditions and measures to reduce or limit discha	rges, air emissions and		
releases to soil			
Prevent discharge of undissolved substance to or recover from wastewa			
environmental exposure is driven by humans via indirect exposure (primal Onsite wastewater treatment required [TCR13].			
Treat air emission to provide a typical removal efficiency of (%)	99.0		
Treat onsite wastewater (prior to receiving water discharge) to provide	95.2		
the required removal efficiency ≥ (%)	30.2		
If discharging to domestic sewage treatment plant, provide the required	80.4		
onsite wastewater removal efficiency of ≥ (%)			
Organisation measures to prevent/limit release from site			
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be reclaimed [OMS3].	e incinerated, contained or		
Conditions and measures related to municipal sewage treatment plants	ant		
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5		
Total efficiency of removal from wastewater after onsite and offsite	99.1		
(domestic treatment plant) RMMs (%)			
Maximum allowable site tonnage (M _{Safe}) (kg/d)	2.0e6		
Assumed domestic sewage treatment plant flow (m³/d)	10000		
Conditions and measures related to external treatment of waste for	disposal		
During manufacturing no waste of the substance is generated [ETW4].			
Conditions and measures related to external recovery of waste			
During manufacturing no waste of the substance is generated [ERW2].			
Additional information on the basis for the allocation of the indentified OCs and RMMs is			
contained in Petrorisk file			
Section 3 Exposure Estimation			
3.1. Health			
The ECETOC TRA tool has been used to estimate workplace exposures G21.	unless otherwise indicated.		
3.2. Environment			
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].			
Section 4 Guidance to check compliance with the Exposure Scenar			
4.1. Health			
	-		

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4]. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file in IUCLID section 13 – "Site-Specific Production" worksheet [DSU6]. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required IDSU81. Measured data have been used to demonstrate that the PETRORISK predicted fence-line concentrations in air are overestimated. These data support the conclusion that no refineries have RCRs>1 (Appendix 4 and PETRORISK file in IUCLID section 13 -"Tier II worksheet").

9.1.1d. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 5% to 20%		
Title		
Manufacture of substances		
Use Descriptor		
Sector(s) of Use	3, 8, 9	
Process Categories	1, 2, 3, 8a, 8b, 15	
	Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Categories	1, 4	
Specific Environmental Release Category	ESVOC SpERC 1.1.v1	
Processes, tasks, activities covered		

Manufacture of the substance within closed or contained systems. Includes incidental exposures during recycling / recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

Assessment Method

See Section 3.

Section 2.1 Control of worker exposure		
Product characteristics		
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	
in product	differently) G13	
Amount used	Not applicable	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2	
use/exposure		
Human factors not	Not applicable	
influenced by risk		
management		

Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General Measures (skin irritants). G19.	Avoid all skin contact with product. Clean up contamination / spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. E3.
General Measures (carcinogens). G18.	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 staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.
	Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
CS15 General exposures (closed systems). + CS56 With sample collection.	Handle substance within closed systems. E47. Sample via a closed loop or other system to avoid exposure. E8. Ensure operation is undertaken outdoors. E69. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures (closed systems).	Provide extract ventilation to points where emissions occur. E54. Handle substance within closed systems. E47. Wear suitable gloves tested to EN374. PPE15. Ensure operation is undertaken outdoors. E69. Avoid carrying out activities involving exposure for more than 4 hours. OC26.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17. Avoid carrying out activities involving exposure for more than 1 hour. OC27.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18. Avoid carrying out activities involving exposure for more than 1 hour. OC27. or, Wear a respirator conforming to EN140 with Type A filter or better. PPE22. Ensure operation is undertaken outdoors. E69.
CS67 Storage.	Wear suitable gloves tested to EN374. PPE15. Store substance within a closed system. E84.
Additional information on	the basis for the allocation of the identified OCs and RMMs is

contained in Appendices 1 to 3		
Section 2.2 Control of environmental exposure		
Product characteristics		
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].		
Amounts used	·-1-	
Fraction of EU tonnage used in region	0.1	
Regional use tonnage (tonnes/year)	1.87E7	
Fraction of Regional tonnage used locally	0.03	
Annual site tonnage (tonnes/year)	6.0e5	
Maximum daily site tonnage (kg/day)	2.0e6	
Frequency and duration of use	2.060	
Continuous release [FD2].		
Emission days (days/year)	300	
Environmental factors not influenced by risk management	1000	
Local freshwater dilution factor	10	
Local marine water dilution factor	100	
Other given operational conditions affecting environmental exposu		
onto given operational containions anothing crivinonimental exposu		
Release fraction to air from process (initial release prior to RMM)	0.05	
Release fraction to wastewater from process (initial release prior to	0.003	
RMM)	0.000	
Release fraction to soil from process (initial release prior to RMM)	0.0001	
Technical conditions and measures at process level (source) to pre	vent release	
Common practices vary across sites thus conservative process release	estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discha	rges, air emissions and	
releases to soil		
Prevent discharge of undissolved substance to or recover from wastewa		
environmental exposure is driven by humans via indirect exposure (primal Onsite wastewater treatment required [TCR13].	arily inhalation) [TCR1k].	
Treat air emission to provide a required efficiency of (%)	99.0	
Treat onsite wastewater (prior to receiving water discharge) to provide	95.2	
the required removal efficiency \geq (%)	00.2	
If discharging to domestic sewage treatment plant, provide the required	80.4	
onsite wastewater removal efficiency of ≥ (%)		
Organisation measures to prevent/limit release from site		
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be	incinerated, contained or	
reclaimed [OMS3].		
Conditions and measures related to municipal sewage treatment plants	ant	
Estimated substance removal from westewater via demostic sewage	95.5	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5	
Total efficiency of removal from wastewater after onsite and offsite	99.1	
(domestic treatment plant) RMMs (%)		
Maximum allowable site tonnage (M _{Safe}) (kg/d)	2.0e6	
A	40000	
Assumed domestic sewage treatment plant flow (m³/d)	10000	
Conditions and measures related to external treatment of waste for	disposal	
During manufacturing no waste of the substance is generated [ETW4].		
Conditions and measures related to external recovery of waste		
During manufacturing no waste of the substance is generated [ERW2].		
Additional information on the basis for the allocation of the indentified OCs and RMMs is		
contained in Petrorisk file		
Section 3 Exposure Estimation 3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures	unless otherwise indicated	
= 52.00 to	marca carrier marcarda	

G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4]. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file in IUCLID section 13 – "Site-Specific Production" worksheet [DSU6]. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required [DSU8]. Measured data have been used to demonstrate that the PETRORISK predicted fence-line concentrations in air are overestimated. These data support the conclusion that no refineries have RCRs>1 (Appendix 4 and PETRORISK file in IUCLID section 13 – "Tier II worksheets").

9.1.2. Exposure Estimation

9.1.2.1a. Human Health

See Appendix 2.a. & 2.g.

9.1.2.1b. Human Health

See Appendix 2.b. & 2.g.

9.1.2.1c. Human Health

See Appendix 2.c. & 2.g.

9.1.2.1d. Human Health

See Appendix 2.d. & 2.g.

9.1.2.2. Environment

See PETRORISK file in IUCLID Section 13 - "LocalCSR" worksheet

9.2. Use of Low Boiling Point Naphthas (Gasoline) as Intermediate – Industrial

9.2.1a. Exposure Scenario

9.2.1a. Exposure Scenario			
Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is <u>NOT</u> classified as R45, R46, R62 or R63; (containing less than 0.1% benzene)			
Title	containing less th	an 0.1% benzene)	
Use of substance as interme	odiato		
	-culate		
Use Descriptor			
Sector(s) of Use		3, 8, 9	
Process Categories		1, 2, 3, 4, 8a, 8b, 15	
		Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Pologo Cate	ngorios	6a	
Environmental Release Categories		ESVOC SpERC 6.1a.v1	
Specific Environmental Release Category		ESVOC SPERC 6. 18.V1	
Processes, tasks, activitie		and an anatolic adaptive for the late 14. Object	
		sed or contained systems (not related to Strictly	
		osures during recycling/ recovery, material transfers,	
vessel/barge, road/rail car a		ies, maintenance and loading (including marine	
Assessment Method	ilu buik collialitel).		
See Section 3.	alitiana and rials w		
Section 2 Operational con	iditions and risk m	ianagement measures	
Section 2.1 Central of way	rkor ovnosuro		
Section 2.1 Control of wor Product characteristics	rker exposure		
	Lianial Manager area	acura : 40 kDa at CTD OOF	
Physical form of product Concentration of substance	Liquid, vapour pressure > 10 kPa at STP OC5		
in product	Covers percentage substance in the product up to 100 % (unless stated		
Amount used	differently) G13		
Frequency and duration of	Not applicable Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure	Covers daily exposures up to o riburs (unless stated differently) 62		
Human factors not	Not applicable		
influenced by risk			
management			
Other Operational	Operation is carried out at elevated temperature (> 20°C above ambient		
Conditions affecting		7. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		
· ·			
0	A sideline of alice	and a to the second and a blanch to a to a Call and a C	
General Measures (skin		ontact with product. Identify potential areas for indirect gloves (tested to EN374) if hand contact with	
irritants). G19.		0	
	substance likely. Clean up contamination/spills as soon as they occur.		
	Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects		
	that may develop. E3		
CS15 General exposures	No other specific measures identified. El20.		
(closed systems).	The other specific measures identified. Lize.		
CS15 General exposures	No other specific measures identified. El20.		
(closed systems) + CS56	The same of the sa		
With sample collection.			
CS16 General exposures	Provide extract ver	ntilation to points where emissions occur. E54.	
(open systems).			
CS29 Mixing operations	No other specific measures identified. El20.		
(closed systems).			
CS2 Process sampling	No other specific measures identified. El20.		
<u></u>	1		

CS36 Laboratory activities	Handle in a fume cupboard or under extract	ventilation. E83.
CS14 Bulk transfers	No other specific measures identified. El20.	
CS8 Drum/batch transfers	No other specific measures identified. El20.	
	·	
CS5 Equipment maintenance	No other specific measures identified. El20.	
CS67 Storage.	No other specific measures identified. El20.	
· ·	•	
contained in Appendices 1	the basis for the allocation of the identific	ed OCs and RMMs is
Section 2.2 Control of env		
Product characteristics		
	B [PrC3]. Predominantly hydrophobic [PrC4a	al.
Amounts used		.1.
Fraction of EU tonnage used	d in region	0.1
Regional use tonnage (tonne	<u> </u>	2.21E6
Fraction of Regional tonnage	,	0.0068
Annual site tonnage (tonnes		1.5e4
Maximum daily site tonnage		5.0e4
	· · · · · · · · · · · · · · · · · · ·	5.064
Frequency and duration of Continuous release [FD2].	use	
Emission days (days/year)		300
	influenced by risk management	300
		10
Local freshwater dilution fac Local marine water dilution f		10
Other given operational co	onditions affecting environmental exposu	re
Release fraction to air from	process (initial release prior to RMM)	0.025
	ter from process (initial release prior to	0.003
RMM)		
Release fraction to soil from process (initial release prior to RMM) 0.001		
Technical conditions and	measures at process level (source) to pre	vent release
	oss sites thus conservative process release e	
	ns and measures to reduce or limit discha	rges, air emissions and
releases to soil		
	olved substance to or recover from wastewa	
	posure is driven by freshwater sediment [TCF ewage treatment plant, no onsite wastewater	
	e a typical removal efficiency of (%)	80
	or to receiving water discharge) to provide	92.9
the required removal efficier	3 , .	
	ewage treatment plant, provide the required	0
onsite wastewater removal e		
Organisation measures to prevent/limit release from site		
Do not apply industrial sludg	e to natural soils [OMS2]. Sludge should be	incinerated, contained or
reclaimed [OMS3].		
Conditions and measures	related to municipal sewage treatment pla	ant
Catimated autotains a remain	ol from wootowotor via domastis severe	05.5
treatment (%)	al from wastewater via domestic sewage	95.5
	om wastewater after onsite and offsite	95.5
(domestic treatment plant) RMMs (%)		
Maximum allowable site toni		7.8e4
Assumed domestic sewage	treatment plant flow (m ³ /d)	2000
	related to external treatment of waste for	
<u> </u>		•

This substance is consumed during use and no waste of the substance is generated [ETW5].

Conditions and measures related to external recovery of waste

This substance is consumed during use and no waste of the substance is generated [ERW3].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.2.1b. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as			
R45 and/or R46 and/or R62 and/or R63; (co	R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene)		
Title			
Use of substance as intermediate			
Use Descriptor			
Sector(s) of Use	3, 8, 9		
Process Categories	1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1		
Environmental Release Categories	6a		
Specific Environmental Release Category	ESVOC SpERC 6.1a.v1		
Processes, tasks, activities covered	·		

Use of substance as an intermediate (not related to strictly controlled conditions) within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

Assessment Method

See Section 3.

Section 2.1 Control of worker exposure		
Product characteristics		
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	

in product	differently) G13	
Amount used	Not applicable	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2	
use/exposure	Correct daily expectation up to a mount (amount attended amount attended to the correct attended atten	
Human factors not	Not applicable	
influenced by risk		
management		
Other Operational	Operation is carried out at elevated temperature (> 20°C above ambient	
Conditions affecting	temperature). OC7. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions	
Gonoral Moasuros (skin	Avoid direct ckin contact with product Identify notantial areas for indirect	
General Measures (skin irritants). G19.	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3	
General Measures (carcinogens). G18.	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 staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.	
	Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.	
CS15 General exposures	Handle substance within closed systems. E47.	
(closed systems). + CS56	Sample via a closed loop or other system intended to avoid exposure. E8.	
With sample collection.	Wear suitable gloves tested to EN374. PPE15.	
CS15 General exposures	Handle substance within a closed system. E47.	
(closed systems).	Ensure operation is undertaken outdoors. E69.	
CS67 Storage.	Ensure operation is undertaken outdoors. E69.	
_	Store substance within a closed system. E84.	
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.	
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66.	
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55.	
and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent	
	recycle. ENVT4.	
	Clear spills immediately. C&H13.	
	Wear chemically resistant gloves (tested to EN374) in combination with	
	basic employee training. PPE16.	
Additional information on the basis for the allocation of the identified OCs and RMMs is		
contained in Appendices 1 to 3		
Section 2.2 Control of environmental exposure		
Product characteristics		
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].		
Amounts used		

Section 4 Guidance to check compliance with the Exposure Scenar 4.1. Health	rio	
0 - 1 - 4 0 - 1 - 1 - 1 - 1		
model [EE2].		
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk		
3.2. Environment		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.		
3.1. Health		
Section 3 Exposure Estimation		
contained in Petrorisk file		
Additional information on the basis for the allocation of the indentified OCs and RMMs is		
This substance is consumed during use and no waste of the substance is	s generated [FRW3]	
Conditions and measures related to external recovery of waste	- 3	
This substance is consumed during use and no waste of the substance is	-	
Conditions and measures related to external treatment of waste for		
Assumed domestic sewage treatment plant flow (m ³ /d)	2000	
Maximum allowable site tonnage (M _{Safe}) (kg/d)	7.8e4	
(domestic treatment plant) RMMs (%)	-	
Total efficiency of removal from wastewater after onsite and offsite	95.5	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5	
	los s	
Conditions and measures related to municipal sewage treatment plants	ant	
reclaimed [OMS3].		
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be	incinerated, contained or	
Organisation measures to prevent/limit release from site		
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	U	
the required removal efficiency ≥ (%) If discharging to demostic sowage treatment plant, provide the required.	0	
Treat onsite wastewater (prior to receiving water discharge) to provide	92.9	
Treat air emission to provide a typical removal efficiency of (%)	80	
treatment plant, no onsite wastewater treatment required [TCR9].		
environmental exposure is driven by freshwater sediment [TCR1b]. If dis		
Prevent discharge of undissolved substance to or recover from wastewar	ter [TCR14] Risk from	
Technical onsite conditions and measures to reduce or limit discha releases to soil	rges, air emissions and	
Common practices vary across sites thus conservative process release of		
Release fraction to soil from process (initial release prior to RMM) Technical conditions and measures at process level (source) to pre		
RMM) Release fraction to sail from process (initial release prior to PMM)	0.001	
Release fraction to wastewater from process (initial release prior to	0.003	
Release fraction to air from process (initial release prior to RMM)	0.025	
Other given operational conditions affecting environmental exposu	re	
Local marine water dilution factor	100	
Local freshwater dilution factor	10	
Environmental factors not influenced by risk management	<u> </u>	
Emission days (days/year)	300	
Continuous release [FD2].		
Frequency and duration of use	0.001	
Maximum daily site tonnage (kg/day)	5.0e4	
Annual site tonnage (tonnes/year)	1.5e4	
Fraction of Regional tonnage used locally	0.0068	
Regional use tonnage (tonnes/year)	2.21E6	
Fraction of EU tonnage used in region	0.1	

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.2.1c. Exposure Scenario

Section 1 Exposure Scenario Title Low b	oiling point naphthas (Gasoline) that is classified as
R45 and/or R46 and/or R62 and/or R63; (ce	ontaining equal to or greater than 1% to 5% benzene)
Title	
Use of substance as intermediate	
Use Descriptor	
Sector(s) of Use	3, 8, 9
Process Categories	1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1
Environmental Release Categories	6a
Specific Environmental Release Category	ESVOC SpERC 6.1a.v1
Droppess tooks activities severed	

Processes, tasks, activities covered

Use of substance as an intermediate (not related to strictly controlled conditions) within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

Assessment Method

See Section 3.

Section 2.1 Control of worker exposure		
Product characteristics		
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	
in product	differently) G13	
Amount used	Not applicable	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2	
use/exposure		
Human factors not	Not applicable	
influenced by risk		
management		
Other Operational	Operation is carried out at elevated temperature (> 20°C above ambient	
Conditions affecting	temperature). OC7. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions	

General Measures (skin irritants). G19.	Avoid direct skin contact with product. Ident skin contact. Wear gloves (tested to EN374 substance likely. Clean up contamination/sp Wash off skin contamination immediately. F training to prevent / minimise exposures and that may develop. E3) if hand contact with oills as soon as they occur. Provide basic employee
General Measures (carcinogens). G18.	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: Rest provide specific activity training to operators suitable gloves (tested to EN374) and cove contamination; wear respiratory protection of certain contributing scenarios; clear up spill wastes safely.	s to minimise exposures; wear ralls to prevent skin when its use is identified for
	Regularly inspect, test and maintain all conformal consider the need for risk based health sur	
CS15 General exposures	Handle substance within closed systems. E	
(closed systems). + CS56	Sample via a closed loop or other system in	
With sample collection.	Wear suitable gloves tested to EN374. PPE	
CS15 General exposures	Provide extract ventilation to points where	
(closed systems).	Handle substance within closed systems. E	
CS67 Storage.	Wear suitable gloves tested to EN374. PPE	
Ĭ	Store substance within a closed system. E8	
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.	
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66.	
CS39 Equipment cleaning	Drain down and flush system prior to equipment break-in or maintenance.	
and maintenance	E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4.	
	Clear spills immediately. C&H13.	
	Wear chemically resistant gloves (tested to	
	intensive management supervision controls	
Additional information on contained in Appendices	the basis for the allocation of the identification is the identification of the identifi	ed OCs and RMMs is
Section 2.2 Control of env		
Product characteristics		
Substance is complex UVCI	3 [PrC3]. Predominantly hydrophobic [PrC4a	a].
Amounts used		-
Fraction of EU tonnage use	d in region	0.1
Regional use tonnage (tonnes/year)		2.21E6
Fraction of Regional tonnage used locally		0.0068
Annual site tonnage (tonnes/year)		1.5e4
Maximum daily site tonnage (kg/day) 5.0e4		J.U64
Frequency and duration o	ı use	
Continuous release [FD2].		
Emission days (days/year)	influenced by viely management	300
	influenced by risk management	T. a
Local freshwater dilution fac	tor	10

Local marine water dilution factor	100
Other given operational conditions affecting environmental exposu	re
Release fraction to air from process (initial release prior to RMM)	0.025
Release fraction to wastewater from process (initial release prior to RMM)	0.003
Release fraction to soil from process (initial release prior to RMM)	0.001
Technical conditions and measures at process level (source) to pre	vent release
Common practices vary across sites thus conservative process release e	estimates used [TCS1].
Technical onsite conditions and measures to reduce or limit dischareleases to soil	rges, air emissions and
Prevent discharge of undissolved substance to or recover from wastewarenvironmental exposure is driven by freshwater sediment [TCR1b]. If distreatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	80
Treat onsite wastewater (prior to receiving water discharge) to provide	92.9
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of \geq (%)	
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be reclaimed [OMS3].	incinerated, contained or
Conditions and measures related to municipal sewage treatment pla	ant
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M _{Safe}) (kg/d)	7.8e4
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for	disposal
This substance is consumed during use and no waste of the substance is	s generated [ETW5].
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is	s generated [ERW3].
Additional information on the basis for the allocation of the indentif	ied OCs and RMMs is

contained in Petrorisk file Section 3 Exposure Estimation

3.1 Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus,

scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.2.1d. Exposure Scenario Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as

		ntaining equal to or greater than 5% to 20%
benzene)	, (
Title		
Use of substance as interme	ediate	
Use Descriptor		
Sector(s) of Use		3, 8, 9
Process Categories		1, 2, 3, 8a, 8b, 15
Ğ		Further information on the mapping and allocation of PROC codes is contained in Table 9.1
Environmental Release Cate	egories	6a
Specific Environmental Rele	ase Category	ESVOC SpERC 6.1a.v1
Processes, tasks, activitie	s covered	
contained systems. Includes storage, sampling, associate vessel/barge, road/rail car a Assessment Method	incidental exposued laboratory activities	ed to strictly controlled conditions) within closed or res during recycling/ recovery, material transfers, ties, maintenance and loading (including marine
See Section 3.	alitiana anal nialan	
Section 2 Operational con	iditions and risk r	nanagement measures
Section 2.1 Control of wor	rker exposure	
Product characteristics		
Physical form of product	Liquid, vapour pre	essure > 10 kPa at STP OC5
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	
in product	differently) G13	
Amount used	Not applicable	
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2	
Human factors not influenced by risk management	Not applicable	
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Ma	nagement Measures and Operating Conditions
General Measures (skin irritants). G19.	soon as they occulikely. Wash off ar	tact with product. Clean up contamination / spills as ur. Wear gloves (tested to EN374) if hand contamination by skin contamination immediately. Provide basic to prevent / minimise exposures and to report any skin y develop. E3.
General Measures (carcinogens). G18.		al advances and process upgrades (including e elimination of releases. Minimise exposure using

possible, prior to maintenance.

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

	T		
	Where there is potential for exposure: Restr provide specific activity training to operators suitable gloves (tested to EN374) and cover contamination; wear respiratory protection vertain contributing scenarios; clear up spills wastes safely.	to minimise exposures; wear calls to prevent skin when its use is identified for	
	Regularly inspect, test and maintain all cont Consider the need for risk based health sur-		
CS15 General exposures	Handle substance within closed systems. E		
(closed systems). + CS56 With sample collection.	Sample via a closed loop or other system to Wear suitable gloves tested to EN374. PPE Ensure operation is undertaken outdoors. E	15.	
CS15 General exposures	Provide extract ventilation to points where e		
(closed systems).	Handle substance within closed systems. E- Wear suitable gloves tested to EN374. PPE	47.	
	Ensure operation is undertaken outdoors. E		
	Avoid carrying out activities involving expos		
	OC26.		
CS36 Laboratory activities	Handle within a fume cupboard or implement to minimise exposure. E12.	·	
CS14 Bulk transfers	Ensure material transfers are under contain	ment or extract ventilation.	
	E66.	EN274) in combination with	
	Wear chemically resistant gloves (tested to specific activity training. PPE17.	EN374) in combination with	
	Avoid carrying out activities involving expos	ure for more than 1 hour.	
	OC27.		
CS39 Equipment cleaning	Drain down and flush system prior to equipr	nent break-in or maintenance.	
and maintenance	E55.		
	Retain drain downs in sealed storage pendi	ng disposal or for subsequent	
	recycle. ENVT4. Clear spills immediately. C&H13.		
	Wear chemically resistant gloves (tested to	EN374) in combination with	
	intensive management supervision controls		
	Avoid carrying out activities involving expos		
	OC27. or, Wear a respirator conforming to E	EN140 with Type A filter or	
	better. PPE22. Ensure operation is undertaken outdoors. E	60	
CS67 Storage.	Wear suitable gloves tested to EN374. PPE		
Coor Storage.	Store substance within a closed system. E8		
Additional information on	the basis for the allocation of the identifie		
contained in Appendices 1			
Section 2.2 Control of env	rironmental exposure		
Product characteristics			
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a	ı].	
Amounts used			
Fraction of EU tonnage used in region		0.1	
Regional use tonnage (tonnes/year)		2.21E6	
Fraction of Regional tonnage used locally		0.0068	
Annual site tonnage (tonnes/year)		1.5e4	
Maximum daily site tonnage (kg/day)		5.0e4	
	Frequency and duration of use		
Continuous release [FD2].			
Emission days (days/year)		300	
Environmental factors not influenced by risk management			
Local freshwater dilution fac	tor	10	

Local marine water dilution factor	100
Other given operational conditions affecting environmental exposur	e
Release fraction to air from process (initial release prior to RMM)	0.025
Release fraction to wastewater from process (initial release prior to RMM)	0.003
Release fraction to soil from process (initial release prior to RMM)	0.001
Technical conditions and measures at process level (source) to pre-	vent release
Common practices vary across sites thus conservative process release e	
Technical onsite conditions and measures to reduce or limit discharge releases to soil	rges, air emissions and
Prevent discharge of undissolved substance to or recover from wastewat environmental exposure is driven by freshwater sediment [TCR1b]. If disc treatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	92.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%)	0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be reclaimed [OMS3].	incinerated, contained or
Conditions and measures related to municipal sewage treatment pla	ant
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d)	7.8e4
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for	disposal
This substance is consumed during use and no waste of the substance is	s generated [ETW5].
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is	s generated [ERW3].
Additional information on the basis for the allocation of the indentificontained in Petrorisk file	ied OCs and RMMs is
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures	unless otherwise indicated

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus,

scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.2.2. Exposure Estimation

9.2.2.1a. Human Health

See Appendix 2.a. & 2.g.

9.2.2.1b. Human Health

See Appendix 2.b. & 2.g.

9.2.2.1c. Human Health

See Appendix 2.c. & 2.g.

9.2.2.1d. Human Health

See Appendix 2.d. & 2.g.

9.2.2.2. Environment

See PETRORISK file in IUCLID Section 13 - "LocalCSR" worksheet

9.3. Distribution of Low Boiling Point Naphthas (Gasoline) – Industrial

9.3.1a. Exposure Scenario

3.3. Ta. Exposure ocenano			
Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is <u>NOT</u> classified as R45, R46, R62 or R63; (containing less than 0.1% benzene)			
Title			
Distribution of substance			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1, 2, 3, 4, 8a, 8b, 9, 15	
lgg		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	
Specific Environmental Rele		ESVOC SpERC 1.1b.v1	
Processes, tasks, activitie			
		il/road car and IBC loading) and repacking (including	
		g its sampling, storage, unloading, maintenance and	
associated laboratory activit		, no camping, ctorage, amousting, maintenance and	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk n	nanagement measures	
	iditionio dila non n	ianagomork modouroc	
Section 2.1 Control of wor	rker exposure		
Product characteristics	I CAPOSUIC		
Physical form of product	Liquid vanour pre	ssure > 10 kPa at STP OC5	
Concentration of substance		e substance in the product up to 100 % (unless stated	
in product	differently) G13	s substance in the product up to 100 % (unless stated	
Amount used	Not applicable		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure	Covers daily expo	sures up to a floura (diffees stated differently)	
Human factors not	Not applicable		
influenced by risk	Tot applicable		
management			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting		G15. Assumes a good basic standard of occupational	
exposure	hygiene is implem		
Contributing Scenarios		nagement Measures and Operating Conditions	
General Measures (skin	Avoid direct skin c	ontact with product. Identify potential areas for indirect	
irritants). G19.		gloves (tested to EN374) if hand contact with	
	substance likely. C	Clean up contamination/spills as soon as they occur.	
	Wash off skin cont	amination immediately. Provide basic employee	
		/ minimise exposures and to report any skin effects	
	that may develop.		
CS15 General exposures	No other specific measures identified. El20.		
(closed systems).	·		
CS15 General exposures	No other specific measures identified. El20.		
(closed systems). + CS56			
With sample collection.			
CS16 General exposures	Provide extract ve	ntilation to points where emissions occur. E54.	
(open systems).	N. 11 12:	11 00 1 5100	
CS2 Process sampling		neasures identified. El20.	
CS36 Laboratory activities.	Handle in a fume cupboard or under extract ventilation. E83.		
CS501 Bulk closed loading	No other specific n	neasures identified. El20.	
and unloading.			

000 Day and Lavell	E91 (-1: / (-1: - 1: - (-1: 0) 1: (1: 1: 0)	and Paris College Language Connect	
CS6 Drum and small	Fill containers/cans at dedicated fill points s ventilation. E51.	upplied with local extract	
package filling CS39 Equipment cleaning	<u> </u>		
and maintenance	No other specific measures identified. El20.		
CS67 Storage.	No other specific measures identified. El20.		
	the basis for the allocation of the identifie	ed OCs and RMMs is	
contained in Appendices			
Section 2.2 Control of env	vironmental exposure		
Product characteristics			
Substance is complex UVCI	B [PrC3]. Predominantly hydrophobic [PrC4a	1].	
Amounts used			
Fraction of EU tonnage used	d in region	0.1	
Regional use tonnage (tonn		1.87E7	
Fraction of Regional tonnag		0.002	
Annual site tonnage (tonnes	-	3.75E4	
Maximum daily site tonnage		1.2E5	
Frequency and duration o		1	
Continuous release [FD2].	. 400		
Emission days (days/year)		300	
	influenced by risk management	1	
Local freshwater dilution fac		10	
Local marine water dilution		100	
	onditions affecting environmental exposu		
<u> </u>	<u> </u>		
Release fraction to air from	process (initial release prior to RMM)	0.001	
Release fraction to wastewa RMM)	ater from process (initial release prior to	0.00001	
	process (initial release prior to RMM)	0.00001	
	measures at process level (source) to pre	vent release	
	oss sites thus conservative process release e		
	ns and measures to reduce or limit discha		
releases to soil			
	posure is driven by humans via indirect exposomestic sewage treatment plant, no onsite wa		
	e a typical removal efficiency of (%)	90	
	or to receiving water discharge) to provide	12	
the required removal efficiency \geq (%)			
If discharging to domestic sewage treatment plant, provide the required		0	
onsite wastewater removal e	efficiency of ≥ (%)		
	prevent/limit release from site		
Do not apply industrial sludo reclaimed [OMS3].	ge to natural soils [OMS2]. Sludge should be	incinerated, contained or	
	related to municipal sewage treatment pla	ant	
treatment (%)	al from wastewater via domestic sewage	95.5	
Total efficiency of removal for (domestic treatment plant)	rom wastewater after onsite and offsite RMMs (%)	95.5	
Maximum allowable site tonnage (M _{Safe}) (kg/d) 1.1E6		1.1E6	
Assumed domestic sewage treatment plant flow (m³/d) 2000			
Conditions and measures related to external treatment of waste for disposal			
	osal of waste should comply with applicable I	•	
	related to external recovery of waste		
- Silaidono ana measares	. J. a. Da Control Indi 1000 toly Of Wasie		

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37..

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.3.1b. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene)		
Title	-	
Distribution of substance		
Use Descriptor		
Sector(s) of Use	3	
Process Categories	1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Categories	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	
Specific Environmental Release Category	ESVOC SpERC 1.1b.v1	
Processes tasks activities covered	•	

Processes, tasks, activities covered

Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.

Assessment Method

See Section 3.

Section 2.1 Control of worker exposure		
Product characteristics		
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	
in product	differently) G13	
Amount used	Not applicable	

Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Human factors not	Not applicable
	INOLAPPIICADIE
influenced by risk	
management	
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational
exposure	hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General Measures (skin	Avoid direct skin contact with product. Identify potential areas for indirect
irritants). G19.	skin contact. Wear gloves (tested to EN374) if hand contact with
	substance likely. Clean up contamination/spills as soon as they occur.
	Wash off skin contamination immediately. Provide basic employee
	training to prevent / minimise exposures and to report any skin effects
	that may develop. E3
General Measures	Consider technical advances and process upgrades (including
(carcinogens). G18.	automation) for the elimination of releases. Minimise exposure using
(carcinogens). 616.	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 staff;
	provide specific activity training to operators to minimise exposures; wear
	suitable gloves (tested to EN374) and coveralls to prevent skin
	contamination; wear respiratory protection when its use is identified for
	certain contributing scenarios; clear up spills immediately and dispose of
	wastes safely.
	, and the second
	Regularly inspect, test and maintain all control measures.
	Consider the need for risk based health surveillance. G20.
CS15 General exposures	Handle substance within closed systems. E47.
(closed systems). + CS56	Sample via a closed loop or other system intended to avoid exposure. E8.
With sample collection.	Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures	Handle substance within closed systems. E47.
(closed systems). OC9	Trandie Substance within closed systems. E47.
Outdoor.	
CS2 Process sampling	Sample via a closed loop or other system to avoid exposure. E8.
CS36 Laboratory activities.	Handle within a fume cupboard or implement suitable equivalent methods
	to minimise exposure. E12.
CS501 Bulk closed loading	Ensure material transfers are under containment or extract ventilation.
and unloading.	E66.
CS39 Equipment cleaning	Drain down and flush system prior to equipment break-in or maintenance.
and maintenance	E55.
	Retain drain downs in sealed storage pending disposal or for subsequent
	recycle. ENVT4.
	Clear spills immediately. C&H13.
	Wear chemically resistant gloves (tested to EN374) in combination with
	basic employee training. PPE16.
CS67 Storage	
CS67 Storage.	Ensure operation is undertaken outdoors. E69.
Additional information	Store substance within a closed system. E84. the basis for the allocation of the identified OCs and RMMs is
contained in Appendices	
Section 2.2 Control of env	
Product characteristics	
Substance is complex UVCI	3 [PrC3]. Predominantly hydrophobic [PrC4a].
Amounts used	

Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.87E7
Fraction of Regional tonnage used locally	0.002
Annual site tonnage (tonnes/year)	3.75E4
Maximum daily site tonnage (kg/day)	1.2E5
Frequency and duration of use	1
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	000
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposul	
other given operational conditions are can general minimum at exposur	
Release fraction to air from process (initial release prior to RMM)	0.001
Release fraction to wastewater from process (initial release prior to	0.00001
RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to pre	vent release
Common practices vary across sites thus conservative process release e	estimates used [TCS1].
Technical onsite conditions and measures to reduce or limit discha	
releases to soil	
Risk from environmental exposure is driven by humans via indirect expos	
[TCR1k]. If discharging to domestic sewage treatment plant, no onsite wa	astewater treatment required
[TCR9].	laa.
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)	12
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	•
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be reclaimed [OMS3].	incinerated, contained or
Conditions and measures related to municipal sewage treatment pla	ant
Conditions and model of folded to maintipal contage treatment pic	
Estimated substance removal from wastewater via domestic sewage	95.5
treatment (%)	05.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M _{Safe}) (kg/d)	1.1E6
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for	disposal
External treatment and disposal of waste should comply with applicable I	-
regulations [ETW3].	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable le	ocal and/or national
regulations [ERW1].	
Additional information on the basis for the allocation of the indentificontained in Petrorisk file	ied UCs and RMMs is
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures	unless otherwise indicated
G21.	sooo otrioi wioo iridioatod.
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environment	al exposure with the Petrorisk
model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenar	10

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. G33. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.3.1c. Exposure Scenario

	iling point naphthas (Gasoline) that is classified as ntaining equal to or greater than 1% to 5% benzene)
Title	talling oqual to or ground man 1,000 0,000 000000
Distribution of substance	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1
Environmental Release Categories	1, 2, 3, 4, 5, 6a, 6b, 6c 6d, 7
Specific Environmental Release Category	ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	

Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.

Assessment Method

See Section 3.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure			
Product characteristics			
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5		
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13		
Amount used	Not applicable		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure			
Human factors not	Not applicable		
influenced by risk			
management			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		

General Measures (skin irritants). G19.	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3		
General Measures (carcinogens). G18.	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: Restr provide specific activity training to operators suitable gloves (tested to EN374) and cover contamination; wear respiratory protection we certain contributing scenarios; clear up spills wastes safely.	to minimise exposures; wear alls to prevent skin when its use is identified for	
	Regularly inspect, test and maintain all control Consider the need for risk based health surv		
CS15 General exposures	Handle substance within closed systems. E4		
(closed systems). + CS56	Sample via a closed loop or other system in		
With sample collection.	Wear suitable gloves tested to EN374. PPE		
CS15 General exposures	Provide extract ventilation to points where emissions occur. E54.		
(closed systems).	Handle substance within closed systems. E4		
CS2 Process sampling	Sample via a closed loop or other system to	avoid exposure. E8.	
CS36 Laboratory activities.	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.		
CS501 Bulk closed loading	Ensure material transfers are under containment or extract ventilation.		
and unloading.	E66 .		
CS39 Equipment cleaning	Drain down and flush system prior to equipn	nent break-in or maintenance.	
and maintenance	E55. Retain drain downs in sealed storage pending disposal or for subsequent		
	recycle. ENVT4.		
	Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to	FN374) in combination with	
	intensive management supervision controls.		
CS67 Storage.	Ensure operation is undertaken outdoors.		
	Store substance within a closed system. E8-		
	the basis for the allocation of the identifie	d OCs and RMMs is	
contained in Appendices 1 Section 2.2 Control of env			
Product characteristics	nominaria expectio		
	3 [PrC3]. Predominantly hydrophobic [PrC4a	1	
Amounts used		.a.	
Fraction of EU tonnage used in region 0.1			
Regional use tonnage (tonnes/year) 1.87E7			
		0.002	
Annual site tonnage (tonnes/year) 3.75E4			
Maximum daily site tonnage	9 ()		
	Frequency and duration of use		
Continuous release [FD2].	. 400		
Emission days (days/year) 300			
Environmental factors not influenced by risk management			
Local freshwater dilution fac		10	
and incommuter dilution lab		1.~	

Local marine water dilution factor	100
Other given operational conditions affecting environmental exposur	re
Release fraction to air from process (initial release prior to RMM)	0.001
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to pre-	vent release
Common practices vary across sites thus conservative process release ϵ	estimates used [TCS1].
Technical onsite conditions and measures to reduce or limit discha	rges, air emissions and
releases to soil	
Risk from environmental exposure is driven by humans via indirect expos	
[TCR1k]. If discharging to domestic sewage treatment plant, no onsite wa	astewater treatment required
[TCR9].	lee.
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide	12
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	inciparated contained or
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be reclaimed [OMS3].	incinerated, contained or
Conditions and measures related to municipal sewage treatment pla	ant
Conditions and incasures related to municipal sewage treatment pla	4111
Estimated substance removal from wastewater via domestic sewage	95.5
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	95.5
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) (kg/d)	1.1E6
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for	disposal
External treatment and disposal of waste should comply with applicable I	ocal and/or national
regulations [ETW3].	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable length regulations [ERW1].	ocal and/or national
Additional information on the basis for the allocation of the indentif	ied OCs and RMMs is
contained in Petrorisk file	
Section 3 Exposure Estimation	

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.3.1d. Exposure Scenario

9.3.1d. Exposure Scenario			
Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 5% to 20%			
benzene)			
Title Distribution of substance			
Use Descriptor		To To	
Sector(s) of Use	3		
Process Categories		1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Cate		1, 2, 3, 4, 5, 6a, 6b, 6c 6d, 7	
Specific Environmental Rele	<u> </u>	ESVOC SpERC 1.1b.v1	
Processes, tasks, activitie			
or contained systems, include maintenance and associated Assessment Method	ling incidental expo	il/road car and IBC loading) of substance within closed sures during its sampling, storage, unloading, es.	
See Section 3.			
Section 2 Operational con	iditions and risk n	nanagement measures	
Section 2.1 Control of wor	rker exposure		
Product characteristics	120 24	40 LDs at OTD 005	
Physical form of product		ssure > 10 kPa at STP OC5	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13		
Amount used	Not applicable		
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2		
Human factors not influenced by risk management	Not applicable		
Other Operational Conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Ma	nagement Measures and Operating Conditions	
General Measures (skin irritants). G19.	Avoid all skin contact with product. Clean up contamination / spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. E3.		
General Measures (carcinogens). G18.	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.		

	T		
	Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.		
	Regularly inspect, test and maintain all controls Consider the need for risk based health surv	veillance. G20.	
CS15 General exposures (closed systems). + CS56 With sample collection.	Handle substance within closed systems. Easily Sample via a closed loop or other system in Wear suitable gloves tested to EN374. PPE	tended to avoid exposure. E8. 15.	
CS15 General exposures (closed systems).	Provide extract ventilation to points where emissions occur. E54. Handle substance within closed systems. E47. Wear suitable gloves tested to EN374. PPE15. Avoid carrying out activities involving exposure for more than 4 hours. OC28.		
CS2 Process sampling	Sample via a closed loop or other system in Wear suitable gloves tested to EN374. PPE		
CS36 Laboratory activities.	Handle within a fume cupboard or implement to minimise exposure. E12		
CS500 Bulk closed loading.	Ensure material transfers are under containment or extract ventilation. E66. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17. Avoid carrying out activities involving exposure for more than 1 hour. OC27.		
CS501 Bulk closed loading and unloading.	Ensure material transfers are under containment or extract ventilation. E66. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17. Avoid carrying out activities involving exposure for more than 1 hour. OC27.		
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18. Avoid carrying out activities involving exposure for more than 1 hour. OC27. or, Wear a respirator conforming to EN140 with Type A filter or better. PPE22. Ensure operation is undertaken outdoors. E69.		
CS67 Storage.	Wear suitable gloves tested to EN374. PPE15. Store substance within a closed system. E84.		
Additional information on contained in Appendices 1	the basis for the allocation of the identifie I to 3	d OCs and RMMs is	
Section 2.2 Control of env			
Product characteristics			
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used			
Fraction of EU tonnage used	Fraction of EU tonnage used in region 0.1		
Regional use tonnage (tonnes/year) 1.87E7			
Fraction of Regional tonnage used locally 0.002		0.002	
Annual site tonnage (tonnes/year) 3.75E4		3.75E4	
Maximum daily site tonnage (kg/day) 1.2E5		1.2E5	

Frequency and duration of use		
Continuous release [FD2].		
Emission days (days/year)	300	
Environmental factors not influenced by risk management		
Local freshwater dilution factor	10	
Local marine water dilution factor	100	
Other given operational conditions affecting environmental exposur	e	
Release fraction to air from process (initial release prior to RMM)	0.001	
Release fraction to wastewater from process (initial release prior to RMM)	0.00001	
Release fraction to soil from process (initial release prior to RMM)	0.00001	
Technical conditions and measures at process level (source) to pre-	vent release	
Common practices vary across sites thus conservative process release e	stimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit dischar	ges, air emissions and	
releases to soil		
Risk from environmental exposure is driven by humans via indirect expositive. [TCR1k]. If discharging to domestic sewage treatment plant, no onsite was [TCR9].		
Treat air emission to provide a typical removal efficiency of (%)	90	
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	12	
If discharging to domestic sewage treatment plant, provide the required	0	
onsite wastewater removal efficiency of ≥ (%)		
Organisation measures to prevent/limit release from site		
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].		
Conditions and measures related to municipal sewage treatment pla	ınt	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5	
Maximum allowable site tonnage (M _{Safe}) based on release following total wastewater treatment removal (kg/d)	1.1E6	
Assumed domestic sewage treatment plant flow (m³/d)	2000	
Conditions and measures related to external treatment of waste for	disposal	
External treatment and disposal of waste should comply with applicable le regulations [ETW3].	•	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable to	ocal and/or national	
regulations [ERW1].		
Additional information on the basis for the allocation of the indentifi	ed OCs and RMMs is	
contained in Petrorisk file		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures G21.	unless otherwise indicated.	
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environmenta	al exposure with the Petrorisk	

model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should

ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.3.2 Exposure Estimation

9.3.2.1a. Human Health

See Appendix 2.a. & 2.g.

9.3.2.1b. Human Health

See Appendix 2.b. & 2.g.

9.3.2.1c. Human Health

See Appendix 2.c. & 2.g.

9.3.2.1d. Human Health

See Appendix 2.d. & 2.g.

9.3.2.2. Environment

See PETRORISK file in IUCLID Section 13 - "LocalCSR" worksheet

9.4. Formulation & (re)packing of Low Boiling Point Naphthas (Gasoline) – Industrial

9.4.1a. Exposure Scenario

9.4.1a. Exposure Scer			
Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is <u>NOT</u> classified			
as R45, R46, R62 or R63; (containing less than 0.1% benzene)			
Title		indi was	
Formulation & (re)packing o	substances and m	ixtures	
Use Descriptor			
Sector(s) of Use 3, 10			
Process Categories		1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	
		Further information on the mapping and allocation of	
Facility and a stall Dalaces Cost		PROC codes is contained in Table 9.1	
	Environmental Release Categories 2		
Specific Environmental Rele		ESVOC SpERC 2.2.v1	
Processes, tasks, activitie			
		stance and its mixtures in batch or continuous	
		rs, mixing, tabletting, compression, pelletization,	
	cale packing, maint	enance, sampling and associated laboratory activities.	
Assessment Method			
See Section 3.	1141		
Section 2 Operational cor	iditions and risk m	nanagement measures	
Continuo de Control of	ul		
Section 2.1 Control of wo	rker exposure		
Product characteristics	1:	40 l-D+ CTD 005	
Physical form of product		ssure > 10 kPa at STP OC5	
Concentration of substance		e substance in the product up to 100 % (unless stated	
in product Amounts used		differently) G13	
Frequency and duration of	Not applicable		
use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2		
Human factors not	Not applicable		
influenced by risk	INOT applicable		
management			
Other Operational	Assumes use at no	ot more than 20°C above ambient temperature, unless	
Conditions affecting		G15. Assumes a good basic standard of occupational	
exposure	hygiene is impléme		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		
0	A sideline of alice	estant Managaria de la la differente d'al anno de fanda Parada	
General Measures (skin		ontact with product. Identify potential areas for indirect	
irritants). G19.		gloves (tested to EN374) if hand contact with clean up contamination/spills as soon as they occur.	
	Wash off skin contamination immediately. Provide basic employee		
	training to prevent / minimise exposures and to report any skin effects that may develop. E3		
CS15 General exposures	No other specific measures identified. El20.		
(closed systems).	TWO Other specific measures lucritimed. E120.		
CS15 General exposures	No other specific measures identified. El20.		
(closed systems). + CS56	140 other specific measures identified. E120.		
With sample collection.			
CS16 General exposures	Provide extract ventilation to points where emissions occur. E54.		
(open systems).	·		
CS2 Process sampling	No other specific n	neasures identified. El20.	
CS29 Mixing operations	Provide extract ventilation to points where emissions occur. E54.		
(closed systems)			
CS36 Laboratory activities	Handle in a fume of	cupboard or under extract ventilation. E83.	

CS14 Bulk transfers	Ensure material transfers are under contain E66.	ment or extract ventilation.
CS34 Manual + CS22	Ensure material transfers are under contain	ment or extract ventilation.
Transfer from/pouring from	E66.	
containers		
CS8 Drum/batch transfers	Ensure material transfers are under contain E66.	ment or extract ventilation.
CS6 Drum and small	Fill containers/cans at dedicated fill points s	upplied with local extract
package filling	ventilation. E51.	
CS39 Equipment cleaning	No other specific measures identified. El18.	
and maintenance		
CS67 Storage.	No other specific measures identified. El20.	
	the basis for the allocation of the identific	ed OCs and RMMs is
contained in Appendices 1		
Section 2.2 Control of env	vironmental exposure	
Product characteristics		
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a	a].
Amounts used	, , , , ,	•
Fraction of EU tonnage used	d in region	0.1
Regional use tonnage (tonne	• ,	1.65e7
Fraction of Regional tonnage		0.0018
Annual site tonnage (tonnes		3.0e4
Maximum daily site tonnage		1.0e5
Frequency and duration of	f use	•
Continuous release [FD2].		
Emission days (days/year)		300
	influenced by risk management	
Local freshwater dilution fac	tor	10
Local marine water dilution f		100
	onditions affecting environmental exposu	
omer given operational oc	maillons ancoming environmental exposu	
	process (initial release prior to RMM)	0.025
Release fraction to wastewa RMM)	ter from process (initial release prior to	0.002
Release fraction to soil from	process (initial release prior to RMM)	0.0001
Technical conditions and	measures at process level (source) to pre	vent release
	oss sites thus conservative process release	
	ns and measures to reduce or limit discha	
releases to soil		. 900, a 000.01.0 aa
	olved substance to or recover from wastewa	ter ITCR141.Risk from
	Iriven by humans via indirect exposure (prima	
	ewage treatment plant, no onsite wastewater	
	e a typical removal efficiency of (%)	56.5
	or to receiving water discharge) to provide	94.7
the required removal efficier	• • • • • • • • • • • • • • • • • • • •	
	ewage treatment plant, provide the required	0
onsite wastewater removal e	• • • • • • • • • • • • • • • • • • • •	
	prevent/limit release from site	
	e to natural soils [OMS2]. Sludge should be	incinerated, contained or
	related to municipal sewage treatment pla	ant
	·	
Estimated substance remove treatment (%)	al from wastewater via domestic sewage	95.5
	om wastewater after onsite and offsite	95.5

Maximum allowable site tonnage (M _{Safe}) (kg/d)	1.0E5
Assumed domestic sewage treatment plant flow (m ³ /d)	2000

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 [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.4.1b. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene)		
Title	·	
Formulation & (re)packing of substances and	mixtures	
Use Descriptor		
Sector(s) of Use	3, 10	
Process Categories	1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Categories	2	
Specific Environmental Release Category	ESVOC SpERC 2.2.v1	
Processes, tasks, activities covered		

Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.

Assessment Method

See Section 3.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of wor	rker exposure
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated
in product	differently) G13
Amounts used	Not applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Human factors not influenced by risk management	Not applicable
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational
exposure	hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General Measures (skin irritants). G19.	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General Measures (carcinogens). G18.	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 staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.
	Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
CS15 General exposures (closed systems). + CS56 With sample collection.	Handle substance within closed systems. E47. Sample via a closed loop or other system intended to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures (closed systems). OC9 Outdoor	Handle substance within a closed system. E47.
CS2 Process sampling	Sample via a closed loop or other system intended to avoid exposure. E8.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66.
CS8 Drum/batch transfers	Ensure material transfers are under containment or extract ventilation. E66.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55.
and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4.
	Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with

	'hasia' amplayes training DDC46			
CS67 Storege	'basic' employee training. PPE16.			
CSOI Storage.	Store substance within a closed system. E84.			
Additional information or	Wear suitable gloves tested to EN374. PPE15. Additional information on the basis for the allocation of the identified OCs and RMMs is			
contained in Appendices		su OOS and Kimins is		
Section 2.2 Control of er				
Product characteristics				
	CB [PrC3]. Predominantly hydrophobic [PrC4a	51		
Amounts used	bb [F103]. F1edominantiy ffydropfiobic [F1048	aj.		
	12	10.4		
Fraction of EU tonnage use		0.1		
Regional use tonnage (ton		1.65e7		
Fraction of Regional tonna		0.0018		
Annual site tonnage (tonne		3.0e4		
Maximum daily site tonnag	, - , ,	1.0e5		
Frequency and duration	of use			
Continuous release [FD2].				
Emission days (days/year)		300		
Environmental factors no	t influenced by risk management			
Local freshwater dilution fa	ctor	10		
Local marine water dilution	factor	100		
Other given operational of	conditions affecting environmental exposu	re		
	•			
Release fraction to air from	process (initial release prior to RMM)	0.025		
Release fraction to wastew RMM)	rater from process (initial release prior to	0.002		
	m process (initial release prior to RMM)	0.0001		
	l measures at process level (source) to pre	vent release		
	ross sites thus conservative process release			
	ons and measures to reduce or limit discha			
releases to soil	mis and incusures to reduce or mint disend	iges, an emissions and		
	solved substance to or recover from wastewa	ter ITCR141.Risk from		
	driven by humans via indirect exposure (prima			
	sewage treatment plant, no onsite wastewater			
	de a typical removal efficiency of (%)	56.5		
Treat onsite wastewater (p	rior to receiving water discharge) to provide	94.7		
the required removal efficie				
	sewage treatment plant, provide the required	0		
onsite wastewater removal				
	o prevent/limit release from site			
	lge to natural soils [OMS2]. Sludge should be	incinerated, contained or		
reclaimed [OMS3].				
Conditions and measures	s related to municipal sewage treatment pl	ant		
Estimated substance rema	val from wastowater via domestic sowace	95.5		
treatment (%)	val from wastewater via domestic sewage	90.0		
	from wastewater after onsite and offsite	95.5		
(domestic treatment plant)		00.0		
Maximum allowable site to		1.0E5		
	e treatment plant flow (m ³ /d)	2000		
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 [ETW3].				
Conditions and measures related to external recovery of waste				
	cling of waste should comply with applicable I	ocal and/or national		
regulations [ERW1].	0 : : see see			

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as

9.4.1c. Exposure Scenario

•		ntaining equal to or greater than 1% to 5% benzene)	
Title	- dilaioi 1100, (001	tuning equal to or greater than 170 to 070 benzeney	
Formulation & (re)packing of	substances and r	nixtures	
Use Descriptor			
Sector(s) of Use		3, 10	
Process Categories		1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Cate	gories	2	
Specific Environmental Release Category		ESVOC SpERC 2.2.v1	
Processes, tasks, activities	s covered		
Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.			
Assessment Method			
See Section 3.			
Section 2 Operational con	Section 2 Operational conditions and risk management measures		
Section 2.1 Control of worker exposure			
Product characteristics			
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5		
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		

use/exposure

Frequency and duration of

in product Amounts used

Covers daily exposures up to 8 hours (unless stated differently) G2

differently) G13

Not applicable

III fortone est	M. Carro Park I.
Human factors not	Not applicable
influenced by risk	
management	
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational
exposure	hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General Measures (skin irritants). G19.	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General Measures	Consider technical advances and process upgrades (including
(carcinogens). G18.	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 staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.
	Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
CS15 General exposures (closed systems). + CS56 With sample collection.	Handle substance within closed systems. E47. Sample via a closed loop or other system intended to avoid exposure. E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures	Provide extract ventilation to points where emissions occur. E54.
(closed systems).	Handle substance within closed systems. E47.
CS2 Process sampling	Sample via a closed loop or other system intended to avoid exposure. E8.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66.
CS8 Drum/batch transfers	Ensure material transfers are under containment or extract ventilation. <u>E66</u> .
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18.
CS67 Storage.	Store substance within a closed system. E84. Wear suitable gloves tested to EN374. PPE15.
Additional information on contained in Appendices	the basis for the allocation of the identified OCs and RMMs is
Section 2.2 Control of env	
Product characteristics	
	B [PrC3]. Predominantly hydrophobic [PrC4a].
Amounts used	<u> </u>

Fraction of EU tonnage used in region	0.1	
Regional use tonnage (tonnes/year)	1.65e7	
Fraction of Regional tonnage used locally	0.0018	
Annual site tonnage (tonnes/year)	3.0e4	
Maximum daily site tonnage (kg/day)	1.0e5	
Frequency and duration of use	1.000	
Continuous release [FD2].		
Emission days (days/year)	300	
Environmental factors not influenced by risk management	300	
	140	
Local freshwater dilution factor Local marine water dilution factor	10	
Other given operational conditions affecting environmental exposu	re	
Delegas fraction to air from process (initial relegas prior to DMM)	0.025	
Release fraction to air from process (initial release prior to RMM)	0.025	
Release fraction to wastewater from process (initial release prior to RMM)	0.002	
Release fraction to soil from process (initial release prior to RMM)	0.0001	
Technical conditions and measures at process level (source) to pre	vent release	
Common practices vary across sites thus conservative process release e	estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discha		
releases to soil		
Prevent discharge of undissolved substance to or recover from wastewar	ter [TCR14]. Risk from	
environmental exposure is driven by humans via indirect exposure (prima	arily inhalation) [TCR1k].	
If discharging to domestic sewage treatment plant, no onsite wastewater	treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	56.5	
Treat onsite wastewater (prior to receiving water discharge) to provide	94.7	
the required removal efficiency ≥ (%)		
If discharging to domestic sewage treatment plant, provide the required	0	
onsite wastewater removal efficiency of \geq (%)		
Organisation measures to prevent/limit release from site		
Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].		
Conditions and measures related to municipal sewage treatment pla	ant	
F		
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5	
Total efficiency of removal from wastewater after onsite and offsite	95.5	
(domestic treatment plant) RMMs (%)	1.0E5	
Maximum allowable site tonnage (M _{Safe}) (kg/d)	1.000	
Assumed domestic sewage treatment plant flow (m ³ /d)	2000	
Conditions and measures related to external treatment of waste for disposal		
External treatment disposal of waste should comply with applicable regulations [ETW3].		
Conditions and measures related to external recovery of waste	<u> </u>	
External recovery and recycling of waste should comply with applicable local and/or national		
regulations [ERW1].		
Additional information on the basis for the allocation of the indentified OCs and RMMs is		
contained in Petrorisk file		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		
G21.		
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environment	al exposure with the Petrorisk	
model (FF2)		

model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.4.1d. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 5% to 20% benzene)			
Title			
Formulation & (re)packing of substances	and mixtures		
Use Descriptor			
Sector(s) of Use	3, 10		
Process Categories	1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1		
Environmental Release Categories	2		

ESVOC SpERC 2.2.v1

Processes, tasks, activities covered

Specific Environmental Release Category

Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.

Assessment Method

See Section 3.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure			
Product characteristics			
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5		
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13		
Amounts used	Not applicable		
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2		
Human factors not influenced by risk management	Not applicable		
Other Operational Conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		

General Measures (skin irritants). G19.	Avoid all skin contact with product. Clean up contamination / spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. E3.
General Measures (carcinogens). G18.	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 staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.
	Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.
CS15 General exposures	Handle substance within closed systems. E47.
(closed systems). + CS56	Sample via a closed loop or other system intended to avoid exposure. E8.
With sample collection.	Wear suitable gloves tested to EN374. PPE15.
	Avoid carrying out activities involving exposure for more than 4 hours. OC28.
CS15 General exposures	Provide extract ventilation to points where emissions occur. E54.
(closed systems).	Handle substance within closed systems. E47.
	Wear suitable gloves tested to EN374. PPE15.
	Avoid carrying out activities involving exposure for more than 4 hours.
	OC28.
CS67 Storage.	Ensure operation is undertaken outdoors. E69. Wear suitable gloves tested to EN374. PPE15.
C307 Storage.	Store substance within a closed system. E84.
	Avoid carrying out activities involving exposure for more than 4 hours.
	OC28.
CS2 Process sampling	Handle substance within closed systems. E47.
	Sample via a closed loop or other system intended to avoid exposure. E8.
	Wear suitable gloves tested to EN374. PPE15. Avoid carrying out activities involving exposure for more than 4 hours.
	OC28.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods
	to minimise exposure. E12.
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation.
	Wear suitable gloves tested to EN374. PPE15.
CS8 Drum/batch transfers	Ensure material transfers are under containment or extract ventilation.
	E66.
	Wear suitable gloves tested to EN374. PPE15.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55.
	Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4.
	Clear spills immediately. C&H13.
	Wear chemically resistant gloves (tested to EN374) in combination with
	intensive management supervision controls. PPE18.
	Avoid carrying out activities involving exposure for more than 1 hour.
	OC27. or, Wear a respirator conforming to EN140 with Type A filter or
	better. PPE22.

Ensure operation is undertaken outdoors. E69.		
Additional information on the basis for the allocation of the identified OCs and RMMs is		
contained in Appendices 1 to 3		
Section 2.2 Control of environmental exposure		
Product characteristics		
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used		
Fraction of EU tonnage used in region	0.1	
Regional use tonnage (tonnes/year)	1.65e7	
Fraction of Regional tonnage used locally	0.0018	
Annual site tonnage (tonnes/year)	3.0e4	
Maximum daily site tonnage (kg/day)	1.0e5	
Frequency and duration of use		
Continuous release [FD2].		
Emission days (days/year)	300	
Environmental factors not influenced by risk management		
Local freshwater dilution factor	10	
Local marine water dilution factor	100	
Other given operational conditions affecting environmental exposur		
other given operational conditions are othing crivino intental exposur		
Release fraction to air from process (initial release prior to RMM)	0.025	
Release fraction to wastewater from process (initial release prior to	0.002	
RMM)	0.002	
Release fraction to soil from process (initial release prior to RMM)	0.0001	
Technical conditions and measures at process level (source) to pre-		
Common practices vary across sites thus conservative process release e		
Technical onsite conditions and measures to reduce or limit dischar		
releases to soil	ges, an emissions and	
Prevent discharge of undissolved substance to or recover from wastewat	er [TCR14]. Risk from	
environmental exposure is driven by humans via indirect exposure (prima		
If discharging to domestic sewage treatment plant, no onsite wastewater		
Treat air emission to provide a required efficiency of (%)	56.5	
Treat onsite wastewater (prior to receiving water discharge) to provide	94.7	
the required removal efficiency ≥ (%)		
	0	
onsite wastewater removal efficiency of ≥ (%)		
Organisation measures to prevent/limit release from site		
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be reclaimed [OMS3].	incinerated, contained or	
Conditions and measures related to municipal sewage treatment pla	ant .	
Conditions and measures related to municipal sewage treatment plant		
Estimated substance removal from wastewater via domestic sewage	95.5	
treatment (%)		
Total efficiency of removal from wastewater after onsite and offsite	95.5	
(domestic treatment plant) RMMs (%)		
Maximum allowable site tonnage (M _{Safe}) based on release following total	1.0E5	
wastewater treatment removal (kg/d)		
Assumed domestic sewage treatment plant flow (m ³ /d)	2000	
Conditions and measures related to external treatment of waste for disposal		
External treatment disposal of waste should comply with applicable regulations [ETW3].		
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable local and/or national		
regulations [ERW1].		
Additional information on the basis for the allocation of the indentifi	ed OCs and RMMs is	
contained in Petrorisk file		

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.4.2. Exposure Estimation

9.4.2.1a. Human Health

See Appendix 2.a. & 2.g.

9.4.2.1b. Human Health

See Appendix 2.b. & 2.g.

9.4.2.1c. Human Health

See Appendix 2.c. & 2.g.

9.4.2.1d. Human Health

See Appendix 2.d. & 2.g.

9.4.2.2. Environment

See PETRORISK file in IUCLID Section 13 - "LocalCSR" worksheet

9.5. Use of Low Boiling Point Naphthas (Gasoline) in Coatings – Industrial

9.5.1a. Exposure Scenario
Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is *NOT* classified

Section 1 Exposure Scena as R45, R46, R62 or R63; (ing point naphthas (Gasoline) that is <u>NOT</u> classified an 0.1% benzene)	
Title		,	
Uses in Coatings			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1, 2, 3, 4, 5, 7, 8a, 8b, 10, 13, 15	
r recess eategenes		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	4	
Specific Environmental Rele		ESVOC SpERC 4.3a.v1	
Processes, tasks, activitie			
		ves, etc) including exposures during use (including	
		sfer from bulk and semi-bulk, application by spray,	
		uction lines and film formation) and equipment	
cleaning, maintenance and a			
Assessment Method	associated laborato	ny activities.	
See Section 3.			
	ditions and risk m	annagamant maggirag	
Section 2 Operational con	iditions and risk h	ianagement measures	
Section 2.1 Central of way	rker evpecure		
Section 2.1 Control of wor Product characteristics	rker exposure		
	Lianial vanavu nua	active to the at CTD OCE	
Physical form of product		ssure > 10 kPa at STP OC5	
Concentration of substance		e substance in the product up to 100 % (unless stated	
in product	differently) G13		
Amounts used	Not applicable	over the O. b. over (verlage state of differential by O.O.	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure			
Human factors not	Not applicable		
influenced by risk			
management Other Operational	Accumos uso of p	ot more than 20°C above ambient temperature, unless	
Conditions affecting		G15. Assumes a good basic standard of occupational	
exposure			
Contributing Scenarios	hygiene is implemented G1. Specific Risk Management Measures and Operating Conditions		
Contributing Scenarios	Specific Kisk Mai	nagement measures and Operating Conditions	
General Measures (skin	Avoid direct skin c	ontact with product. Identify potential areas for indirect	
irritants). G19.		gloves (tested to EN374) if hand contact with	
		Clean up contamination/spills as soon as they occur.	
		amination immediately. Provide basic employee	
		/ minimise exposures and to report any skin effects	
	that may develop.		
		on measures such as impervious suits and face shields	
		uring high dispersion activities which are likely to lead	
		sol release, e.g. spraying. E4	
CS15 General exposures	No other specific n	neasures identified. El20.	
(closed systems).			
CS15 General exposures			
(closed systems) + CS56			
With sample collection.			
CS99 Film formation - force	Provide extract ve	ntilation to points where emissions occur. E54.	
drying, stoving and other			

CS95 Film formation - air drying. CS96. Preparation of material for application. CS30. Mixing operations (open systems). CS24 Spraying/fogging by manual application. CS97 Spraying (automatic/robotic) CS97 Spraying (automatic/robotic) CS98 Roller, spreader, flow application. CS98 Roller, spreader, flow application. CS98 Roller, spreader, flow application and popuring CS96 Laboratory activities. LS36 Laboratory activities. LS36 Laboratory activities. LS37 Storage. No other specific measures identified. EI20. Additional information on the basis for the allocation of the identified OCs and RMMs is contained in Appendices 1 to 3 Section 2.2 Control of environmental exposure Product characteristics Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a]. Amounts used Fraction of EQ1 tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used locally Annual site tonnage (tonnes/year) Residence of the operation or equipment and provide extract ventilation at openings. E60. Brown material transfers are under containment or extract ventilation. E66. CS98 Roller, spreader, flow application at openings. E60. CS94 Dipping, immersion Information or extract ventilation at openings. E60. CS95 Storage. No other specific measures identified. EI20. Additional information on the basis for the allocation of the identified OCs and RMMs is contained in Appendices 1 to 3 Section 2.2 Control of environmental exposure Product characteristics Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a]. Amounts used Fraction of EQ1 tonnage used in region Regional use tonnage (tonnes/year) Section 2.2 E23 Amounts used Fraction of Regional tonnage used locally Annual site tonnage (tonnes/year) Section 2.2 E23 Easission days (days/year) Section 2.2 E23 Easission days (days/year) Section 2.2 E25 Easission days (days/year) Section 2.2 E26 E27 E28 E30 E30 E30 E30 E30 E30 E30 E3	technologies.				
drying. CS96. Preparation of material for application. CS30. Mixing operations (open systems). CS24 Spraying/logging by manual application. CS95 Spraying Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. E60. CS95 Spraying Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. E60. CS98 Roller, spreader, flow Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. E60. CS98 Roller, spreader, flow Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings. E60. CS98 Roller, spreader, flow Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings. E60. CS98 Roller, spreader, flow Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings. E60. CS98 Roller, spreader, flow Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings. E60. CS98 Roller, spreader, flow Minimise exposure by enclosing the operation or equipment and provide extract ventilation. E60. CS98 Roller, spreader, flow Minimise exposure by enclosing the operation or equipment and provide extract ventilation. E60. CS98 Roller, spreader, flow Minimise exposure by enclosing the operation or equipment and provide extract ventilation. E60. CS98 Roller, spreader, flow flow flow flow flow flow flow flow	<u> </u>	No other epocific measures identified FIGO			
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			0		
	onsite wastewater removal e	efficiency of ≥ (%)			

Organisation measures to prevent/limit release from site

Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage	95.5
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	95.5
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) (kg/d)	2.1E4
Assumed domestic sewage treatment plant flow (m ³ /d)	2000

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 [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libaries.html) [DSU4].

9.5.1b. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as	
R45 and/or R46 and/or R62 and/or R63; (co	ontaining 0% to 1% benzene)
Title	
Uses in Coatings	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 8a, 8b, 15
	Further information on the mapping and allocation of
	PROC codes is contained in Table 9.1

Environmental Release Cate	anories	4		
		ESVOC SpERC 4.3a.v1		
Processes, tasks, activities covered Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities.				
Assessment Method				
See Section 3.				
Section 2 Operational con	ditions and risk m	nanagement measures		
Section 2.1 Control of wor	ker exposure			
Product characteristics				
Physical form of product	Liquid, vapour pres	ssure > 10 kPa at STP OC5		
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated		
in product	differently) G13	·		
Amounts used	Not applicable			
Frequency and duration of		sures up to 8 hours (unless stated differently) G2		
use/exposure		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Human factors not influenced by risk management	Not applicable			
Other Operational		ot more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently.	G15. Assumes a good basic standard of occupational		
exposure	hygiene is impleme	ented G1.		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions		
General Measures (skin irritants). G19.	skin contact. Wear substance likely. C Wash off skin cont	ontact with product. Identify potential areas for indirect gloves (tested to EN374) if hand contact with clean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects		
General Measures (carcinogens). G18.	automation) for the measures such as general / local exhibitines prior to break possible, prior to m Where there is pot provide specific ac suitable gloves (tecontamination; we certain contributing	advances and process upgrades (including elimination of releases. Minimise exposure using closed systems, dedicated facilities and suitable aust ventilation. Drain down systems and clear transfering containment. Clean / flush equipment, where naintenance. ential for exposure: Restrict access to authorised staff; tivity training to operators to minimise exposures; wear sted to EN374) and coveralls to prevent skin ar respiratory protection when its use is identified for g scenarios; clear up spills immediately and dispose of		
CS99 Film formation - force drying, stoving and other	Consider the need	test and maintain all control measures. for risk based health surveillance. G20. ntilation to points where emissions occur. E54.		
technologies.	Handle aubatanas	within a closed system. F47		
CS15 General exposures (closed systems).	Provide a good sta doors, windows etc removed by a pow			
CS3 Material transfers	Ensure material tra E66.	ansfers are under containment or extract ventilation.		
	1 -			

CS36 Laboratory activities.	Handle within a fume cupboard or implemen	et quitable aquivalent mathada	
C336 Laboratory activities.	to minimise exposure. E12.	it suitable equivalent methods	
CS39 Equipment cleaning	Drain down and flush system prior to equipr	nent break-in or maintenance	
and maintenance	E55.		
	Retain drain downs in sealed storage pendi	ng disposal or for subsequent	
	recycle. ENVT4.		
	Clear spills immediately. C&H13.	-1 10-4)	
	Wear chemically resistant gloves (tested to	EN374) in combination with	
CS67 Storage	'basic' employee training. PPE16. Store substance within a closed system. E8	4	
CS67 Storage.	the basis for the allocation of the identifie	od OCs and RMMs is	
contained in Appendices		d OOS and Riving 13	
Section 2.2 Control of env			
Product characteristics	·		
Substance is complex UVC	B [PrC3]. Predominantly hydrophobic [PrC4a	n].	
Amounts used	i i i i i i i i i i i i i i i i i i i	.1.	
Fraction of EU tonnage used	d in region	0.1	
Regional use tonnage (tonn		6.2E3	
Fraction of Regional tonnage		1.0	
Annual site tonnage (tonnes	•	6.2E3	
Maximum daily site tonnage		2.1E4	
Frequency and duration of	, ,	2.164	
Continuous release [FD2].	i use		
Emission days (days/year)		300	
	influenced by risk management	300	
Local freshwater dilution fac	, ,	10	
Local marine water dilution f		100	
	onditions affecting environmental exposu		
other given operational of	onations uncoming environmental exposur		
Release fraction to air from	process (initial release prior to RMM)	0.98	
Release fraction to wastewa	ater from process (initial release prior to	0.007	
	process (initial release prior to RMM)	0	
	measures at process level (source) to pre	vent release	
	oss sites thus conservative process release		
	ns and measures to reduce or limit discha		
releases to soil			
	olved substance to or recover from wastewar		
	driven by humans via indirect exposure (prima		
	ewage treatment plant, no onsite wastewater		
	e a typical removal efficiency of (%)	94.1 92.6	
the required removal efficier	or to receiving water discharge) to provide	92.6	
	ewage treatment plant, provide the required	0	
onsite wastewater removal	• • • • • • • • • • • • • • • • • • • •	o a a a a a a a a a a a a a a a a a a a	
	prevent/limit release from site		
	ge to natural soils [OMS2]. Sludge should be	incinerated, contained or	
	ge to flatural 3013 [OMO2]. Gludge 3110tild be	,	
reclaimed [OMS3].	related to municipal sewage treatment pla		
reclaimed [OMS3].			
reclaimed [ÓMS3]. Conditions and measures			
reclaimed [OMS3]. Conditions and measures Estimated substance remove treatment (%) Total efficiency of removal fire	related to municipal sewage treatment plants all from wastewater via domestic sewage from wastewater after onsite and offsite	ant	
reclaimed [OMS3]. Conditions and measures Estimated substance remove treatment (%)	related to municipal sewage treatment plants all from wastewater via domestic sewage from wastewater after onsite and offsite RMMs (%)	95.5	

Assumed domestic sewage treatment plant flow (m³/d)

2000

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 [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1 Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.5.2. Exposure Estimation

9.5.2.1a. Human Health

See Appendix 2.a. & 2.g.

9.5.2.1b. Human Health

See Appendix 2.b. & 2.g.

9.5.2.2. Environment

See PETRORISK file - "LocalCSR" worksheet

9.6. Use of Low Boiling Point Naphthas (Gasoline) in Coatings – Professional

9.6.1. Exposure Scenario

9.6.1. Exposure Scena			
Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is <u>NOT</u> classified as R45, R46, R62 or R63; (containing less than 0.1% benzene)			
Title	g 1000		
Uses in Coatings			
Use Descriptor			
Sector(s) of Use		22	
Process Categories		1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19	
i i i i i i i i i i i i i i i i i i i		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	8a, 8d	
Specific Environmental Rele	ase Category	ESVOC SpERC 8.3b.v1	
Processes, tasks, activities	s covered	-	
		ves, etc) including exposures during use (including	
		sfer from bulk and semi-bulk, application by spray,	
		ds, and film formation), and equipment cleaning,	
maintenance and associated	l laboratory activitie	S.	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	anagement measures	
Section 2.1 Control of wor	ker exposure		
Product characteristics			
Physical form of product		ssure > 10 kPa at STP OC5	
Concentration of substance		e substance in the product up to 100 % (unless stated	
in product	differently) G13		
Amounts used	Not applicable		
Frequency and duration of use/exposure	Covers daily expos	sures up to 8 hours (unless stated differently) G2	
Human factors not	Not applicable		
influenced by risk			
management			
Other Operational		ot more than 20°C above ambient temperature, unless	
Conditions affecting		G15. Assumes a good basic standard of occupational	
exposure	hygiene is impleme		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
Conoral Massures (alice	Avoid direct aldia =	entent with product Identify notential areas for indirect	
General Measures (skin irritants). G19.		ontact with product. Identify potential areas for indirect gloves (tested to EN374) if hand contact with	
imanis). G19.		lean up contamination/spills as soon as they occur.	
		amination immediately. Provide basic employee	
		/ minimise exposures and to report any skin effects	
	that may develop.		
	inat may dovolop.		
	Other skin protection measures such as impervious suits and face shields		
		uring high dispersion activities which are likely to lead	
CS15 General exposures		sol release, e.g. spraying. E4 ansfers are under containment or extract ventilation.	
(closed systems). CS38	Ensure material tra	ansiers are unider containment of extract ventilation.	
Use in contained systems.	L00.		
	Use drum numns d	or carefully pour from container. E64.	
equipment (from drums or	Coo arani pampo c	. saistany pour nom containor. Lot.	
containers).			

	I			
CS95 Film formation - air	No other specific measures identified. El20).		
drying. OC8 Indoor.	Describe autorativantilation to mainta vibana			
CS96 Preparation of	Provide extract ventilation to points where	emissions occur. E54.		
material for application. CS30 Mixing operations				
(open systems). CS9				
Pouring from small				
containers. OC8 Indoor.				
CS96 Preparation of	Provide extract ventilation to points where	emissions occur E54		
material for application.	Tovide extract vertiliation to points where	emissions occur. ES4.		
CS30 Mixing operations				
(open systems). CS9				
Pouring from small				
containers. OC9 Outdoor.				
	Ensure material transfers are under contain	nment or extract ventilation.		
	E66.			
CS3 Material transfers. CS8	Ensure material transfers are under contain	nment or extract ventilation.		
Pumped Drum/batch	E66.			
transfers.				
CS98 Roller, spreader, flow	Provide enhanced mechanical ventilation by	y mechanical means. E48.		
application. OC8 Indoor.				
CS24Spraying/fogging by	Carry out in a vented booth. E57.			
manual application. OC8				
Indoor.				
CS4 Dipping, immersion	Minimise exposure by partial enclosure of t			
and pouring. OC8 Indoor.	provide extract ventilation at openings. E60			
CS36 Laboratory activities	Handle in a fume cupboard or under extract			
CS72 Hand application -	Provide enhanced mechanical ventilation b	y mechanical means. E48.		
finger-paints, pastels,				
adhesives. OC8 Indoor.				
CS67 Storage. No other specific measures identified. El20.				
Additional information on the basis for the allocation of the identified OCs and RMMs is				
contained in Appendices 1				
Section 2.2 Control of env	rironmentai exposure			
Product characteristics				
Substance is complex UVCE	B [PrC3]. Predominantly hydrophobic [PrC4	Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].		
Amounts used				
Amounts used				
	d in region	0.1		
Fraction of EU tonnage used				
Fraction of EU tonnage used Regional use tonnage (tonna	es/year)	6.13E3		
Fraction of EU tonnage used Regional use tonnage (tonna Fraction of Regional tonnage	es/year) e used locally	6.13E3 0.0005		
Fraction of EU tonnage used Regional use tonnage (tonnage Fraction of Regional tonnage Annual site tonnage (tonnes	es/year) e used locally /year)	6.13E3 0.0005 3.1		
Fraction of EU tonnage used Regional use tonnage (tonnage Fraction of Regional tonnage Annual site tonnage (tonnes Maximum daily site tonnage	es/year) e used locally /year) (kg/day)	6.13E3 0.0005		
Fraction of EU tonnage used Regional use tonnage (tonnage Fraction of Regional tonnage Annual site tonnage (tonnes Maximum daily site tonnage Frequency and duration of	es/year) e used locally /year) (kg/day)	6.13E3 0.0005 3.1		
Fraction of EU tonnage used Regional use tonnage (tonnage Fraction of Regional tonnage Annual site tonnage (tonnes Maximum daily site tonnage Frequency and duration of Continuous release [FD2].	es/year) e used locally /year) (kg/day)	6.13E3 0.0005 3.1 8.4		
Fraction of EU tonnage used Regional use tonnage (tonnage Fraction of Regional tonnage Annual site tonnage (tonnes Maximum daily site tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year)	es/year) e used locally /year) (kg/day) f use	6.13E3 0.0005 3.1		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Maximum daily site tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not	es/year) e used locally /year) (kg/day) f use influenced by risk management	6.13E3 0.0005 3.1 8.4		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Maximum daily site tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not Local freshwater dilution factors	es/year) e used locally /year) (kg/day) f use influenced by risk management tor	6.13E3 0.0005 3.1 8.4		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Maximum daily site tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not	es/year) e used locally /year) (kg/day) f use influenced by risk management tor	6.13E3 0.0005 3.1 8.4		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Maximum daily site tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not Local freshwater dilution factoral marine water dilution from tonnage water dilution from the continuous release [FD2].	es/year) e used locally /year) (kg/day) f use influenced by risk management tor	6.13E3 0.0005 3.1 8.4 365		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Maximum daily site tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not Local freshwater dilution factoral marine water dilution from tonnage water dilution from the continuous release [FD2].	es/year) e used locally /year) (kg/day) f use influenced by risk management tor actor	6.13E3 0.0005 3.1 8.4 365		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Maximum daily site tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not Local freshwater dilution factoral marine water dilution for Other given operational continuous continuous release [FD2].	es/year) e used locally /year) (kg/day) f use influenced by risk management tor actor	6.13E3 0.0005 3.1 8.4 365		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not Local freshwater dilution factoral marine water dilution for Other given operational continuous release fraction to air from Release fraction to air from Release fraction to air from Release fraction for tonnage (tonnage Annual State Sta	es/year) e used locally /year) (kg/day) f use influenced by risk management tor actor onditions affecting environmental exposi	6.13E3 0.0005 3.1 8.4 365 10 100 100		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not Local freshwater dilution factoral marine water dilution for Other given operational continuous release fraction to air from Release fraction to air from Release fraction to air from Release fraction for tonnage (tonnage Annual State Sta	es/year) e used locally //year) (kg/day) f use influenced by risk management tor actor actor anditions affecting environmental exposurocess (initial release prior to RMM)	6.13E3 0.0005 3.1 8.4 365 10 100 1re		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not Local freshwater dilution factoral marine water dilution for Other given operational continuous release fraction to wasteward RMM)	es/year) e used locally //year) (kg/day) f use influenced by risk management tor actor actor anditions affecting environmental exposurocess (initial release prior to RMM)	6.13E3 0.0005 3.1 8.4 365 10 100 1re		
Fraction of EU tonnage used Regional use tonnage (tonne Fraction of Regional tonnage Annual site tonnage (tonnes Maximum daily site tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not Local freshwater dilution factoral marine water dilution for Other given operational continuous release fraction to wastewate RMM) Release fraction to soil from Release fraction to soil from	es/year) e used locally /year) (kg/day) f use influenced by risk management tor actor onditions affecting environmental exposurations process (initial release prior to RMM) ter from process (initial release prior to RMM)	6.13E3 0.0005 3.1 8.4 365 10 100 100 1re 0.98 0.01		
Fraction of EU tonnage used Regional use tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Annual site tonnage (tonnage Frequency and duration of Continuous release [FD2]. Emission days (days/year) Environmental factors not Local freshwater dilution factoral marine water dilution for Other given operational continuous release fraction to air from Release fraction to wasteware RMM) Release fraction to soil from Technical conditions and recommendations.	es/year) e used locally /year) (kg/day) f use influenced by risk management tor actor actor anditions affecting environmental exposurocess (initial release prior to RMM) ter from process (initial release prior to	6.13E3 0.0005 3.1 8.4 365 10 100 1re 0.98 0.01 0.01 event release		

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

Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].

[TORO].	
Treat air emission to provide a typical removal efficiency of (%)	N/A
Treat onsite wastewater (prior to receiving water discharge) to provide	3.9
the required removal efficiency \geq (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of \geq (%)	

Organisation measures to prevent/limit release from site

Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage	95.5
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	95.5
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) (kg/d)	7.8E1
Assumed domestic sewage treatment plant flow (m ³ /d)	2000

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 [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.6.2. Exposure Estimation

9.6.2.1. Human Health

See Appendix 2.a. & 2.g.

9.6.2.2 Environment

See PETRORISK file - "LocalCSR" worksheet

9.7. Use of Low Boiling Point Naphthas (Gasoline) in Cleaning Agents – Industrial

9.7.1a. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is <u>NOT</u> classified as R45, R46, R62 or R63; (containing less than 0.1% benzene)			
Title	-		
Use in Cleaning Agents			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1, 2, 3, 4, 7, 8a, 8b, 10, 13	
l research categories		Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Categories		4	
Specific Environmental Release Category		ESVOC SpERC 4.4a.v1	
Processes, tasks, activitie	s covered		
		ducts including transfer from storage,	
pouring/unloading from drun	ns or containers. Ex	cposures during mixing/diluting in the preparatory phase	
		hing, dipping, wiping, automated and by hand), related	
equipment cleaning and mai			
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	nanagement measures	
Section 2.1 Control of wo	rker exposure		
Product characteristics	•		
Physical form of product	Liquid, vapour pres	ssure > 10 kPa at STP OC5	
Concentration of substance		e substance in the product up to 100 % (unless stated	
in product	differently) G13	(
Amounts used	Not applicable		
Frequency and duration of		sures up to 8 hours (unless stated differently) G2	
use/exposure	Section daily oxposured up to a manife (united stated uniterating) oz		
Human factors not	Not applicable		
influenced by risk			
management			
Other Operational		ot more than 20°C above ambient temperature, unless	
Conditions affecting	stated differently.	G15. Assumes a good basic standard of occupational	
exposure	hygiene is impleme		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General Measures (skin	Avoid direct skin c	ontact with product. Identify potential areas for indirect	
irritants). G19.		gloves (tested to EN374) if hand contact with	
,	substance likely. C	Clean up contamination/spills as soon as they occur.	
	Wash off skin cont	amination immediately. Provide basic employee	
	training to prevent	/ minimise exposures and to report any skin effects	
	that may develop.	E3	
		on measures such as impervious suits and face shields	
		uring high dispersion activities which are likely to lead	
0000 11:		sol release, e.g. spraying. E4	
CS38 Use in contained	No other specific n	neasures identified. El20.	
systems, CS93 Automated			
process with (semi) closed			
systems.	No other are a sife :	naccina identified FIGO	
CS37 Use in contained	INO other specific n	neasures identified. El20.	
batch processes.			

equipment (from drums or	No other specific measures identified. El20.		
containers). CS44 Cleaning with high	Minimise exposure by partial enclosure of the operation or equipment and		
pressure washers	provide extract ventilation at openings. E60.		
CS39 Equipment cleaning and maintenance	No other specific measures identified. El20.		
CS 14 Bulk transfers	Ensure material transfers are under containment or extract ventilation.		
CS37 Use in contained	E66.		
batch processes. CS93	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. E60.		
Automated process with	provide extract vertilation at openings. Loo.		
(semi) closed systems.			
CS4 Dipping, immersion	Minimise exposure by extracted full enclosu	re for the operation or	
and pouring	equipment. E61.	re for the operation of	
CS42 Cleaning with low-	Provide enhanced general ventilation by me	chanical means F48	
pressure washers.	Tovido cimanoca general ventilation by me	oriamodi modris. L-10.	
CS34 Manual, CS47	Provide enhanced general ventilation by me	echanical means F48	
Cleaning, CS48 Surfaces,	Tovido cimanoca general ventilation by me	oriamodi modris. L-10.	
CS60 No spraying			
CS67 Storage.	No other specific measures identified. El20.		
	the basis for the allocation of the identifie	ed OCs and RMMs is	
contained in Appendices 1			
Section 2.2 Control of env			
Product characteristics			
	3 [PrC3]. Predominantly hydrophobic [PrC4a	1.	
Amounts used		u.	
Fraction of EU tonnage used	d in region	0.1	
	_	5.12E2	
Regional use tonnage (tonna			
Fraction of Regional tonnage	•	0.2	
Annual site tonnage (tonnes/year) 1.0E2			
	Maximum daily site tonnage (kg/day) 5.0E3		
Frequency and duration of	f use		
Continuous release [FD2].			
Emission days (days/year)		20	
Environmental factors not	influenced by risk management		
Local freshwater dilution factor 10			
Local marine water dilution f	actor	100	
Other given operational conditions affecting environmental exposure			
Release fraction to air from process (initial release prior to RMM) 1.0			
Release fraction to wastewater from process (initial release prior to RMM) 0.00003			
	Release fraction to soil from process (initial release prior to RMM)		
	measures at process level (source) to pre	vent release	
Common practices vary acro	Common practices vary across sites thus conservative process release estimates used [TCS1].		
	s and measures to reduce or limit discha		
releases to soil			
Prevent discharge of undisse	olved substance to or recover from wastewat	ter [TCR14]. Risk from	
	lriven by humans via indirect exposure (prima		
	ewage treatment plant, no onsite wastewater	treatment required [TCR9].	
	e a typical removal efficiency of (%)	70	
	or to receiving water discharge) to provide	4.4	
the required removal efficiency ≥ (%)			
	If discharging to domestic sewage treatment plant, provide the required		
onsite wastewater removal e	eniciency of \geq (%)	<u> </u>	

Organisation measures to prevent/limit release from site

Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage	95.5
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	95.5
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) (kg/d)	2.9E4
Assumed domestic sewage treatment plant flow (m ³ /d)	2000

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 [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.7.1b. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as	
R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene)	
Title	
Use in Cleaning Agents	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 8a, 8b
	Further information on the mapping and allocation of
	PROC codes is contained in Table 9.1

Environmental Release Cate	egories 4	
Specific Environmental Release Category ESVOC SpERC 4.4a.v1		
Processes, tasks, activities covered		
Covers the use as a compor incidental exposures during	nent of cleaning products within closed or contained systems including transfer from storage, mixing/diluting in the preparatory phase and quipment cleaning and maintenance.	
See Section 3.		
	ditions and risk management measures	
Section 2.1 Control of wor	rker exposure	
Product characteristics	Line is a second of AOLDs of OTD OOF	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated	
in product Amounts used	differently) G13 Not applicable	
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2	
use/exposure		
Human factors not influenced by risk management	Not applicable	
Other Operational Conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions	
General Measures (skin irritants). G19.	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3	
General Measures (carcinogens). G18.	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 staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.	
CS14 Bulk Transfers	Ensure material transfers are under containment or extract ventilation. E66.	
CS38 Use in contained systems, CS93 Automated process with (semi) closed systems.	Handle substance within a closed system. E47. Wear suitable gloves tested to EN374. PPE15.	
CS45 Filling / preparation of equipment (from drums or containers).	Ensure material transfers are under containment or extract ventilation. E66.	
CS39 Equipment cleaning	Drain down and flush system prior to equipment break-in or maintenance.	

	I		
and maintenance	E55.		
	Retain drain downs in sealed storage pending disposal or for subsequent		
	recycle. ENVT4. Clear spills immediately. C&H13.		
	Wear chemically resistant gloves (tested to	EN374) in combination with	
	'basic' employee training. PPE16.	ENGT 4) III COMBINATION WITH	
CS67 Storage.			
	on the basis for the allocation of the identifi		
contained in Appendices			
Section 2.2 Control of e	nvironmental exposure		
Product characteristics			
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].			
Amounts used			
Fraction of EU tonnage used in region		0.1	
Regional use tonnage (tonnes/year)		5.12E2	
Fraction of Regional tonnage used locally		0.2	
Annual site tonnage (tonnes/year)		1.0E2	
Maximum daily site tonnage (kg/day)		5.0E3	
Frequency and duration of use			
Continuous release [FD2]			
Emission days (days/year)		20	
Environmental factors not influenced by risk management			
Local freshwater dilution factor 10			
Local marine water dilution factor		100	
Other given operational conditions affecting environmental exposure			
Cinci given operational	conditions anothing cirvinonian expect		
Release fraction to air from process (initial release prior to RMM)		1.0	
Release fraction to wastewater from process (initial release prior to		0.00003	
RMM)		0.0000	
Release fraction to soil from process (initial release prior to RMM)		0	
Technical conditions and measures at process level (source) to prevent release			
Common practices vary a	cross sites thus conservative process release	estimates used [TCS1].	
	ons and measures to reduce or limit discha		
releases to soil			
Prevent discharge of undissolved substance to or recover from wastewater [TCR14]. Risk from			
environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TCR1k].			
If discharging to domestic sewage treatment plant, no onsite wastewater Treat air emission to provide a typical removal efficiency of (%)			
		70 4.4	
the required removal effici	prior to receiving water discharge) to provide	4.4	
	sewage treatment plant, provide the required	0	
onsite wastewater removal efficiency of \geq (%)		o a a a a a a a a a a a a a a a a a a a	
	to prevent/limit release from site		
	dge to natural soils [OMS2]. Sludge should be	e incinerated, contained or	
reclaimed [OMS3].		,	
Conditions and measures related to municipal sewage treatment plant			
	oval from wastewater via domestic sewage	95.5	
treatment (%)		05.5	
Total efficiency of removal from wastewater after onsite and offsite		95.5	
(domestic treatment plant) RMMs (%) Maximum allowable site tonnage (M _{Safe}) (kg/d)		2.9E4	
INIAAIITIUITI AIIOWADIE SILE L	onnage (M _{Safe}) (kg/d)	2.354	
Assumed domestic sewage treatment plant flow (m³/d)		2000	
Conditions and measures related to external treatment of waste for o		r disposal	
External treatment and disposal of waste should comply with applicable local and/or national			
1			

regulations [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.7.2. Exposure Estimation

9.7.2.1a. Human Health

See Appendix 2.a. & 2.g.

9.7.2.1b. Human Health

See Appendix 2.b. & 2.g.

9.7.2.2. Environment

See PETRORISK file - "LocalCSR" worksheet

9.8. Use of Low Boiling Point Naphthas (Gasoline) in cleaning agents – Professional

9.8.1. Exposure Scenario

9.8.1. Exposure Scena		
		ng point naphthas (Gasoline) that is <u>NOT</u> classified
as R45, R46, R62 or R63; (Title	containing less the	an 0.1% benzene)
Use in Cleaning Agents		
Use Descriptor		
Sector(s) of Use		22
Process Categories		1, 2, 3, 4, 8a, 8b, 10, 11, 13
Process Categories		Further information on the mapping and allocation of
		PROC codes is contained in Table 9.1
Environmental Release Cate	egories	8a, 8d
Specific Environmental Rele		ESVOC 8.4b.v1
Processes, tasks, activitie		
		ducts including pouring/unloading from drums or
containers: and exposures d	lurina mixina/dilutin	g in the preparatory phase and cleaning activities
(including spraying, brushing		
Assessment Method	, 	,
See Section 3.		
Section 2 Operational con	ditions and risk m	nanagement measures
Section 2.1 Control of wor	rker exposure	
Product characteristics		
Physical form of product	Liquid, vapour pres	ssure > 10 kPa at STP OC5
Concentration of substance		e substance in the product up to 100 % (unless stated
in product	differently) G13	
Amounts used	Not applicable	
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2
use/exposure	NI. C. a. a. P. a. I. I.	
Human factors not	Not applicable	
influenced by risk		
management Other Operational	Assumes use at no	ot more than 20°C above ambient temperature, unless
Conditions affecting		G15. Assumes a good basic standard of occupational
exposure	hygiene is impleme	
Contributing Scenarios		nagement Measures and Operating Conditions
General Measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect
irritants). G19.		gloves (tested to EN374) if hand contact with
,		clean up contamination/spills as soon as they occur.
		amination immediately. Provide basic employee
	<u> </u>	/ minimise exposures and to report any skin effects
	that may develop.	E3
		on measures such as impervious suits and face shields
		uring high dispersion activities which are likely to lead
CS38 Use in contained		sol release, e.g. spraying. E4 ntilation to points where emissions occur. E54.
systems. CS93 Automated	i Tovide extract Ver	manori to points where emissions occur. E34.
process with (semi) closed		
systems.		
CS37 Use in contained	No other specific n	neasures identified. El20.
batch processes.		
CS45 Filling / preparation of	No other specific n	neasures identified. El20.
<u> </u>		

	T			
equipment (from drums or				
containers).				
CS37 Use in contained	Minimise exposure by partial enclosure of the	ne operation or equipment and		
batch processes, CS76	provide extract ventilation at openings. E60			
Semi Automated process.				
(e.g.: Semi automatic				
application of floor care and				
maintenance products).				
CS45 Filling / preparation of	Ensure material transfers are under contain	ment or extract ventilation.		
equipment (from drums or	E66.			
containers)				
CS14 Bulk Transfers.	Ensure material transfers are under contain	ment or extract ventilation.		
	E66.			
CS42 Cleaning with low-	Minimise exposure by extracted full enclosu	re for the operation or		
pressure washers, CS60	equipment. E61.			
No spraying.				
CS34 Manual, CS47	Provide enhanced mechanical ventilation by	v mechanical means, E48.		
Cleaning, CS48 Surfaces,	Tovido officialida modificial voltalation by	y moonamoar moano. E ro.		
CS50 Wiping, CS51				
Rolling, Brushing.				
CS44 Cleaning with high	Provide enhanced mechanical ventilation by	v mechanical means F48		
pressure washers, CS10	Trovide enhanced mechanical ventilation by	y mechanical means. L40.		
Spraying, OC8 Indoor.				
CS67 Storage.	No other specific measures identified. El20.			
	the basis for the allocation of the identific			
		ed OCS and Rivilvis is		
contained in Appendices 1				
Section 2.2 Control of env	rronmental exposure			
Product characteristics				
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a	a].		
Amounts used				
Fraction of EU tonnage used	Fraction of EU tonnage used in region 0.1			
Regional use tonnage (tonne	3.6E2			
<u> </u>				
Fraction of Regional tonnage	<u> </u>	0.0005		
Annual site tonnage (tonnes,	• ,	0.18		
Maximum daily site tonnage	(kg/day)	0.49		
Frequency and duration of	use			
Continuous release [FD2].				
Emission days (days/year)		365		
	influenced by risk management			
Local freshwater dilution fact		10		
Local marine water dilution factor 100				
Other given operational co	onditions affecting environmental exposu	re		
Delega fraction to air from t	process (initial release prior to DMM)	0.03		
Release fraction to air from process (initial release prior to RMM) 0.02				
Release fraction to wastewater from process (initial release prior to RMM) 0.000001				
Release fraction to soil from process (initial release prior to RMM)				
Technical conditions and measures at process level (source) to prevent release				
	oss sites thus conservative process release			
	s and measures to reduce or limit discha	rges, air emissions and		
releases to soil	and the delivery has been as a line in direct own.			
	posure is driven by humans via indirect expo			
	omestic sewage treatment plant, no onsite wa	astewater treatment required		
[TCR9].	a tunical removal officiary of (0/)	INI/A		
	a typical removal efficiency of (%)	N/A		
rreat onsite wastewater (price	or to receiving water discharge) to provide	3.3		

the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of \geq (%)	

Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage	95.5
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	95.5
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) (kg/d)	4.6
Assumed domestic sewage treatment plant flow (m ³ /d)	2000

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 [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or nation regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.8.2. Exposure Estimation

9.8.2.1. Human Health

See Appendix 2.a. & 2.g.

9.8.2.2. Environment



See PETRORISK file – "LocalCSR" worksheet		

9.9. Use of Low Boiling Point Naphthas (Gasoline) in cleaning agents – Consumer

9.9.1. Exposure Scenario

9.9.1. Exposure Scen			
Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is <u>NOT</u> classified as R45, R46, R62 or R63; (containing less than 0.1% benzene)			
Title	(containing	1633 than 0.170 benzene)	
Use in cleaning agents			
Use Descriptor			
Sector(s) of Use		21	
Product Categories		3, 4, 9a, 24, 35, 38	
l Toddot Gategories		Further information on the mapping and allocation of	
		PC codes is contained in Table 9.1	
Environmental Release Ca	tegories	8a 8d	
Specific Environmental Rel		pry ESVOC SpERC 8.4c.v1	
Processes, tasks, activiti	es covered		
		rs arising from the use of substance in household products sold	
		osols, coatings, lubricants and air care products.	
Assessment Method	-	· · · · · · · · · · · · · · · · · · ·	
See Section 3.			
	nditions an	d risk management measures	
		•	
Section 2.1 Control of co	nsumer ex	oosure	
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (Pa)		our pressure > 10 kPa at STP OC5	
Concentration of	Unless other	erwise stated, cover concentrations up to 50% [ConsOC1]	
substance in product			
Amounts used	Unless otherwise stated, covers use amounts up to2760g [ConsOC2]; covers skin contact area up to 857.5cm2 [ConsOC5]		
Frequency and duration of	Unless otherwise stated, covers use frequency up to 4 times per day		
use/exposure	[ConsOC4];	covers exposure up to 8 hours per event [ConsOC14]	
Other Operational		erwise stated assumes use at ambient temperatures	
Conditions affecting		;]; assumes use in a 20 m³ room [ConsOC11]; assumes use	
exposure		ventilation [ConsOC8].	
Product Category	Specific Ri	sk Management Measures and Operating Conditions	
PC3:Air care productsAir	OC	Unless otherwise stated, covers concentrations up to 50%	
care, instant action		[ConsOC1]; covers use up to 365 days/year[ConsOC3];	
(aerosol sprays)		covers use up to 4 times/day of use[ConsOC4]; for each use	
(event, covers use amounts up to 0.1g [ConsOC2]; covers use	
		under typical household ventilation [ConsOC8]; covers use in	
		room size of 20m3[ConsOC11]; for each use event, covers	
		exposure up to 0.25hr/event[ConsOC14];	
	RMM	No specific RMMs identified beyond those OCs stated	
		[ConsRMM15]	
PC3:Air care productsAir	OC	Unless otherwise stated, covers concentrations up to 10%	
care, continuous action		[ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers	
(solid and liquid)		use up to 1 time/on day of use[ConsOC4]; covers skin contact	
		area up to 35.70 cm2 [ConsOC5]; for each use event, covers	
		use amounts up to 0.48g [ConsOC2]; covers use under typical household ventilation [ConsOC8]; covers use in room size of	
		20m3[ConsOC11]; for each use event, covers exposure up to	
		8.00hr/event[ConsOC14];	
	RMM	No specific RMMs identified beyond those OCs stated	
		[ConsRMM15]	
	1		

DC4 Anti-france and da	100	Union of anti-sector of actions are accommoditions on the 40/
PC4_n:Anti-freeze and de-	OC	Unless otherwise stated, covers concentrations up to 1%
icing productsWashing		[ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers
car window		use up to 1 time/on day of use[ConsOC4]; for each use event,
		covers use amounts up to 0.5g [ConsOC2]; Covers use in a
		one car garage (34m3) under typical ventilation [ConsOC10];
		covers use in room size of 34m3[ConsOC11]; for each use
		event, covers exposure up to 0.02hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
	I XIVIIVI	[ConsRMM15]
DC4 niAnti francia and da	00	
PC4_n:Anti-freeze and de-	OC	Unless otherwise stated, covers concentrations up to 10%
icing productsPouring		[ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers
into radiator		use up to 1 time/on day of use[ConsOC4]; covers skin contact
		area up to 428.00 cm2 [ConsOC5]; for each use event, covers
		use amounts up to 2000g [ConsOC2]; Covers use in a one car
		garage (34m3) under typical ventilation [ConsOC10]; covers
		use in room size of 34m3[ConsOC11]; for each use event,
		covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
PC4_n:Anti-freeze and de-	OC	Unless otherwise stated, covers concentrations up to 30%
icing productsLock de-		[ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers
icer	1	use up to 1 time/on day of use[ConsOC4]; covers skin contact
		area up to 214.40 cm2 [ConsOC5]; for each use event, covers
		use amounts up to 4g [ConsOC2]; Covers use in a one car
		garage (34m3) under typical ventilation [ConsOC10]; covers
		use in room size of 34m3[ConsOC11]; for each use event,
		covers exposure up to 0.25hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
	RMM	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
PC9a:Coatings and	OC	Unless otherwise stated, covers concentrations up to 1.5%
paints, fillers putties,		[ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers
thinnersWaterborne latex		use up to 1 time/on day of use[ConsOC4]; covers skin contact
wall paint		area up to 428.75 cm2 [ConsOC5]; for each use event, covers
		use amounts up to 2760g [ConsOC2]; covers use under typical
		household ventilation [ConsOC8]; covers use in room size of
		20m3[ConsOC11]; for each use event, covers exposure up to
		2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
PC9a:Coatings and	OC	Unless otherwise stated, covers concentrations up to 8%
paints, fillers putties,	1	[ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers
thinnersSolvent rich,	1	use up to 1 time/on day of use[ConsOC4]; covers skin contact
high solid, water borne		area up to 428.75 cm2 [ConsOC5]; for each use event, covers
paint		use amounts up to 744g [ConsOC2]; covers use under typical
Pann	1	household ventilation [ConsOC8]; covers use in room size of
	1	
	1	20m3[ConsOC11]; for each use event, covers exposure up to
		2.20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
PC9a:Coatings and	OC	Unless otherwise stated, covers concentrations up to 10%
paints, fillers putties,		[ConsOC1]; covers use up to 2 days/year[ConsOC3]; covers
thinnersAerosol spray	1	use up to 1 time/on day of use[ConsOC4]; for each use event,
can	1	covers use amounts up to 215g [ConsOC2]; Covers use in a
<u> </u>		one car garage (34m3) under typical ventilation [ConsOC10];
	1	covers use in room size of 34m3[ConsOC11]; for each use
	i .	
		event covers exposure up to 0.33hr/ovent[ConsOC14]:
	DNANA	event, covers exposure up to 0.33hr/event[ConsOC14];
	RMM	event, covers exposure up to 0.33hr/event[ConsOC14]; No specific RMMs identified beyond those OCs stated [ConsRMM15]

PC9a:Coatings and	OC	Unless otherwise stated, covers concentrations up to 5%
	OC	
paints, fillers putties,		[ConsOC1]; covers use up to 3 days/year[ConsOC3]; covers
thinnersRemovers		use up to 1 time/on day of use[ConsOC4]; covers skin contact
(paint-, glue-, wall paper-,		area up to 857.50 cm2 [ConsOC5]; for each use event, covers
sealant-remover)		use amounts up to 491g [ConsOC2]; covers use under typical
,		household ventilation [ConsOC8]; covers use in room size of
		20m3[ConsOC11]; for each use event, covers exposure up to
		2.00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
PC24: Lubricants,	OC	Unless otherwise stated, covers concentrations up to 20%
greases, and release		[ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers
productsLiquids		use up to 1 time/on day of use[ConsOC4]; covers skin contact
products Elquids		area up to 468.00 cm2 [ConsOC5]; for each use event, covers
		use amounts up to 2200g [ConsOC2]; Covers use in a one car
		garage (34m3) under typical ventilation [ConsOC10]; covers
		use in room size of 34m3[ConsOC11]; for each use event,
		covers exposure up to 0.17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
PC24: Lubricants,	OC	Unless otherwise stated, covers concentrations up to 20%
	OC	
greases, and release		[ConsOC]; covers use up to 10 days/year[ConsOC3]; covers
productsPastes		use up to 1 time/on day of use[ConsOC4]; covers skin contact
		area up to 468.00 cm2 [ConsOC5]; for each use event, covers
		use amounts up to 34g [ConsOC2]; covers use in room size of
		m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
	I XIVIIVI	[ConsRMM15]
PC24: Lubricants,	OC	
	OC	Unless otherwise stated, covers concentrations up to 15%
greases, and release		[ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers
productsSprays		use up to 1 time/on day of use[ConsOC4]; covers skin contact
		area up to 428.75 cm2 [ConsOC5]; for each use event, covers
		use amounts up to 73g [ConsOC2]; covers use under typical
		household ventilation [ConsOC8]; covers use in room size of
		20m3[ConsOC11]; for each use event, covers exposure up to
		0.17hr/event[ConsOC14];
	RMM	
	KIVIIVI	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
PC35:Washing and	OC	Unless otherwise stated, covers concentrations up to 5%
cleaning products		[ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers
(including solvent based		use up to 1 time/on day of use[ConsOC4]; covers skin contact
products)Laundry and		area up to 857.50 cm2 [ConsOC5]; for each use event, covers
dish washing products		use amounts up to 15g [ConsOC2]; covers use under typical
distrivasting products		household ventilation [ConsOC8]; covers use in room size of
		20m3[ConsOC11]; for each use event, covers exposure up to
		0.50hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
PC35:Washing and	OC	Unless otherwise stated, covers concentrations up to 5%
cleaning products		[ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers
(including solvent based		use up to 1 time/on day of use[ConsOC4]; covers skin contact
products)Cleaners,		area up to 857.50 cm2 [ConsOC5]; for each use event, covers
liquids (all purpose		use amounts up to 27g [ConsOC3]; covers use under typical
cleaners, sanitary		household ventilation [ConsOC8]; covers use in room size of
products, floor cleaners,		20m3[ConsOC11]; for each use event, covers exposure up to
glass cleaners, carpet		0.33hr/event[ConsOC14];
cleaners, metal cleaners)	RMM	No specific RMMs identified beyond those OCs stated
		[ConsRMM15]
PC35:Washing and	OC	Unless otherwise stated, covers concentrations up to 15%
cleaning products		[ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers
	h	- ' ' ' ' '

	1		
(including solvent based		use up to 1 time/on day of use[C	
products)Cleaners,		area up to 428.00 cm2 [ConsOC	
trigger sprays (all purpose		use amounts up to 35g [ConsOC	
cleaners, sanitary		household ventilation [ConsOC8	
products, glass cleaners)		20m3[ConsOC11]; for each use	event, covers exposure up to
	DNANA	0.17hr/event[ConsOC14];	
	RMM	No specific RMMs identified bey	ond those OCs stated
DC20 n. Walding and	OC	[ConsRMM15]	accontrations up to 200/
PC38_n: Welding and	OC	Unless otherwise stated, covers	
soldering products, flux productsNOTE,		[ConsOC1]; covers use up to 36 use up to 1 time/on day of use[C	
n_assessment not in TRA		covers use amounts up to 12g [6	ConsOC2]: covers use under
in_uoocoomenenen in inv		typical household ventilation [Co	
		size of 20m3[ConsOC11]; for ea	ich use event. covers exposure
		up to 1.00hr/event[ConsOC14];	
	RMM	No specific RMMs identified bey	ond those OCs stated
		[ConsRMM15]	
Additional information or	the basis	for the allocation of the identifi	ed OCs and RMMs is
contained in Appendices			
Section 2.2 Control of er	vironment	al exposure	
Product characteristics			
•	CB [PrC3]. F	Predominantly hydrophobic [PrC4	a]
Amounts used			
Fraction of EU tonnage use	ed in region		0.1
Regional use tonnage (ton			8.54E2
Fraction of Regional tonna	•	ally	0.0005
Annual site tonnage (tonne			0.43
Maximum daily site tonnag	, ,		1.2
Frequency and duration	of use		
Continuous release [FD2].			
Emission days (days/year) 365			365
Environmental factors no	t influence	d by risk management	
Local freshwater dilution fa			10
Local marine water dilution			100
Other given operational of	onditions a	affecting environmental exposu	ire
Delegas fraction to sinfrance		itial palaces prior to DMMA	10.05
Release fraction to air from process (initial release prior to RMM)			0.95
Release fraction to wastewater from process (initial release prior to 0.025			0.025
,	RMM) Release fraction to sail from process (initial release prior to RMM) 0.035		
Release fraction to soil from process (initial release prior to RMM) 0.025 Conditions and measures related to municipal sewage treatment plant			
		riven by humans via indirect expo	
[STP71k].	poduro is u	Tron by hamano via manoot expe	(primarily initialation)
	val from wa	stewater via domestic sewage	95.5
treatment (%)			
Maximum allowable site to	nnage (M _{Safe}	e) (kg/d)	11
			2000
		, ,	2000
		external treatment of waste for	•
regulations [ETW3].	Josai oi was	ste should comply with applicable	local and/or national
	s related to	external recovery of waste	
		te should comply with applicable	local and/or national
regulations [ERW1].		and the same of the same	
	the basis	for the allocation of the indenti	fied OCs and RMMs is
contained in Petrorisk file	9		

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC Report #107 and the Chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these sources, then they are indicated.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented. G39.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.9.2. Exposure Estimation

9.9.2.1. Human Health

See Appendix 2.e. & 2.g.

9.9.2.2. Environment

See PETRORISK file - "LocalCSR" worksheet

9.10. Use of Low Boiling Point Naphthas (Gasoline) as a fuel – Industrial

9.10.1a. Exposure Scenario

9.10.1a. Exposure Sce			
		ng point naphthas (Gasoline) that is <u>NOT</u> classified	
as R45, R46, R62 or R63; (containing less tha	an 0.1% benzene)	
Title			
Use as a fuel			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1, 2, 3, 8a, 8b, 16	
		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate		7	
Specific Environmental Rele	• •	ESVOC SpERC 7.12a.v1	
Processes, tasks, activitie			
		additive components) and includes activities associated	
with its transfer, use, equipm	nent maintenance a	nd handling of waste.	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	anagement measures	
Section 2.1 Control of wor	rker exposure		
Product characteristics			
Physical form of product		ssure > 10 kPa at STP OC5	
Concentration of substance		substance in the product up to 100 % (unless stated	
in product	differently) G13		
Amounts used	Not applicable		
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2	
use/exposure			
Human factors not	Not applicable		
influenced by risk			
management			
Other Operational		ot more than 20°C above ambient temperature, unless	
Conditions affecting		G15. Assumes a good basic standard of occupational	
exposure	hygiene is impleme		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General Measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect	
irritants). G19.		gloves (tested to EN374) if hand contact with	
	substance likely. C	lean up contamination/spills as soon as they occur.	
	Wash off skin cont	amination immediately. Provide basic employee	
		/ minimise exposures and to report any skin effects	
	that may develop.		
CS15 General exposures	No specific measu	res identified. El18.	
(closed systems).			
CS502 Bulk closed	No specific measu	res identified. El18.	
unloading			
CS8 Drum/batch transfers	No specific measu	res identified. El18.	
CS507 Refuelling	No specific measu	res identified. El18.	
CS508 Refuelling aircraft	Ensure material transfers are under containment or extract ventilation. E66.		
GEST_12I Use as a fuel,	No specific measu	res identified. EI18.	

	T			
CS107 (closed systems)				
CS5 Equipment				
maintenance	No specific measures identified. El18.			
CS67 Storage. No specific measures identified. El18. Additional information on the basis for the allocation of the identified OCs and RMMs is				
contained in Appendices 1		d CO3 and Rimins 13		
Section 2.2 Control of env				
Product characteristics				
	B [PrC3]. Predominantly hydrophobic [PrC4a	1.		
Amounts used	i real in the second se	.1.		
Fraction of EU tonnage used	d in region	0.1		
Regional use tonnage (tonnage	<u> </u>	1.4E6		
Fraction of Regional tonnage		1		
Annual site tonnage (tonnes	•	1.4E6		
Maximum daily site tonnage	• ,	4.6E6		
Frequency and duration of		4.000		
Continuous release [FD2].	i use			
Emission days (days/year)		300		
	influenced by risk management	000		
Local freshwater dilution fac		10		
Local marine water dilution f		100		
	onditions affecting environmental exposur			
g sporanoma.				
Release fraction to air from	process (initial release prior to RMM)	0.0025		
Release fraction to wastewa	ter from process (initial release prior to	0.00001		
RMM)				
Release fraction to soil from	process (initial release prior to RMM)	0		
Technical conditions and	measures at process level (source) to pre	vent release		
	oss sites thus conservative process release e			
	ns and measures to reduce or limit discha	rges, air emissions and		
releases to soil		(' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '		
	posure is driven by humans via indirect expos			
[TCR1k]. If discharging to do	omestic sewage treatment plant, no onsite wa	astewater treatment required		
	e a typical removal efficiency of (%)	99.4		
	or to receiving water discharge) to provide	76.9		
the required removal efficier	- · · · · · · · · · · · · · · · · · · ·			
	ewage treatment plant, provide the required	0		
onsite wastewater removal efficiency of ≥ (%)				
	prevent/limit release from site			
Do not apply industrial sludg reclaimed [OMS3].	ge to natural soils [OMS2]. Sludge should be	incinerated, contained or		
Conditions and measures	related to municipal sewage treatment pla	ant		
		lo		
Estimated substance removal from wastewater via domestic sewage 95.5 treatment (%)				
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)				
Maximum allowable site tonnage (M _{Safe}) (kg/d) 4.6E6				
Assumed domestic sewage treatment plant flow (m³/d) 2000				
Conditions and measures	related to external treatment of waste for	disposal		
Combustion emissions limite considered in regional expos	ed by required exhaust emission controls [ET sure assessment [ETW2].	W1]. Combustion emissions		
	related to external recovery of waste			
	d during use and no waste of the substance is	s generated [ERW3].		
L Company of the Comp				

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.10.1b. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene)		
Title		
Use as a fuel		
Use Descriptor		
Sector(s) of Use	3	
Process Categories	1, 2, 3, 8a, 8b, 16 Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Categories	7	
Specific Environmental Release Category	ESVOC SpERC 7.12a.v1	
Processes, tasks, activities covered		
Covers the use as a fuel (or fuel additives an	nd additive components) within closed or contained	

Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.

Assessment Method

See Section 3.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure				
Product characteristics				
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5			
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated			
in product	differently) G13			
Amounts used	Not applicable			
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2			

Contributing Scenarios General Measures (skin irritants). G19. Specific Risk Management Measures and Operating Conditions (skin irritants). G19. 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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3 General Measures (carcinogens). G18. General Measures (carcinogens). G18. General Measures (carcinogens). G18. General Measures (carcinogens). G18. Where there is potential of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear translines prior to breaking contaminent. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised st provide specific activity training to operators to minimise exposures; we suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20 Ensure material transfers are under containment or extract ventilation. E66. CS502 Bulk closed unloading Ensure material transfers are under containment or extract ventilation. E66. CS507 Refuelling Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilat	Human factors not influenced by risk management	Not applicable
General Measures (skin irritants). G19. Avoid direct skin contact with product. Identify potential areas for indiring skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3 General Measures (carcinogens). G18. General Measures (carcinogens). G18. 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 translines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised st provide specific activity training to operators to minimise exposures; we suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified to certain contributing scenarios; clear up spills immediately and dispose wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20. Ensure material transfers are under containment or extract ventilation. E66. CS507 Refuelling CS507 Refuelling CS508 Refuelling aircraft E66. Ensure material transfers are under containment or extract ventilation. E66. CS15 General exposures (closed systems) CS515 General exposures (closed systems) CS39 Equipment cleaning and maintenance. Provide a good standard of general ventilation is means air is supplied or removed by a powered fan. E1. Handle substance within closed systems. E47. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is fredors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.	Other Operational Conditions affecting	
irritants). G19. skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3 General Measures (carcinogens). G18. General Measures (carcinogens). G18. 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 trans lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised st provide specific activity training to operators to minimise exposures; w suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified fo certain contributing scenarios; clear up spills immediately and dispose wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20. Ensure material transfers are under containment or extract ventilation. E66. CS507 Refuelling Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. Secondary and maintenance. E650. E751 21 Use as a fuel, C5107 (closed systems) C539 Equipment cleaning and maintenance. Drain down system prior to equipment brea	Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
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 transitines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised st provide specific activity training to operators to minimise exposures; w suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20. Ensure material transfers are under containment or extract ventilation. E66. CS8D Turm/batch transfers Ensure material transfers are under containment or extract ventilation. E66. CS507 Refuelling Ensure material transfers are under containment or extract ventilation. E66. CS508 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS508 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS508 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS508 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS509 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS509 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS509 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS509 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS509 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS60 Storage provides a		substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects
provide specific activity training to operators to minimise exposures; w suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified fo certain contributing scenarios; clear up spills immediately and dispose wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20. CS502 Bulk closed Insure material transfers are under containment or extract ventilation. E66. CS8 Drum/batch transfers Ensure material transfers are under containment or extract ventilation. E66. CS507 Refuelling Ensure material transfers are under containment or extract ventilation. E66. CS508 Refuelling aircraft E66. CS508 Refuelling aircraft E66. CS15 General exposures (closed systems) Handle substance within a closed system. E47. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Handle substance within closed systems. E47. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination wit basic employee training. PPE16. CS67 Storage Total Covernation of the covernation of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination wit basic employee training. PPE16. CS67 Storage		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
Consider the need for risk based health surveillance. G20. CS502 Bulk closed unloading CS8 Drum/batch transfers Ensure material transfers are under containment or extract ventilation. E66. CS507 Refuelling Ensure material transfers are under containment or extract ventilation. E66. CS508 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS508 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS15 General exposures (closed systems) CS15 General exposures (row a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. GEST_12I Use as a fuel, CS107 (closed systems) CS39 Equipment cleaning and maintenance. Drain down system prior to equipment break-in or maintenance. E65. Retain drain downs in sealed storage pending disposal or for subsequivecycle. ENVT4. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination wit basic employee training. PPE16. CS67 Storage Store substance within a closed system. E84. Provide a good standard of general ventilation. Natural ventilation is fr		contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of
unloading		
CS8 Drum/batch transfers Ensure material transfers are under containment or extract ventilation. E66. CS507 Refuelling Ensure material transfers are under containment or extract ventilation. E66. CS508 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS15 General exposures (closed systems) Handle substance within a closed system. E47. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. GEST_12I Use as a fuel, CS107 (closed systems) CS39 Equipment cleaning and maintenance. Drain down system prior to equipment break-in or maintenance. E65. Retain drain downs in sealed storage pending disposal or for subsequincycle. ENVT4. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination wit basic' employee training. PPE16. CS67 Storage Ensure material transfers are under containment or extract ventilation. E66. Ensure material transfers are under containment or extract ventilation. E66. Provide a good standard of general ventilation. Natural ventilation wit basic' employee training. PPE16. CS67 Storage Store substance within a closed system. E84. Provide a good standard of general ventilation. Natural ventilation is fr		Ensure material transfers are under containment or extract ventilation.
CS508 Refuelling aircraft Ensure material transfers are under containment or extract ventilation. E66. CS15 General exposures (closed systems) Handle substance within a closed system. E47. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Handle substance within closed systems. E47. CS107 (closed systems) CS39 Equipment cleaning and maintenance. Drain down system prior to equipment break-in or maintenance. E65. Retain drain downs in sealed storage pending disposal or for subsequ recycle. ENVT4. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination wit basic' employee training. PPE16. CS67 Storage Store substance within a closed system. E84. Provide a good standard of general ventilation. Natural ventilation is fr		Ensure material transfers are under containment or extract ventilation.
CS15 General exposures (closed systems) Handle substance within a closed system. E47. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. GEST_12I Use as a fuel, CS107 (closed systems) CS39 Equipment cleaning and maintenance. Drain down system prior to equipment break-in or maintenance. E65. Retain drain downs in sealed storage pending disposal or for subsequ recycle. ENVT4. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination wit 'basic' employee training. PPE16. CS67 Storage Store substance within a closed system. E84. Provide a good standard of general ventilation. Natural ventilation is fr		
(closed systems) Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. GEST_12I Use as a fuel, CS107 (closed systems) CS39 Equipment cleaning and maintenance. Drain down system prior to equipment break-in or maintenance. E65. Retain drain downs in sealed storage pending disposal or for subsequ recycle. ENVT4. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is fr doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination wit 'basic' employee training. PPE16. CS67 Storage Store substance within a closed system. E84. Provide a good standard of general ventilation. Natural ventilation is fr	CS508 Refuelling aircraft	E66.
GEST_12I Use as a fuel, CS107 (closed systems) CS39 Equipment cleaning and maintenance. Drain down system prior to equipment break-in or maintenance. E65. Retain drain downs in sealed storage pending disposal or for subsequencycle. ENVT4. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is frequencycle or removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination with basic employee training. PPE16. CS67 Storage Store substance within a closed system. E84. Provide a good standard of general ventilation. Natural ventilation is frequency.		Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or
CS39 Equipment cleaning and maintenance. Drain down system prior to equipment break-in or maintenance. E65. Retain drain downs in sealed storage pending disposal or for subseque recycle. ENVT4. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is frequency doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination with basic employee training. PPE16. CS67 Storage Store substance within a closed system. E84. Provide a good standard of general ventilation. Natural ventilation is frequency.		
removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination wit 'basic' employee training. PPE16. CS67 Storage Store substance within a closed system. E84. Provide a good standard of general ventilation. Natural ventilation is fr	CS39 Equipment cleaning	Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Provide a good standard of general ventilation. Natural ventilation is from
Provide a good standard of general ventilation. Natural ventilation is fr		removed by a powered fan. E1. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16.
removed by a powered fan. E1. Additional information on the basis for the allocation of the identified OCs and RMMs is		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. E1.

contained in Annandices 1 to 2	
contained in Appendices 1 to 3 Section 2.2 Control of environmental exposure	
Product characteristics	
	<u></u>
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a	1].
Amounts used	I
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.4E6
Fraction of Regional tonnage used locally	1
Annual site tonnage (tonnes/year)	1.4E6
Maximum daily site tonnage (kg/day)	4.6E6
Frequency and duration of use	
Continuous release [FD2].	I
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposu	re
Delegas fraction to air from process (initial relation minute DAMA)	0.0025
Release fraction to air from process (initial release prior to RMM)	0.0025
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to pre	vent release
Common practices vary across sites thus conservative process release ϵ	
Technical onsite conditions and measures to reduce or limit dischareleases to soil	rges, air emissions and
Risk from environmental exposure is driven by humans via indirect expos	sure (primarily inhalation)
[TCR1k]. If discharging to domestic sewage treatment plant, no onsite was	
[TCR9].	actoriator trodument required
Treat air emission to provide a typical removal efficiency of (%)	99.4
Treat onsite wastewater (prior to receiving water discharge) to provide	76.9
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be	incinerated, contained or
reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment pla	nnt
Conditions and measures related to municipal sewage treatment pla	arit
Estimated substance removal from wastewater via domestic sewage	95.5
treatment (%)	00.0
Total efficiency of removal from wastewater after onsite and offsite	95.5
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) (kg/d)	4.6E6
Assumed domestic sewage treatment plant flow (m³/d)	2000
Conditions and measures related to external treatment of waste for	disposal
Combustion emissions limited by required exhaust emission controls [ET	
considered in regional exposure assessment [ETW2].	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is	
Additional information on the basis for the allocation of the indentif	ied OCs and RMMs is
contained in Petrorisk file	
Section 3 Exposure Estimation	
3.1. Health The ECETOC TRA tool has been used to estimate workplace exposures	unless otherwise indicated
The Locator that tool has been used to estimate workplace exposures	unicas otnerwise mulcateu.

G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.10.2. Exposure Estimation

9.10.2.1a. Human Health

See Appendix 2.a. & 2.g.

9.10.2.1b. Human Health

See Appendix 2.b. & 2.g.

9.10.2.2. Environment

See PETRORISK file - "LocalCSR" worksheet

9.11. Use of Low Boiling Point Naphthas (Gasoline) as a fuel – Professional

9.11.1a. Exposure Scenario

9.11.1a. Exposure Sce				
Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is <u>NOT</u> classified				
as R45, R46, R62 or R63; (containing less than 0.1% benzene)				
Title				
Use as a fuel				
Use Descriptor				
Sector(s) of Use		22		
Process Categories		1, 2, 3, 8a, 8b, 16		
		Further information on the mapping and allocation of		
PROC codes is contained in Table 9.1				
Environmental Release Cate		9a, 9b		
Specific Environmental Rele	ase Category	ESVOC SpERC 9.12b.v1		
Processes, tasks, activitie	s covered			
Covers the use as a fuel (or	fuel additives and a	additive components) and includes activities associated		
with its transfer, use, equipm	nent maintenance a	nd handling of waste.		
Assessment Method				
See Section 3.				
Section 2 Operational con	ditions and risk m	nanagement measures		
		•		
Section 2.1 Control of wo	rker exposure			
Product characteristics				
Physical form of product	Liquid, vapour pres	ssure > 10 kPa at STP OC5		
Concentration of substance	Covers percentage	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13			
Amounts used	Not applicable			
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2			
use/exposure				
Human factors not	Not applicable			
influenced by risk				
management				
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless			
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational			
exposure	hygiene is implemented G1.			
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions			
General Measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect		
irritants). G19.		gloves (tested to EN374) if hand contact with		
	substance likely. Clean up contamination/spills as soon as they occur.			
	Wash off skin contamination immediately. Provide basic employee			
	training to prevent / minimise exposures and to report any skin effects			
	that may develop. E3			
CS15 General exposures	No other specific measures identified. El20.			
(closed systems).				
CS66 Preparation of	No other specific measures identified. El20.			
material for application +	· ·			
CS29 Mixing operations				
(closed systems).				
CS502 Bulk closed	No other specific measures identified. El20.			
unloading				
CS8 Drum/batch transfers	No other specific measures identified. El20.			
CS507 Refuelling	No other specific measures identified. El20.			
GEST_12I Use as a fuel,	No other specific measures identified. El20.			
CS107 (closed systems)				

maintenance CS67 Storage Additional information on the basis of contained in Appendices 1 to 3 Section 2.2 Control of environmental Product characteristics Substance is complex UVCB [PrC3]. Pamounts used Fraction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used local Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions and Release fraction to air from process (information of the process of th	redominantly hydrophobic [PrC4a] ally d by risk management affecting environmental exposur atial release prior to RMM) access (initial release prior to	D.1 1.19E6 0.0005 5.9E2 1.6E3 365			
CS67 Storage Additional information on the basis for contained in Appendices 1 to 3 Section 2.2 Control of environmental Product characteristics Substance is complex UVCB [PrC3]. Pamounts used Fraction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used local Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions and Release fraction to air from process (infinitely and process) Release fraction to soil from process (infinitely and process) Common practices vary across sites the Technical onsite conditions and measures are leases to soil	management supervision controls. pecific measures identified. El20. for the allocation of the identified. Il exposure redominantly hydrophobic [PrC4a] ally d by risk management ffecting environmental exposur stial release prior to RMM) pocess (initial release prior to	PPE18. d OCs and RMMs is 0.1 1.19E6 0.0005 5.9E2 1.6E3 365 10 100 e			
Additional information on the basis for contained in Appendices 1 to 3 Section 2.2 Control of environmental Product characteristics Substance is complex UVCB [PrC3]. Pamounts used Fraction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used local Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions and Release fraction to air from process (initive Release fraction to soil from process (interpretational conditions and measures and conditions and measures are common practices vary across sites the Technical onsite conditions and measures releases to soil	pecific measures identified. El20. For the allocation of the identified of the allocation of the identified of the ident	0.1 1.19E6 0.0005 5.9E2 1.6E3 365			
Additional information on the basis of contained in Appendices 1 to 3 Section 2.2 Control of environmental Product characteristics Substance is complex UVCB [PrC3]. Parametric Praction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used local Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions and Release fraction to air from process (initive Release fraction to soil from process (interchnical conditions and measures and conditions and measures are common practices vary across sites the Technical onsite conditions and measures releases to soil	redominantly hydrophobic [PrC4a] Illy d by risk management Iffecting environmental exposur Itial release prior to RMM) Docess (initial release prior to	0.1 1.19E6 0.0005 5.9E2 1.6E3 365			
contained in Appendices 1 to 3 Section 2.2 Control of environmental Product characteristics Substance is complex UVCB [PrC3]. Parametric Praction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used local Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Cother given operational conditions and Release fraction to wastewater from process (infection of the process of the pr	redominantly hydrophobic [PrC4a] ally d by risk management affecting environmental exposur atial release prior to RMM) access (initial release prior to	0.1 1.19E6 0.0005 5.9E2 1.6E3 365			
Product characteristics Substance is complex UVCB [PrC3]. P Amounts used Fraction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used local Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions and Release fraction to wastewater from process (interpretation of the process of t	redominantly hydrophobic [PrC4a] llly d by risk management ffecting environmental exposur itial release prior to RMM) pocess (initial release prior to	0.1 1.19E6 0.0005 5.9E2 1.6E3 365			
Product characteristics Substance is complex UVCB [PrC3]. P Amounts used Fraction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used local Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Cother given operational conditions and Release fraction to wastewater from process (initial Release fraction to soil from process (information of the conditions and measures and conditions and measures are common practices vary across sites the conditions and measures are leases to soil	redominantly hydrophobic [PrC4a] llly d by risk management ffecting environmental exposur itial release prior to RMM) pocess (initial release prior to	0.1 1.19E6 0.0005 5.9E2 1.6E3 365			
Substance is complex UVCB [PrC3]. P Amounts used Fraction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used loca Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions a Release fraction to air from process (ini Release fraction to soil from process (ini Technical conditions and measures a Common practices vary across sites the Technical onsite conditions and measures releases to soil	d by risk management Iffecting environmental exposur Itial release prior to RMM) Docess (initial release prior to	0.1 1.19E6 0.0005 5.9E2 1.6E3 365			
Amounts used Fraction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used local Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions and Release fraction to air from process (initive Release fraction to soil from process (interpretational conditions and measures and conditions and measures are common practices vary across sites the Technical onsite conditions and measureleases to soil	d by risk management Iffecting environmental exposur Itial release prior to RMM) Docess (initial release prior to	0.1 1.19E6 0.0005 5.9E2 1.6E3 365			
Fraction of EU tonnage used in region Regional use tonnage (tonnes/year) Fraction of Regional tonnage used loca Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions at Release fraction to air from process (initial Release fraction to soil from process (interpretational conditions and measures at Common practices vary across sites the Technical onsite conditions and measureleases to soil	d by risk management Iffecting environmental exposure itial release prior to RMM) Docess (initial release prior to	1.19E6 0.0005 5.9E2 1.6E3 365 10 100 e			
Regional use tonnage (tonnes/year) Fraction of Regional tonnage used loca Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions a Release fraction to air from process (ini Release fraction to wastewater from process (ini Release fraction to soil from process (ini Technical conditions and measures a Common practices vary across sites the Technical onsite conditions and measures releases to soil	d by risk management Iffecting environmental exposure itial release prior to RMM) Docess (initial release prior to	1.19E6 0.0005 5.9E2 1.6E3 365 10 100 e			
Fraction of Regional tonnage used local Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions and Release fraction to wastewater from process (interpretation of the process	d by risk management Iffecting environmental exposure itial release prior to RMM) Docess (initial release prior to	0.0005 5.9E2 1.6E3 365 10 100 e			
Annual site tonnage (tonnes/year) Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions at Release fraction to air from process (init Release fraction to wastewater from process (in Release fraction to soil from process (in Technical conditions and measures at Common practices vary across sites the Technical onsite conditions and measureleases to soil	d by risk management Iffecting environmental exposure itial release prior to RMM) Docess (initial release prior to	5.9E2 1.6E3 365 10 100 e			
Maximum daily site tonnage (kg/day) Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions at Release fraction to air from process (init Release fraction to wastewater from process (init Release fraction to soil from process (interpretation of the process of the proc	itial release prior to RMM) ocess (initial release prior to	1.6E3 365 10 100 e 0.01			
Frequency and duration of use Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions a Release fraction to air from process (initive Release fraction to wastewater from process (interpretation of the process fraction to soil from process (interpretation of the process fraction of the process fraction of the process (interpretation of the process fraction of the process (interpretation of the process of the	itial release prior to RMM) ocess (initial release prior to	365 10 100 e 0.01			
Continuous release [FD2]. Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions at Release fraction to air from process (init Release fraction to wastewater from process (in Release fraction to soil from process (in Technical conditions and measures at Common practices vary across sites the Technical onsite conditions and measureleases to soil	itial release prior to RMM) ocess (initial release prior to	10 100 e 0.01			
Emission days (days/year) Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions at Release fraction to air from process (init Release fraction to wastewater from process (in Release fraction to soil from process (in Technical conditions and measures at Common practices vary across sites the Technical onsite conditions and measureleases to soil	itial release prior to RMM) ocess (initial release prior to	10 100 e 0.01			
Environmental factors not influenced Local freshwater dilution factor Local marine water dilution factor Other given operational conditions at Release fraction to air from process (init Release fraction to wastewater from process (init Release fraction to soil from process (init Release fraction to soil from process (init Technical conditions and measures at Common practices vary across sites the Technical onsite conditions and measures to soil	itial release prior to RMM) ocess (initial release prior to	10 100 e 0.01			
Local freshwater dilution factor Local marine water dilution factor Other given operational conditions a Release fraction to air from process (ini Release fraction to wastewater from pro RMM) Release fraction to soil from process (in Technical conditions and measures a Common practices vary across sites the Technical onsite conditions and measures releases to soil	itial release prior to RMM) ocess (initial release prior to	0.01			
Local marine water dilution factor Other given operational conditions a Release fraction to air from process (init Release fraction to wastewater from process (in Release fraction to soil from process (in Release fraction to soil from process (in Technical conditions and measures a Common practices vary across sites the Technical onsite conditions and measureleases to soil	itial release prior to RMM) ocess (initial release prior to	0.01			
Release fraction to air from process (inited Release fraction to wastewater from process (in RMM) Release fraction to soil from process (in Technical conditions and measures and Common practices vary across sites the Technical onsite conditions and measures to soil	itial release prior to RMM) ocess (initial release prior to	0.01			
Release fraction to air from process (inited Release fraction to wastewater from process (in RMM) Release fraction to soil from process (in Technical conditions and measures and Common practices vary across sites the Technical onsite conditions and measures to soil	itial release prior to RMM) ocess (initial release prior to	0.01			
Release fraction to wastewater from process (IRMM) Release fraction to soil from process (IRME) Rehnical conditions and measures and measures are common practices vary across sites the rechnical onsite conditions and measureleases to soil	ocess (initial release prior to				
RMM) Release fraction to soil from process (in Technical conditions and measures a Common practices vary across sites the Technical onsite conditions and measureleases to soil		0.00001			
Technical conditions and measures and common practices vary across sites the Technical onsite conditions and measureleases to soil	'''				
Common practices vary across sites the Technical onsite conditions and mea releases to soil	Release fraction to soil from process (initial release prior to RMM) 0.00001				
Technical onsite conditions and mea releases to soil	Technical conditions and measures at process level (source) to prevent release				
Technical onsite conditions and mea releases to soil	us conservative process release e	stimates used [TCS1].			
Risk from environmental exposure is dr	iven by humans via indirect expos	ure (primarily inhalation)			
[TCR1k]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].					
Treat air emission to provide a typical removal efficiency of (%) N/A					
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)					
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)					
Organisation measures to prevent/lir	mit release from site				
Do not apply industrial sludge to natura reclaimed [OMS3].					
Conditions and measures related to	municipal sewage treatment pla	int			
Estimated substance removal from was treatment (%)	stewater via domestic sewage	95.5			
Fotal efficiency of removal from wastewater after onsite and offsite domestic treatment plant) RMMs (%)					
Maximum allowable site tonnage (M _{Safe}) (kg/d) 1.5E4					
Assumed domestic sewage treatment plant flow (m³/d) 2000					
Conditions and measures related to external treatment of waste for disposal					
Combustion emissions limited by requir considered in regional exposure assess		W1]. Combustion emissions			
Conditions and measures related to					
This substance is consumed during use	external recovery of waste				

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.11.1b. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as				
R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene)				
Title				
Use as a fuel				
Use Descriptor				
Sector(s) of Use	22			
Process Categories	1, 2, 3, 8a, 8b, 16			
-	Further information on the mapping and allocation of			
	PROC codes is contained in Table 9.1			
Environmental Release Categories 9a, 9b				
Specific Environmental Release Category ESVOC SpERC 9.12b.v1				
Processes, tasks, activities covered				
Covers the use as a fuel (or fuel additives and additive components) within closed or contained				

Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.

Assessment Method

See Section 3.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure				
Product characteristics				
Physical form of product	Liquid, vapour pressure > 10 kPa at STP OC5			
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated			
in product	differently) G13			
Amounts used	Not applicable			
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2			

Human factors not influenced by risk management	Not applicable			
	1 2000			
Other Operational Conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.			
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions			
General Measures (skin irritants). G19.	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3			
General Measures (carcinogens). G18.	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 staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.			
	Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance. G20.			
CS15 General exposures (closed systems), OC9 Outdoor.	Handle substance within a closed system. E47.			
CS502 Bulk closed unloading	Ensure material transfers are under containment or extract ventilation. E66 .			
CS8 Drum/batch transfers	Ensure material transfers are under containment or extract ventilation. E66 .			
CS507 Refuelling	Ensure material transfers are under containment or extract ventilation. E66 .			
GEST_12I Use as a fuel, CS107 (closed systems)	Handle substance within closed systems. E47.			
CS5 Equipment maintenance	Drain down system prior to equipment break-in or maintenance. E65. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. 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. E1. Ensure operatives are trained to minimise exposures. El19.			
CS67 Storage.	Store substance within a closed system. E84. 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. E1.			
Additional information on the basis for the allocation of the identified OCs and RMMs is contained in Appendices 1 to 3				
Section 2.2 Control of env				
Product characteristics				
FIGURE CHAIACTERSTICS				

Cultotongo io comploy III/CD [DrC01]. Drodomin authorizante de la ID-04-	.1				
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a	IJ.				
Amounts used					
Fraction of EU tonnage used in region	0.1				
Regional use tonnage (tonnes/year)	1.19E6				
Fraction of Regional tonnage used locally 0.0005					
Annual site tonnage (tonnes/year)	5.9E2				
Maximum daily site tonnage (kg/day)	1.6E3				
Frequency and duration of use					
Continuous release [FD2].					
Emission days (days/year)	365				
Environmental factors not influenced by risk management	1				
Local freshwater dilution factor	10				
Local marine water dilution factor	100				
Other given operational conditions affecting environmental exposu					
Strong operational containing and an acting an acting an acting an acting an acting an acting					
Release fraction to air from process (initial release prior to RMM)	0.01				
Release fraction to wastewater from process (initial release prior to RMM)	0.00001				
Release fraction to soil from process (initial release prior to RMM)	0.00001				
Technical conditions and measures at process level (source) to pre					
Common practices vary across sites thus conservative process release e					
Technical onsite conditions and measures to reduce or limit discha					
releases to soil	3 -1, 11 11 11 11 11 11 11 11 11 11 11 11 1				
Risk from environmental exposure is driven by humans via indirect expos	sure (primarily inhalation)				
[TCR1k]. If discharging to domestic sewage treatment plant, no onsite wa [TCR9].					
Treat air emission to provide a typical removal efficiency of (%)	N/A				
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)	3.4				
If discharging to domestic sewage treatment plant, provide the required	0				
onsite wastewater removal efficiency of ≥ (%)					
Organisation measures to prevent/limit release from site	•				
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be reclaimed [OMS3].	incinerated, contained or				
Conditions and measures related to municipal sewage treatment pla	ant				
·					
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5				
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5				
Maximum allowable site tonnage (M _{Safe}) (kg/d)	1.5E4				
Assumed domestic sewage treatment plant flow (m ³ /d)	2000				
Conditions and measures related to external treatment of waste for	disposal				
Combustion emissions limited by required exhaust emission controls [ET					
considered in regional exposure assessment [ETW2].					
Conditions and measures related to external recovery of waste					
This substance is consumed during use and no waste of the substance is					
Additional information on the basis for the allocation of the indentificontained in Petrorisk file	ied OCs and RMMs is				
Section 3 Exposure Estimation					
3.1. Health					
The ECETOC TRA tool has been used to estimate workplace exposures	unless otherwise indicated.				
G21. 3.2. Environment					
The Hydrocarbon Block Method has been used to calculate environment	al exposure with the Petrorick				
The Hydrocarbon block Method has been used to calculate environment	ai exposure with the retionsk				

model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.11.2. Exposure Estimation

9.11.2.1a. Human Health

See Appendix 2.a. & 2.g.

9.11.2.1b. Human Health

See Appendix 2.b. & 2.g.

9.11.2.2. Environment

See PETRORISK file - "LocalCSR" worksheet

9.12. Use of Low Boiling Point Naphthas (Gasoline) as a fuel – Consumer

9.12.1a. Exposure Scenario

9.12.1a. Exposure Scenario				
Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is <u>NOT</u> classified as R45, R46, R62 or R63; (containing less than 0.1% benzene)				
Title	Containing	iess iliai	1 0.1 % Delizerie)	
Use as a fuel				
Use Descriptor				
Sector(s) of Use		2	1	
Product Categories		1;		
Floduct Categories			Further information on the mapping and allocation of	
			C codes is contained in Table 9.1	
Environmental Release Cate	egories		a, 9b	
Specific Environmental Rele			SVOC SpERC 9.12c.v1	
Processes, tasks, activitie				
Covers the consumer use of		in liquid fu	uels	
Assessment Method				
See Section 3.				
Section 2 Operational con	ditions an	d risk ma	nagement measures	
oconon 2 operational con	MILIONIS AN	a Hon IIIa	nugomont mousulos	
Section 2.1 Control of cor	sumer ext	osure		
Product characteristics				
Physical form of product	Liquid			
Vapour pressure (Pa)	Liquid, vapour pressure > 10 kPa at STP OC5			
	Unless otherwise stated, cover concentrations up to 100% [ConsOC1]			
in product				
Amounts used	Unless otherwise stated, covers use amounts up to 37500g [ConsOC2];			
			area up to 420cm2 [ConsOC5]	
Frequency and duration of		Unless otherwise stated, covers use frequency up to 0.143 times per day		
use/exposure	[ConsOC4]; covers exposure up to 2 hours per event [ConsOC14]			
Other Operational	Unless otherwise stated assumes use at ambient temperatures			
Conditions affecting	[ConsOC15]; assumes use in a 20 m³ room [ConsOC11]; assumes use			
exposure	with typical ventilation [ConsOC8]. Specific Risk Management Measures and Operating Conditions			
Product Category				
PC13:FuelsLiquid -	OC		herwise stated, covers concentrations up to 100%	
subcategories added:			1]; covers use up to 52 days/year[ConsOC3]; covers	
Automotive Refuelling			1 time/on day of use[ConsOC4]; covers skin contact	
			o 210.00 cm2 [ConsOC5]; for each use event, covers	
			unts up to 37500g [ConsOC2]; covers outdoor use 12]; covers use in room size of 100m3[ConsOC11];	
			use event, covers exposure up to	
			ent[ConsOC14];	
	RMM		ic RMMs developed beyond those OCs stated	
PC13:FuelsLiquid -	1 7			
subcategories added:	oc		herwise stated, covers concentrations up to 100% 1]; covers use up to 52 days/year[ConsOC3]; covers	
Scooter Refuelling			1 time/on day of use[ConsOC4]; covers skin contact	
Cocotor residening			210.00 cm2 [ConsOC5]; for each use event, covers	
			unts up to 3750g [ConsOC2]; covers outdoor use	
			12]; covers use in room size of 100m3[ConsOC11];	
			use event, covers exposure up to	
		0.03hr/ev	rent[ConsOC14];	
	RMM		ic RMMs developed beyond those OCs stated	
PC13:FuelsLiquid -	OC	Unless ot	herwise stated, covers concentrations up to 100%	

subcategories added:		[ConsOC1]; covers use up to 26			
Garden Equipment - Use use up to 1 time/on day of use[ConsOC4]; for each use eve					
covers use amounts up to 750g [ConsOC2]; covers outdoor					
		use [ConsOC12]; covers use in			
		100m3[ConsOC11]; for each use	e event, covers exposure up to		
		2.00hr/event[ConsOC14];			
	RMM	No specific RMMs developed be			
PC13:FuelsLiquid	OC	Unless otherwise stated, covers			
(subcategories added):		[ConsOC1]; covers use up to 26			
Garden Equipment -		use up to 1 time/on day of use[C			
Refuelling		area up to 420.00 cm2 [ConsOC			
		use amounts up to 750g [ConsC			
		garage (34m3) under typical ver			
		use in room size of 34m3[ConsC			
covers exposure up to 0.03hr/event[ConsOC14]; RMM No specific RMMs developed beyond those OCs stated					
A delition of information on	RMM				
		for the allocation of the identifi	ed OCs and RIMINIS IS		
contained in Appendices 1		1			
Section 2.2 Control of env	/ironmenta	ai exposure			
Product characteristics					
Substance is complex UVCE	3 [PrC3]. F	Predominantly hydrophobic [PrC4	a].		
Amounts used					
Fraction of EU tonnage used	d in region		0.1		
Regional use tonnage (tonne			1.39E7		
Fraction of Regional tonnage		ally	0.0005		
	ally				
Annual site tonnage (tonnes/year)			7.0E3		
Maximum daily site tonnage (kg/day) 1.9E4					
Frequency and duration of use					
Continuous release [FD2].					
Emission days (days/year)			365		
Environmental factors not	influence	d by risk management			
Local freshwater dilution factor 10					
Local marine water dilution f	actor		100		
Other given operational co	onditions a	affecting environmental exposu	ire		
Release fraction to air from	process (in	itial release prior to RMM)	0.01		
Release fraction to wastewater from process (initial release prior to RMM)					
Release fraction to soil from process (initial release prior to RMM) 0.00001			0.00001		
Conditions and measures related to municipal sewage treatment plant					
		riven by humans via indirect expo			
	osule is di	iven by numans via manect expo	sure (primarily irinalation)		
[STP7k]. Estimated substance removal from wastewater via domestic sewage 95.5					
5					
treatment (%) Maximum allowable site tonnage (M _{Safe}) (kg/d) 1.8E5					
INDED					
Assumed domestic sewage treatment plant flow (m ³ /d) 2000					
Conditions and measures related to external treatment of waste for disposal					
Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].					
		external recovery of waste			
		e and no waste of the substance	is generated [FRW3]		
		for the allocation of the indenti			
contained in Petrorisk file			nica 003 and inivitis is		
Section 3 Exposure Estim					
3.1. Health					
or ir rioundi					

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC Report #107 and the Chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these sources, then they are indicated.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented. G39.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.12.1b. Exposure Scenario

Section 1 Exposure Scena		Low boiling point naphthas (Gasoline) that is classified as		
		63; (containing 0% to 1% benzene)		
Title				
Use as a fuel				
Use Descriptor				
Sector(s) of Use		21		
Product Categories		13		
		Further information on the mapping and allocation of		
		PC codes is contained in Table 9.1		
Environmental Release Cate		9a, 9b		
Specific Environmental Rele	ase Catego	ory ESVOC SpERC 9.12c.v1		
Processes, tasks, activitie				
Covers the consumer use of	substance	in liquid fuels		
Assessment Method				
See Section 3.				
	ditions an	d risk management measures		
Section 2.1 Control of cor	sumer ex	posure		
Product characteristics				
Physical form of product	Liquid			
Vapour pressure (Pa)		oour pressure > 10 kPa at STP OC5		
Concentration of substance	Unless oth	nerwise stated, cover concentrations up to 100% [ConsOC1]		
in product				
Amounts used		Unless otherwise stated, covers use amounts up to 37500g [ConsOC2];		
		n contact area up to 420cm2 [ConsOC5]		
Frequency and duration of		nerwise stated, covers use frequency up to 0.143 times per day		
use/exposure	[ConsOC4]; covers exposure up to 2 hours per event [ConsOC14] Unless otherwise stated assumes use at ambient temperatures			
Other Operational	[ConsOC15]; assumes use in a 20 m ³ room [ConsOC11]; assumes use			
Conditions affecting exposure	with typical ventilation [ConsOC8].			
Product Category	Specific Risk Management Measures and Operating Conditions			
Specific Risk Management Measures and Operating Conditions				
PC13:FuelsLiquid -	OC	Unless otherwise stated, covers concentrations up to 1%		
subcategories added:		[ConsOC1]; covers use up to 52 days/year[ConsOC3]; covers		
Automotive Refuelling		use up to 1 time/on day of use[ConsOC4]; covers skin contact		
		area up to 210.00 cm2 [ConsOC5]; for each use event, covers		
		use amounts up to 37500g [ConsOC2]; covers outdoor use		
		[ConsOC12]; covers use in room size of 100m3[ConsOC11]; for each use event, covers exposure up to		
		0.05hr/event[ConsOC14];		
	RMM	No specific RMMs developed beyond those OCs stated		
DO40:Firely Live II				
PC13:FuelsLiquid -	oc	Unless otherwise stated, covers concentrations up to 1%		
subcategories added:		[ConsOC1]; covers use up to 52 days/year[ConsOC3]; covers		
Scooter Refuelling		use up to 1 time/on day of use[ConsOC4]; covers skin contact		
		area up to 210.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 3750g [ConsOC2]; covers outdoor use		
		[ConsOC12]; covers use in room size of 100m3[ConsOC11];		
		for each use event, covers exposure up to		
		0.03hr/event[ConsOC14];		
	RMM	No specific RMMs developed beyond those OCs stated		
PC13:FuelsLiquid -	OC	Unless otherwise stated, covers concentrations up to 1%		
subcategories added:		[ConsOC1]; covers use up to 26 days/year[ConsOC3]; covers		
Garden Equipment - Use		use up to 1 time/on day of use[ConsOC4]; for each use event,		
		y		

	•			
		covers use amounts up to 750g		
		use [ConsOC12]; covers use in		
		100m3[ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];		
	RMM	No specific RMMs developed b		
PC13:FuelsLiquid	OC	Unless otherwise stated, covers		
(subcategories added):		[ConsOC1]; covers use up to 20		
Garden Equipment -		use up to 1 time/on day of use[
Refuelling		area up to 420.00 cm2 [ConsO		
		use amounts up to 750g [Const		
		garage (34m3) under typical ve		
		use in room size of 34m3[Cons		
	DAMA	covers exposure up to 0.03hr/e	vent[ConsOC14];	
Additional information or	RMM	No specific RMMs developed b	eyond those OCs stated	
		s for the allocation of the identif	led OCs and RIMIMS IS	
contained in Appendices Section 2.2 Control of en		tal evnesure		
	IVII OIIIII C II	ital exposure		
Product characteristics	D ID C::			
-	:В [PrC3].	Predominantly hydrophobic [PrC4	łaj.	
Amounts used				
Fraction of EU tonnage use	ed in regior	า	0.1	
Regional use tonnage (toni	nes/year)		1.39E7	
Fraction of Regional tonnage		cally	0.0005	
Annual site tonnage (tonne			7.0E3	
9 (<u> </u>		1.9E4	
Maximum daily site tonnage (kg/day) 1.98 Frequency and duration of use		1.524		
Continuous release [FD2].	Ji use			
Emission days (days/year)			365	
Environmental factors no	t influenc	ed by risk management	303	
		ca by risk management	140	
Local freshwater dilution fa			10	
Local marine water dilution				
Other given operational of	onaitions	affecting environmental expos	ure	
Release fraction to air from	process (i	initial release prior to RMM)	0.01	
Release fraction to wastew RMM)	ater from p	process (initial release prior to	0.00001	
,	Release fraction to soil from process (initial release prior to RMM)		0.00001	
Conditions and measures	related to	o municipal sewage treatment p	lant	
		driven by humans via indirect expe		
[STP7k].				
Estimated substance remote treatment (%)	val from wa	astewater via domestic sewage	95.5	
Maximum allowable site tonnage (M _{Safe}) (kg/d)		1.8E5		
Assumed domestic sewage treatment plant flow (m ³ /d)		2000		
		o external treatment of waste fo		
		uired exhaust emission controls [E	TW1]. Combustion emissions	
considered in regional expo				
		o external recovery of waste		
		se and no waste of the substance		
contained in Petrorisk file		s for the allocation of the indent	ified OCs and RMMs is	
Section 3 Exposure Estin				
3.1. Health				
		ed to estimate consumer exposure		
ECETOC Report #107 and	the Chapt	er R15 of the IR&CSA TGD. Whe	re exposure determinants differ	

to these sources, then they are indicated.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented. G39.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.12.2. Exposure Estimation

9.12.2.1a. Human Health

See Appendix 2.e. & 2.g.

9.12.2.1b. Human Health

See Appendix 2.f. & 2.g.

9.12.2.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

9.13. Use of Low Boiling Point Naphthas (Gasoline) in Rubber production and processing – Industrial

9.13.1a. Exposure Scenario

9.13.1a. Exposure Sce			
as R45, R46, R62 or R63; (ing point naphthas (Gasoline) that is <u>NOT</u> classified an 0.1% benzene)	
Title			
Rubber production and proc	essing		
Use Descriptor			
Sector(s) of Use		3, 10, 11	
Process Categories		1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 13, 14, 15, 21 Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	1, 4, 6d	
Specific Environmental Release Category		ESVOC SpERC 4.19.v1	
Processes, tasks, activitie	s covered		
handling and mixing of rubbe maintenance.		s, including processing of raw (uncured) rubber, aring, vulcanising, cooling and finishing as well as	
Assessment Method			
See Section 3.			
Section 2 Operational con	<u>iditions and risk m</u>	nanagement measures	
0			
Section 2.1 Control of wor	rker exposure		
Product characteristics	Liquid vanour pro	nours > 10 kDo at CTD OOF	
Physical form of product Concentration of substance	Liquid, vapour pressure > 10 kPa at STP OC5		
in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13		
Amounts used	Not applicable		
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2		
Human factors not influenced by risk management	Not applicable		
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.		
Contributing Scenarios		nagement Measures and Operating Conditions	
General Measures (skin irritants). G19.	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 skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3		
	Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. E4		
CS15 General exposures	No other specific n	neasures identified. El20.	
(closed systems).	English and a state of	and an are under containing and an artifact and the containing	
CS3 Material transfers	E66.	ansfers are under containment or extract ventilation.	
CS91 Bulk weighing	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. E60.		
CS90 Small scale weighing	Carry out in a vent		

CS92 Additive premixing	Minimise exposure by partial enclosure of the		
CCC4 Calandaria	provide extract ventilation at openings. E60.		
CS64 Calendaring (including Banburys)	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. E60.		
CS73 Pressing uncured	Provide extract ventilation to points where emissions occur. E54.		
rubber blanks			
CS112 Rubber refreshing during article build up	Provide extract ventilation to points where emissions occur. E54.		
CS70 Vulcanisation	Provide a good standard of general ventilati	on Natural ventilation is from	
oo o valoamoanom	doors, windows etc. Controlled ventilation m		
CC71 Cooling oursed orticles	removed by a powered fan. E1.	a aparation or aguinment and	
	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. E60.		
CS13 Manual applications	Minimise exposure by partial enclosure of the		
e.g. brushing, rolling	provide extract ventilation at openings. E60.		
CS113 Production of	Minimise exposure by partial enclosure of the		
articles by dipping	provide extract ventilation at openings. E60.		
	No other specific measures identified. El20.		
CS36 Laboratory activities	Handle in a fume cupboard or under extract	ventilation. E83.	
CS5 Equipment maintenance	No other specific measures identified. El20.		
CS67 Storage.	No other specific measures identified. El20.		
	the basis for the allocation of the identifie	ed OCs and RMMs is	
contained in Appendices 1	to 3		
Section 2.2 Control of env	ironmental exposure		
Product characteristics			
	[PrC3]. Predominantly hydrophobic [PrC4a	1].	
Amounts used			
Fraction of EU tonnage used	d in region	0.1	
Regional use tonnage (tonnes/year)		94	
		1	
Annual site tonnage (tonnes/year) 94			
Maximum daily site tonnage (kg/day) 4.7E3		4.7E3	
Frequency and duration of	use		
Continuous release [FD2].			
Emission days (days/year)		20	
Environmental factors not	influenced by risk management		
Local freshwater dilution fact	tor	10	
Local marine water dilution fa	actor	100	
Other given operational co	enditions affecting environmental exposu	re	
Release fraction to air from p	process (initial release prior to RMM)	0.003	
Release fraction to wastewa RMM)	ter from process (initial release prior to	0.01	
Release fraction to soil from process (initial release prior to RMM) 0.0001			
	measures at process level (source) to pre		
	oss sites thus conservative process release e		
	s and measures to reduce or limit discha		
releases to soil			
	olved substance to or recover from wastewar		
environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TCR1k].			
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].			
	Treat air emission to provide a typical removal efficiency of (%) N/A		
**	Treat onsite wastewater (prior to receiving water discharge) to provide 23.9 the required removal efficiency ≥ (%)		
	ewage treatment plant, provide the required	0	
in discharging to domestic se	wago nearment plant, provide the required	I ∨	

onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be reclaimed [OMS3].	be incinerated, contained or
Conditions and measures related to municipal sewage treatment p	olant
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (M _{Safe}) (kg/d)	4.2E4
Assumed domestic sewage treatment plant flow (m ³ /d)	2000

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 [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.13.1b. Exposure Scenario

Section 1 Exposure Scenario Title Low boiling point naphthas (Gasoline) that is classified as		
R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene)		
Title		
Rubber production and processing		
Use Descriptor		
Sector(s) of Use	3, 10, 11	
Process Categories	1, 2, 3, 8a, 8b, 9, 15	
	Further information on the mapping and allocation of	

		codes is contained in Table 9.1	
		C SpERC 19	
	neral rubber articles within processing of raw (uncure	closed or contained systems, including d) rubber, handling and mixing of rubber ng as well as maintenance.	
See Section 3.			
Section 2 Operational con	ditions and risk manage	ment measures	
Section 2.1 Control of wor	ker exposure		
Product characteristics	Liquid vanour proceure >	10 kDo at STD OCE	
Physical form of product Concentration of substance	Liquid, vapour pressure >	ance in the product up to 100 % (unless stated	
in product	differently) G13	ance in the product up to 100 % (unless stated	
Amounts used	Not applicable		
Frequency and duration of		p to 8 hours (unless stated differently) G2	
use/exposure			
Human factors not	Not applicable		
influenced by risk			
management			
Other Operational	Operation is carried out at elevated temperature (> 20°C above ambient		
Conditions affecting exposure	temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.		
Contributing Scenarios		ent Measures and Operating Conditions	
General Measures (skin irritants). G19.	skin contact. Wear gloves substance likely. Clean up Wash off skin contaminati	with product. Identify potential areas for indirect (tested to EN374) if hand contact with contamination/spills as soon as they occur. Ion immediately. Provide basic employee hise exposures and to report any skin effects	
General Measures (carcinogens). G18.	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 staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of		
CS3 Material transfers	wastes safely. Regularly inspect, test an	d maintain all control measures. s based health surveillance. G20.	
CS107 Storage and bulk		are under containment or extract ventilation.	
transfers of rubber	E66.		
chemicals to/from storage			
CS15 General exposures	Handle substance within a closed system. E47.		
(closed systems).			
CS3 Material transfers	Ensure material transfers are under containment or extract ventilation. E66 .		

CS91 Bulk weighing	Handle substance within a closed system.	7/7	
Coar bulk weigning	Wear suitable gloves tested to EN374. PPE15.		
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.		
CS5 Equipment	Drain down system prior to equipment break-in or maintenance. E65.		
maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4.		
	Clear spills immediately. C&H13.		
	Provide a good standard of general ventilation		
	doors, windows etc. Controlled ventilation m	eans air is supplied or	
CS90 Small scale weighing	removed by a powered fan. E1.	docuro E57	
CS67 Storage. OC9	Carry out in a vented booth or extracted enclosure. E57. Store substance within a closed system. E84.		
Outdoor.	Clore substance within a closed system.	τ.	
	the basis for the allocation of the identifie	d OCs and RMMs is	
contained in Appendices 1	to 3		
Section 2.2 Control of env	rironmental exposure		
Product characteristics			
Substance is complex UVCE	[PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used			
Fraction of EU tonnage used	d in region	0.1	
Regional use tonnage (tonne	es/year)	94	
Fraction of Regional tonnage	• ,	1	
Annual site tonnage (tonnes	/year)	94	
Maximum daily site tonnage	4.7E3		
Frequency and duration of	, , ,		
Continuous release [FD2].			
Emission days (days/year)		20	
Environmental factors not	influenced by risk management		
Local freshwater dilution fact		10	
Local marine water dilution factor		100	
Other given operational co	onditions affecting environmental exposur	е	
Release fraction to air from p	process (initial release prior to RMM)	0.003	
Release fraction to wastewa RMM)	ter from process (initial release prior to	0.01	
Release fraction to soil from	process (initial release prior to RMM)	0.0001	
Technical conditions and r	measures at process level (source) to pre	vent release	
	oss sites thus conservative process release e		
	s and measures to reduce or limit discha	rges, air emissions and	
releases to soil		(TOD 4 4) D: 1 (
	olved substance to or recover from wastewat		
	riven by humans via indirect exposure (prima ewage treatment plant, no onsite wastewater		
Treat air emission to provide a typical removal efficiency of (%)			
Treat onsite wastewater (price	23.9		
the required removal efficien	- · · · · · · · · · · · · · · · · · · ·		
	wage treatment plant, provide the required	0	
onsite wastewater removal efficiency of ≥ (%)			
	prevent/limit release from site		
reclaimed [OMS3].	e to natural soils [OMS2]. Sludge should be		
Conditions and measures	related to municipal sewage treatment pla	nnt	
Estimated substance remova treatment (%)	al from wastewater via domestic sewage	95.5	
		1	

Total efficiency of removal from wastewater after onsite and offsite	95.5
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M _{Safe}) (kg/d)	4.2E4
Assumed domestic sewage treatment plant flow (m ³ /d)	2000

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 [ETW3].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in Petrorisk file

Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

9.13.2. Exposure Estimation

9.13.2.1a. Human Health

See Appendix 2.a. & 2.g.

9.13.2.1b. Human Health

See Appendix 2.b. & 2.g.

9.13.2.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

9.14. Regional Environment Exposure Estimation

See PETRORISK file – "RegionalCSR" worksheet

10. RISK CHARACTERISATION

10.1. Manufacture of Substance – Industrial

10.1.1. Human Health

See Appendix 3.a, 3.b, 3.c, 3.d & 3.g.

10.1.2. Environment

See PETRORISK file in IUCLID section 13 - "Site-Specific Production & Tier II worksheets"

10.2. Use as intermediate – Industrial

10.2.1. Human Health

See Appendix 3.a, 3.b, 3.c, 3.d & 3.g.

10.2.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.3. Distribution – Industrial

10.3.1. Human Health

See Appendix 3.a, 3.b, 3.c, 3.d & 3.g.

10.3.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.4. Formulation & packing of preparations and mixtures – Industrial

10.4.1. Human Health

See Appendix 3.a, 3.b, 3.c, 3.d & 3.g.

10.4.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.5. Uses in Coatings – Industrial

10.5.1. Human Health

See Appendix 3.a, 3.b & 3.g.

10.5.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.6. Uses in Coatings – Professional

10.6.1. Human Health

See Appendix 3.a. & 3.g.

10.6.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.7. Use in Cleaning Agents – Industrial

10.7.1. Human Health

See Appendix 3.a, 3.b & 3.g.

10.7.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.8. Use in Cleaning Agents – Professional

10.8.1. Human Health

See Appendix 3.a. & 3.g.

10.8.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.9. Use in Cleaning Agents - Consumer

10.9.1. Human Health

See Appendix 3.e. & 3.g.

10.9.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.10. Use as a fuel - Industrial

10.10.1. Human Health

See Appendix 3.a, 3.b. & 3.g.

10.10.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.11. Use as a fuel - Professional

10.11.1. Human Health

See Appendix 3.a, 3.b. & 3.g.

10.11.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.12. Use as a fuel – Consumer

10.12.1. Human Health

See Appendix 3.e, 3.f. & 3.g.

10.12.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.13. Rubber production and processing – Industrial

10.13.1. Human Health

See Appendix 3.a, 3b & 3.g.

10.13.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

10.14. Overall exposure (combined for all relevant emission/release sources)

10.14.1. Human health (combined for all exposure routes)

See Appendix 3.a, 3.b, 3.c, 3.d, 3.e, 3.f & 3.g.

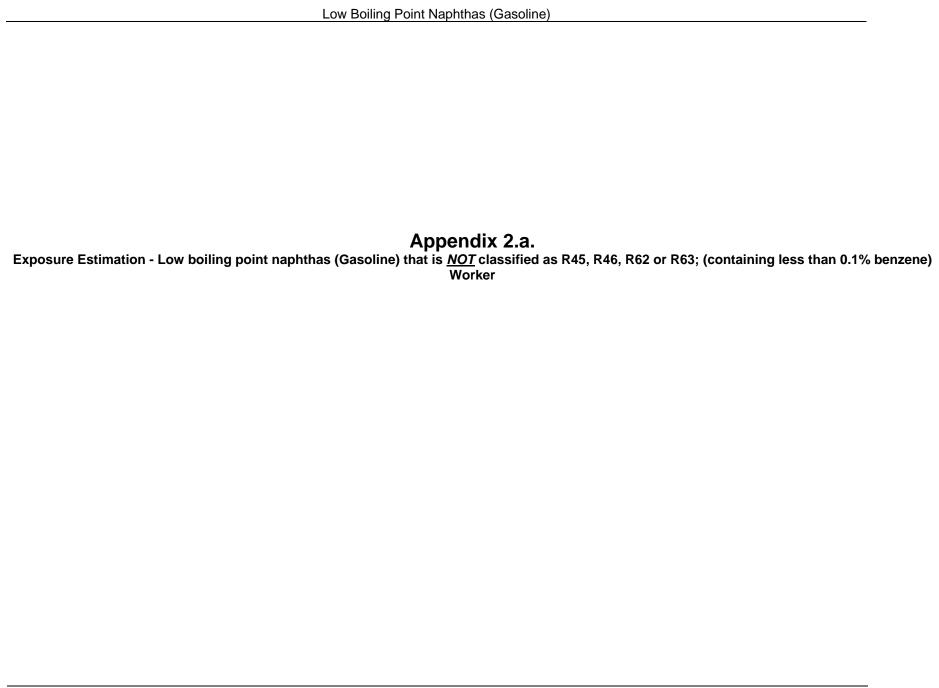
10.14.2. Environment (combined for all exposure routes)

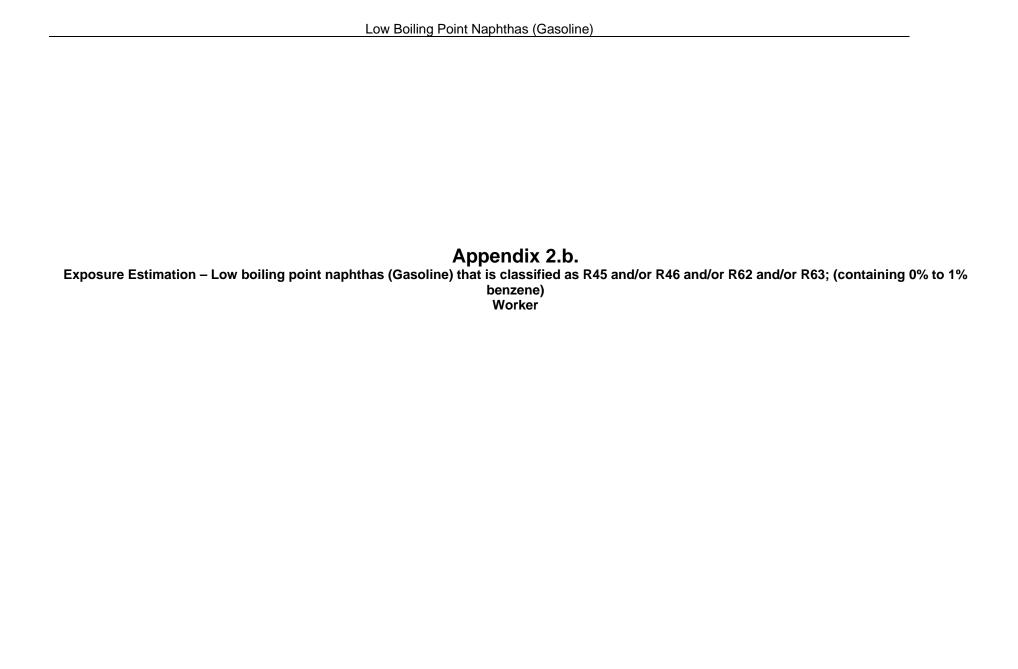
Combined exposures can be calculated with information provided on the individual exposure scenarios presented in section 9. However, it is unclear how to define risk management measures resulting from this analysis.

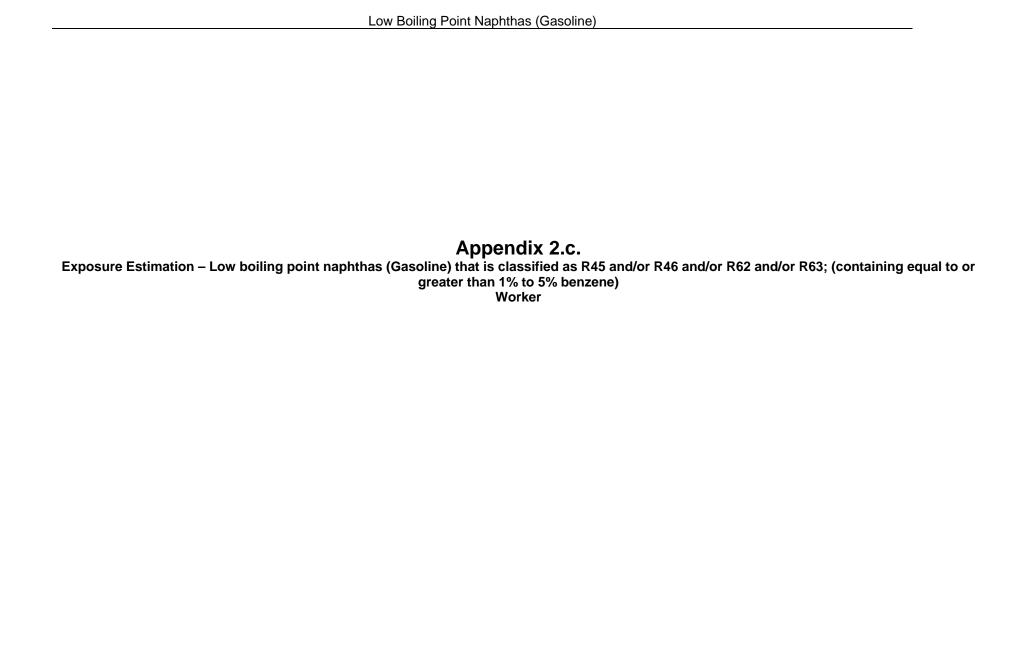
10.15. Regional Environment

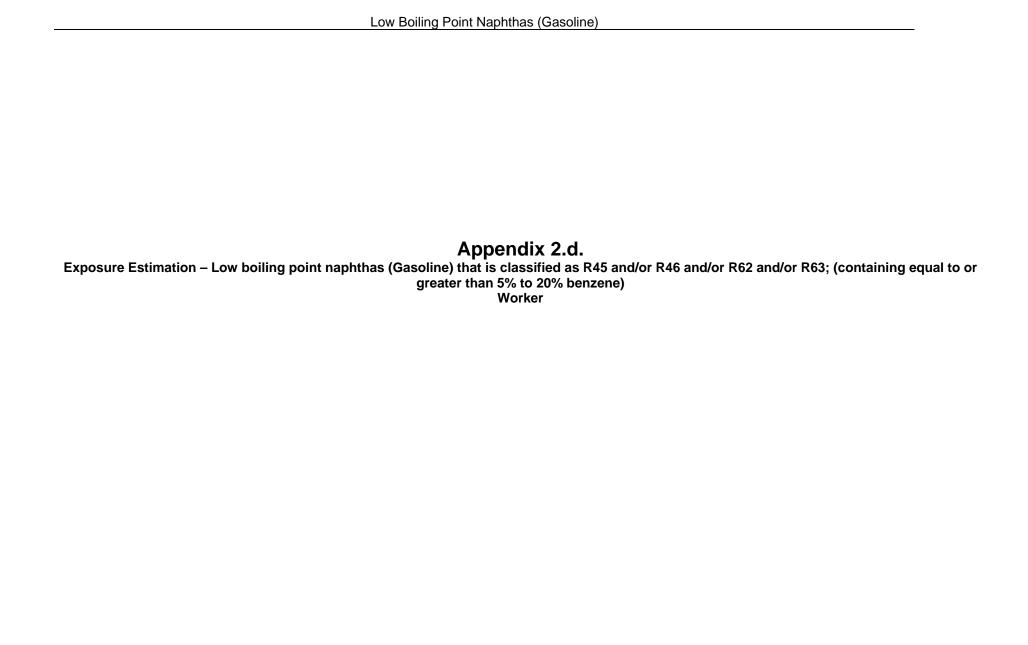
See PETRORISK file in IUCLID section 13 - "RegionalCSR" worksheet

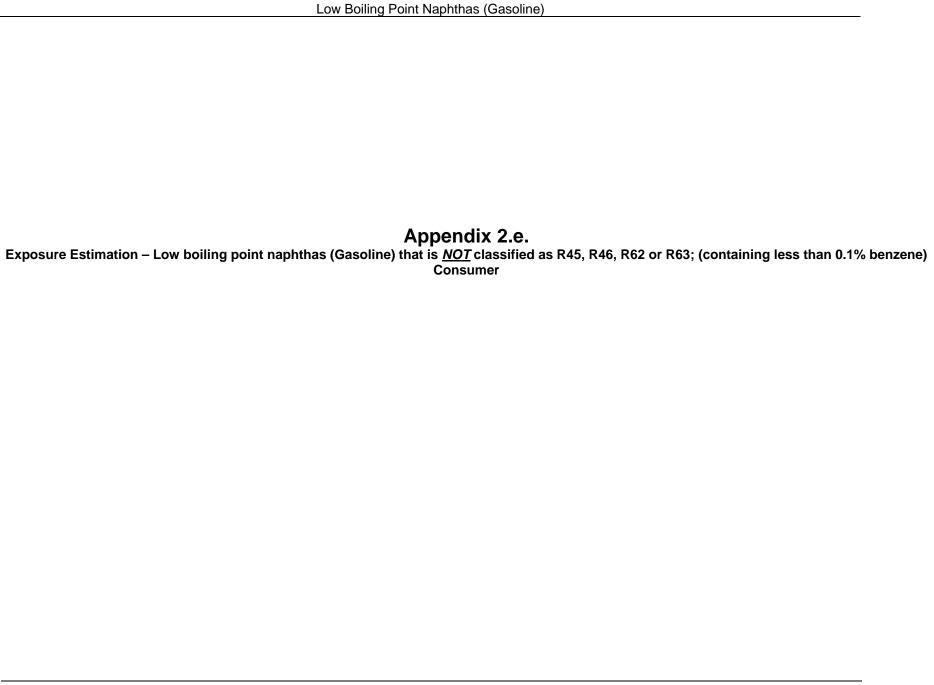
APPENDIX 2: Exposure Estimation

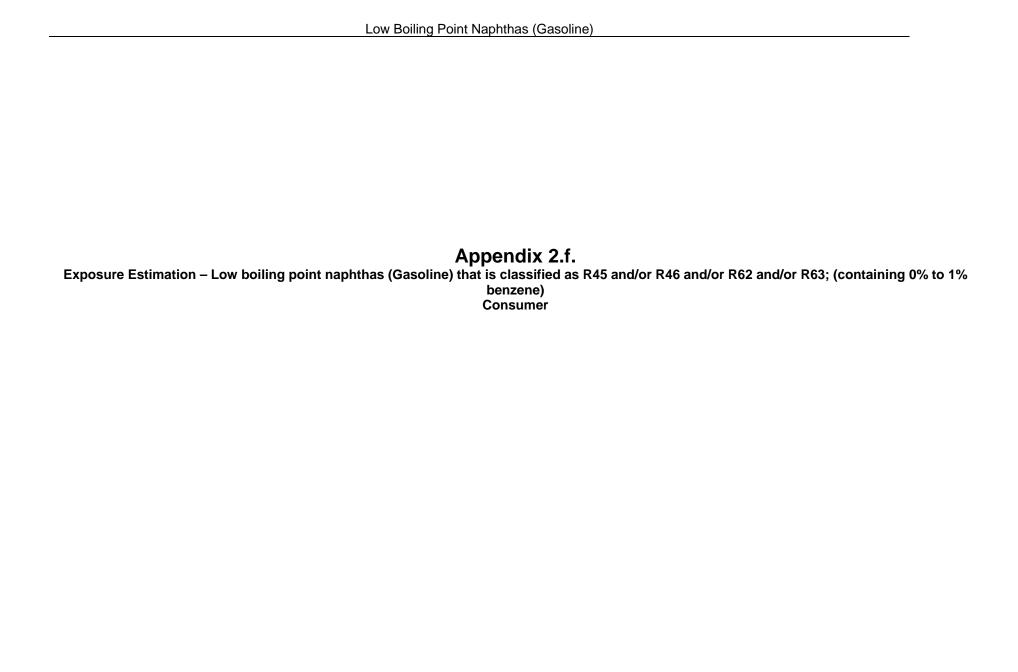












Appendix 2.g.

Exposure Estimation – Qualitative Exposure Estimation

Qualitative Exposure Estimation for R38 substances

This general qualitative CSA approach aims to reduce/avoid contact or incidents with the substance. However, implementation of risk management measures (RMMs) and operational conditions (OCs) need to be proportional to the degree of concern for the health hazard presented by the substance. Exposures should be controlled to at least the levels that represent an acceptable level of risk, i.e. implementation of the chosen RMMs will ensure that the likelihood of an event occurring due to the hazard of the substance is negligible, and the risk is considered to be controlled to a level of no concern.

For skin irritation a qualitative risk characterisation was conducted. Handling and storage risk management measures that are generally identified for skin irritation and identified in the Table given in Appendix 3.b.

A review of these RMMs indicates that if the user complies with the following generic statements, risks due to skin irritation can be considered to be adequately controlled:

E3: Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if direct hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop.

Plus (where there is the potential for additional and significant aerosol exposure, e.g. associated with PROCs 7, 11, 17 or 18):

E4: Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Qualitative Exposure Estimation for R45 substances (where applicable)

current expectations of Directive 2004/37/EC.

The R45 risk phrase (may cause cancer) relates to the strength of evidence to indicate that the substance may cause cancer in humans. When a carcinogenic substance is considered a threshold carcinogen and/or if appropriate dose-response data from epidemiological and/or animal studies are available, it may be possible to derive a DMEL which should then be used in quantitative risk characterisation to define the appropriate RMMs... However, when a carcinogenic substance is considered a non-threshold carcinogen and/or if appropriate dose-response data from epidemiological and/or animal studies are not available, it is not possible to derive a DMEL, and hence a qualitative approach to the CSA will be required. This general qualitative CSA approach aims to reduce/avoid exposure or incidents with the substance consistent with the expectations of Directive 2004/37/EC. The general philosophy

- is twofold:

 1. that the uses of any R45 substance are limited to suitably equipped industrial or professional settings and will only be supported in circumstances where exposure potential is limited (PROCs 1, 2, 3, 8a (maintenance only), 8b, 9, 15, and 16) and will not cover those situations where exposure to the substance might be expected to be significant (such as PROCs 7, 11, 17, 18, etc). This limitation on use is consistent with the
- 2. That a stringent set of RMMs will be applied. Firstly, exposures should be controlled to at least the levels that represent an acceptable level of risk (i.e. represent a RCR of <1 for the DMEL or the otherwise critical non-carcinogenic adverse effect associated with exposure to the substance (the lowest DNEL is used for a quantitative CSA)). Secondly, that rigorous systems of control are implemented to manage exposures in addition to and independent of the risk measures required to manage non-cancer endpoints (and which are described via the use of standard phrases linked to defined circumstances of use), with the aim that the net outcome is the description of the RMMs that when implemented

ensure that the likelihood of cancer occurring is minimised, and the risk is considered to be controlled.

Qualitative Exposure Estimation for R65 substances

'Aspiration' means the entry of a liquid substance directly into the trachea and lower respiratory tract. Aspiration of hydrocarbon substances can result in severe acute effects such as chemical pneumonitis, varying degrees of pulmonary injury or death. This property relates to the potential for low viscosity material to spread quickly into the deep lung and cause severe pulmonary tissue damage. Classification of a hydrocarbon substance for aspiration hazard is made on the basis of reliable human evidence or on the basis of physical properties.

The R65 risk phrase (Harmful: may cause lung damage if swallowed) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived.

This general qualitative CSA approach aims to reduce/avoid contact or incidents with the substance. However, implementation of risk management measures (RMMs) and operational conditions (OCs) need to be proportional to the degree of concern for the health hazard presented by the substance. Exposures should be controlled to at least the levels that represent an acceptable level of risk such that the implementation of the chosen RMMs will ensure that the likelihood of an event occurring due to the substance hazard is negligible, and the risk is considered to be controlled to a level of no concern.

There are no routine anticipated exposures by ingestion related to any supported uses of the substance. The risk arising from aspiration hazard is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific risk. For any substance, classified as R65, these measures should be communicated via the safety data sheet by use of the following phrase:

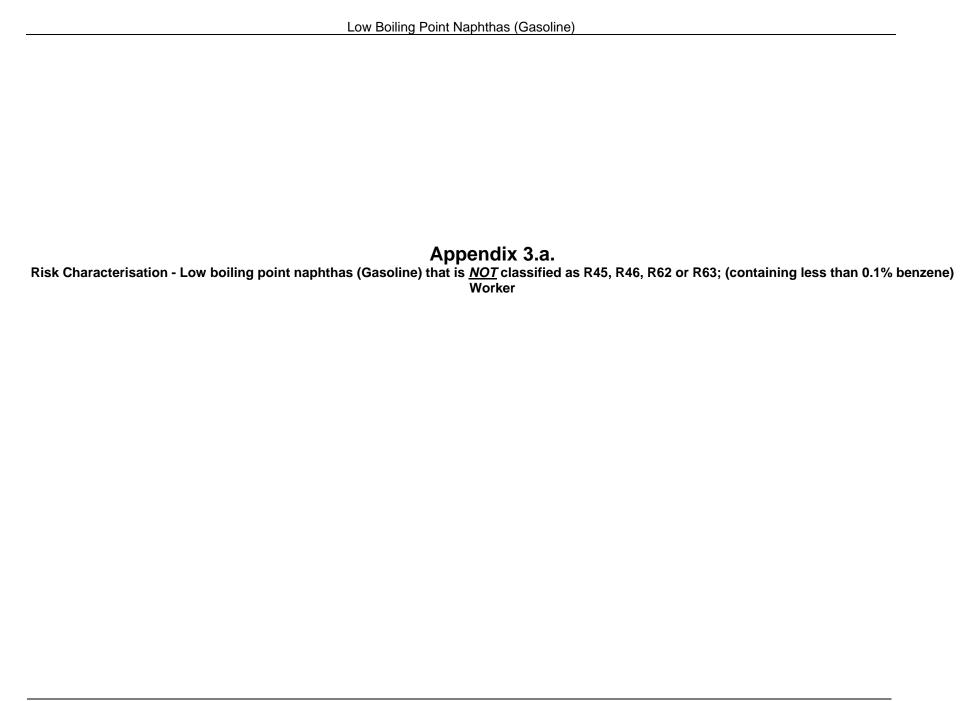
Do not ingest. If swallowed then seek immediate medical assistance.

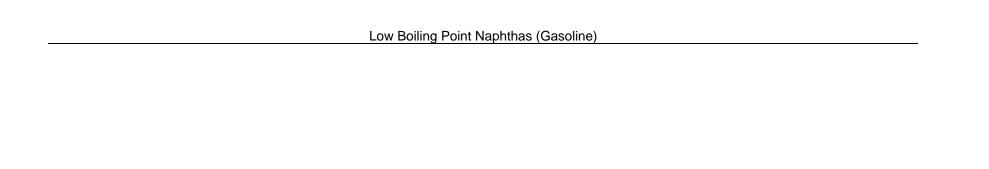
Furthermore it should be noted that where the substance is sold for use in lamp oils and grill lighters by the general public (Consumers), then these must be visibly, legibly and indelibly marked as follows, in accordance with REACH Annex XVII update of 1.4.2010:

- Keep lamps filled with this liquid out of the reach of children.

Just a sip of lamp oil – or even sucking the wick of lamps may lead to life threatening lung damage.

APPENDIX 3: Risk Characterisation

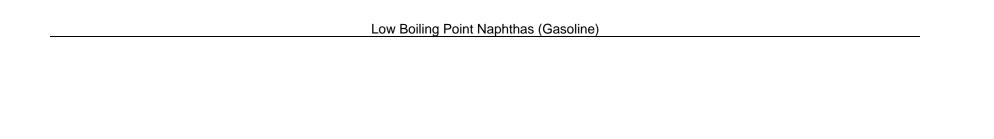




Appendix 3.c.

Risk Characterisation – Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 1% to 5% benzene)

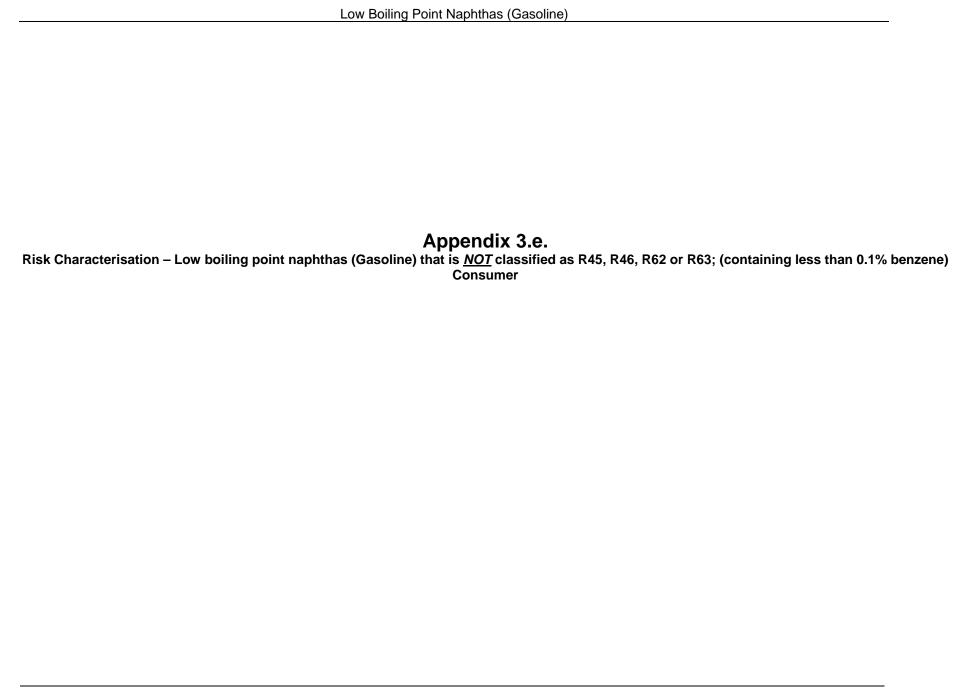
Worker

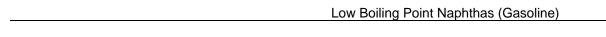


Appendix 3.d.

Risk Characterisation - Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing equal to or greater than 5% to 20% benzene)

Worker





Appendix 3.f.

Risk Characterisation – Low boiling point naphthas (Gasoline) that is classified as R45 and/or R46 and/or R62 and/or R63; (containing 0% to 1% benzene) Consumér

Appendix 3.g.

Risk Characterisation - Qualitative Risk Characterisation

Qualitative Risk Characterisation for R38 substances

The implementation of relevant RMMs will ensure that the likelihood of an event occurring due to the substance hazard of skin irritation is negligible and the risk is considered to be controlled to a level of no concern.

For the skin irritation (R38) hazard a qualitative risk characterisation has been conducted consistent with the considerations and risk management measures identified in the Table below.

Hazard	Material	Risk / Hazard Phrase	Examples of Relevant S Phrases and P Statements	Components of the Qualitative Risk Assessment
Skin Irritation (R38)	• Liquid	R38 / H315	 S24: Avoid contact with skin Prevention: P264: Wash thoroughly after handling. P280: Wear protective gloves. Response: P280: Wear protective gloves/protective gloves/protect ive clothing/eye protection/fac e protection. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P321: Specific treatment (see on this label). P332 + P313: If skin irritation occurs: Get medical advice/attenti on. P362: Take off 	 Implementation of basic standards of occupational hygiene; Avoid direct skin contact with product; Wear gloves (tested to EN374) if direct hand contact with the substance is likely; wash off skin contamination immediately; Avoid splashes and spills; Avoidance of contact with contaminated tools and objects; Clean up contamination/spills as soon as they occur; Regular cleaning of equipment and work area; Ensure suitable management/supervision is in place to check that the RMMs in place are being used correctly and OCs followed; Train staff on good practice to prevent / minimise exposures and to report any skin problems that may develop; Adopt good standards of personal skin hygiene. Where activities may lead to aerosol release e.g. spraying, then additional skin protection measures such as impervious suits and face shields may be required.

contaminated clothing and wash before re-use	

The outcome of the CSA is displayed within the relevant Exposure Scenarios by the inclusion of the general phrase

E3: Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if direct hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop.

Together with (where there is the potential for additional and significant aerosol exposure):

E4: Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Qualitative Risk Characterisation for R45 substances (where applicable)

In the case of carcinogens (substances classified as R45), comprehensive EU legislation already exists that establishes a framework of expectations that can be used as the basis for applying a qualitative approach for any CSA. Specifically Directive 2004/37/EC of the European Parliament and the Council of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work (Sixth individual Directive within the meaning of Article 16(1) of Council Directive 89/391/EEC) sets out the minimum requirements for protecting workers who may be exposed to carcinogens and mutagens during work activities Preventive measures must be taken for the protection of the health and safety of workers exposed to carcinogens or mutagens. The implementation of following RMMs, which build from the existing legal provisions, is intended to ensure that the likelihood of cancer occurring is minimised.

For the cancer hazard a qualitative risk characterisation has been conducted consistent with the considerations and risk management measures identified in the Table below.

Hazard	Material	Risk / Hazard Phrase	Examples of Relevant S Phrases and P Statements	Components of the Qualitative Risk Assessment
Cancer (R45)	• Liquid	R45 / H350	 S23: Do not breathe gas/fumes/vapour/spray S24: Avoid contact with skin S51: Use only in well-ventilated areas S36/37: Wear suitable protective clothing and gloves. S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S53: Avoid exposure – obtain special instructions before use. 	 Worker Implement good standards of occupational hygiene Consider technical advances and process upgrades Minimise exposure using measures such as closed systems Management/supervision to check that the RMMs in place are being used correctly and OCs followed Restrict access to authorised persons; Provide specific activity training Regularly inspect, test and maintain all control

Hazard	Material	Risk / Hazard Phrase	Examples of Relevant S Phrases and P Statements	Components of the Qualitative Risk Assessment
			 Prevention: P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P260: Do not breathe dust/fume/gas/mist/vapours/spr ay. P281: Use personal protective equipment as required. Response: P308 + P313: If exposed or concerned: Get medical advice/attention. Storage: P405: Store locked up. Disposal: P501: Dispose of contents/container to in accordance with local/regional/national/international regulations (to be specified) 	measures Consider the need for risk based health surveillance Consumer Not supported unless marketed in a manner consistent with Article 56 of REACH

For any substance, classified as R45, these risk management measures will be communicated via the Exposure Scenario by use of the following phrases:

For every exposure scenario, the following general phrase will be included

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 scenarios; clear up spills immediately and dispose of wastes 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. G20.

In addition the following specific phrases will also be applied, where the identified contributing scenarios are relevant within any Exposure Scenario

Contributing Scenarios (examples)	Risk Management Measures (all included in Exposure Scenarios – for R45 substances)
CS2 Process sampling	Sample via a closed loop or other system to avoid exposure. E8.

CS14 Bulk transfers (incl. CS501) And related phrases such as CS6, CS8.	Ensure material transfers are under containment or extract ventilation. E66.
CS15 General exposures (closed systems) And related phrases	Handle substance within a closed system. E47.
CS507 Refuelling	Ensure material transfers are under containment or extract ventilation. E66.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12.
CS5 Equipment maintenance AND CS39 Equipment cleaning and maintenance	Either: Drain down and flush system prior to equipment break-in or maintenance. E55; Or; Drain down system prior to equipment break-in or maintenance. E65. And; Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13.
CS67 Storage	Store substance within a closed system. E84.

Qualitative Risk Characterisation for R65 substances

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

For aspiration hazard a qualitative risk characterisation has been conducted consistent with the considerations and risk management measures identified in the Table below.

Hazard	Material	Risk / Hazard Phrase	Examples of Relevant S Phrases and P Statements	Components of the Qualitative Risk Assessment
Aspiration Toxicity (R65)	• Liquid	R65 / H304	Response: (S2): Keep out of the reach of children (for dangerous products sold to the general public must include this safety phrase) S62: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label P102: Keep out of reach of children. P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P331: Do NOT induce vomiting. Storage: P405: Store locked up.	 Worker Do not ingest Implementation of basic standards of occupational hygiene Avoid splashes and spills Avoidance of contact with contaminated tools and objects Management/supervision to check that the RMMs in place are being used correctly and OCs followed Training for staff on good practice Good standard of personal hygiene Consumer Do not ingest For lamp oils and grill lighters, follow the provisions of REACH – Annex XVII, including: Marketing in black opaque containers not exceeding 1 litre Labelling with specific safe use instruction

Hazard	Material	Risk / Hazard Phrase	Examples of Relevant S Phrases and P Statements	Components of the Qualitative Risk Assessment
			Disposal: • P501 : Dispose of contents/container to in accordance with local/regional/national/internation al regulations (to be specified)	

For any substance, classified as R65, these risk management measures should be communicated via the safety data sheet by use of the following phrase:

• Do not ingest. If swallowed then seek immediate medical assistance.

APPENDIX 4: REACH Tier 2 Risk Assessment of Low Boiling Point Naphthas (Gasolines): Overview of European Refinery Benzene Monitoring Data

Summary:

Using the prescribed risk assessment models, calculations made for the Risk Assessment of Low Boiling Point Naphthas (Gasolines) in the framework of REACH gave unrealistically high predicted values for concentrations of benzene in the air compartment. To assess the degree of conservatism involved, measured ambient air concentrations of benzene in the vicinity of refineries have been investigated using refinery and national data. No agreement was found between the measured data and the risk assessment concentrations. There is no evidence in the measured data that concentrations exceed the air quality standards intended to protect human health.

1. Introduction

Benzene is a priority substance because of the adverse health effects associated with long term chronic exposure. It is one of several priority substances for which regulatory standards are set for their ambient air quality concentrations. The European Union (and its member states) has a long term objective to reduce ambient benzene concentrations, expressed as annual averages, The current Air Quality Directive (2008/50/EC) requires ambient air concentrations of benzene to be below 5 $\mu g/m^3$ by January 1st 2010 having reduced from a maximum of 10 $\mu g/m^3$ in July 1999 and decreasing by 1 $\mu g/m^3$ per year from 2006. Furthermore the Air Quality Directive requires monitoring of benzene levels wherever they exceed an upper assessment threshold of 3.5 $\mu g/m^3$. Lesser monitoring requirements apply where benzene is below the upper threshold but still above a lower threshold of 2.5 $\mu g/m^3$. Modelling may be used as an alternative to monitoring subject to verification of methodology. To reflect that the purpose of ambient air quality standards is to protect public health, the number of monitoring stations needed to establish that air quality standards are met is linked to population density. Benzene monitoring is required to be made downwind of industrial sites where populations exceed 249,000 in a declared air quality zone.

Member states may set their own (stricter) tolerance for benzene concentrations. These may alternatively be expressed as Air Quality Objectives which are generally non-binding but carry with them the requirement to monitor in order to demonstrate trends in the reduction of ambient air concentrations.

It is important to note that air quality standards do not apply within refinery boundaries on the grounds that health and safety legislation adequately governs worker exposure for the limited time they are on site.

In the context of REACH risk assessments have been carried out using a screening tool, PETRORISK, that predicts environmental concentrations based on category-specific site tonnages and conservative emission release factors. For the majority of refineries, conservative human exposure estimates derived from PETRORISK have resulted in risk characterisation ratios significantly greater than 1.0. As a result, a refined assessment is required.

It is worth noting that:

- Refinery releases to atmosphere of benzene take place as fugitive or diffuse emissions, where the benzene is a minority component in process and product streams. Benzene per se is never released as a channelled emission of pure substance which is the assumption made in the risk assessment.
- The modelled risk factors are so large that the implied environmental concentrations are not considered realistic. For example, the risk characterisation ratio at one site of 8.61 for the benzene component implies a "typical" environmental concentration of 28 μg/m³ using the risk assessors chosen DMEL of 3.25 μg/m³ (1 ppb) which is more than 5 times the permitted AQ standard in 2010.

Low Boiling Point Naphthas (Gasoline)

To secure our view of this 'credibility gap", CONCAWE has asked its member companies for information on benzene concentrations obtained via refinery monitoring programmes. Furthermore, an analysis of data from the European AQ monitoring network 10 was also made with focus on measurement stations placed (approximately) 3 km or less 11 from refineries. In remote areas and particularly where the station was separated from the refinery by a water body, over which dispersion is less than overland, this distance was extended to 5 km. The judgement on relative positions of refineries and monitoring stations was made visually using Google Earth, a Google Earth refinery location file and the monitoring station location data provided by the European Environment Agency,

Information on benzene monitoring was provided by 50 refineries following a request for data. The extent of monitoring ranged from continuous measures to short duration surveys. A typical short duration measure is a 2 week diffusion tube sample or a 2 week campaign of daily diffusion tube samples. It is clear from this response that a majority of refineries are actively undertaking risk management measures with respect to Benzene in air.

The time frame in which measurements have been made varied considerably. Generally a short duration campaign (typically between 2 weeks and 2 months duration) was carried out to establish typical concentrations. Such studies started in the mid 1990's. In some refineries results showed low concentrations and no further measurements were made. In other refineries there are periodic monitoring campaigns to verify that the low measured concentrations remain so over a number of years. In other refineries a requirement for detailed monitoring is a condition of the operating permit (either discrete campaigns or continuous monitoring) providing times-series of concentrations.

The purpose of monitoring varies. In some cases the focus is on inspecting likely "hot spots" of benzene by looking at points where the potential for leaks or releases to atmosphere are greatest. Measures here are not spatially representative of either the refinery site (inside the fence) or of concentrations outside the site. In other cases measurements focus on fenceline concentrations in order to understand the maximal impact outside the fence where ambient air quality standards apply. In further cases the measurements extend into the neighbourhood around the site to establish ambient concentrations. These are the most relevant for risk assessment to public health. External measurements may be carried out in collaboration with or by local authorities. This investigation has shown that such data very rarely appear in the European AQ database (Airbase¹²).

2. Overview of air quality data

Short duration measures, especially on the sites themselves can show concentrations above $5 \mu g/m^3$, when made close to process plant, water treatment and loading/unloading facilities. The more complete surveys show that the spatial extent of these areas is very limited and away from the sources, the concentrations on site rapidly fall to fenceline values.

Fenceline surveys generally show concentrations that are (well) below 5 μ g/m³ at any time of year. Where time-series are available, there is a tendency for concentrations to be higher in the winter months than in the summer months. This could be due to differences in meteorological conditions affecting dispersion or changes in refining product slate for the winter months or a combination of these factors. There are however some exceptions to this where summer concentrations are higher.

Measurements outside the fenceline were reported for stations ranging from a few meters to 5 kilometres distance. Generally concentrations were well below 5 μ g/m³. For those cases of elevated levels, it was commented by the investigating national body that traffic contributions were probably significant and possibly accounted for between 20–50% of the measured

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¹⁰ Across Europe the ambient air quality standard for benzene is met. As a consequence not all industrial monitoring stations are required to be set up to detect benzene. This reflects a combination of data or (dispersion) model based evidence that concentrations are below the threshold limits for the presence of population at risk.

It is very important to note that refinery sources are only one possible source of atmospheric benzene and the further the monitoring station from the refinery the more likely that other sources, for example road traffic, will dominate.

¹² http://air-climate.eionet.europa.eu/announcements/ann1267782109/databases/airbase

concentrations. The spatial extent of hot spots appears to be of order 400 m diameter maximum based on observations.

The European AQ database holds some information on benzene and, as described above, the AQ Directive requires benzene to be monitored if concentrations near to populated areas are above the lower threshold. The 5 μ g/m³ standard is substantially met¹³ throughout Europe but European Environment Agency use a traffic light system to assess compliance which gives no quantitative information. Therefore statistical data on concentrations obtained from Airbase¹⁴ were examined. We chose records from measurement stations sited (approximately) <3 km from refinery sites noting that, although their proximity to refineries makes them useful indicators, it is still possible that other benzene sources would influence their measurements.

The Airbase station results are summarised in Table 1 below. This table is a list of benzene measurements, expressed as annual averages, reported in Airbase. Not all stations that are near to refineries report benzene. A single station may cover more than one refinery in areas where there are several. A refinery may be covered by more than one station. Only 4 data points exceed the 2010 EU standard of 5 μ g/m³. For one station in Belgium the 1997 value is completely different to the data for all other years and seems to be an outlier. In France the 2007 value for one of the stations of 5.7 μ g/m³ just exceeds the 2010 current standard. However in 2008 the reported value for this station is below this standard. In Italy, two 2008 measurements (5.5 and 8.4 μ g/m³) exceed this standard. It should be noted that multiple sources contribute to these concentrations and the neighbouring refinery is not necessarily responsible for the exceedence. Overall the impression of the data is that benzene concentrations are low and have been since detailed monitoring started in the mid 1990's. The typical air concentration for benzene appears to be < 2 μ g/m³.

The mean of the data from stations in Table 1 is 1.95 μ g/m³ and the median is 1.48 μ g/m³. Some 90% of measurements are below 3.34 μ g/m³ and 95% below 4.44 μ g/m³.

Table 1. Annual Average Concentrations from Airbase stations located near (~ 3 km from) refineries.

Country	Station id	Year	Concentration µg/m³
AT	AT32701	2006	1.00
		2007	0.98
BG	BG0044A	2006	2.56
		2008	4.41
RO	RO0106A	2008	3.57
GB	GB0814A	2002	1.61
		2003	1.69
		2004	1.61
		2005	1.65
		2006	1.74
CZ	CZ0EPAO	2005	1.90
		2006	2.60
		2007	0.57
		2008	1.17
	CZEPAU	2005	0.92
		2006	1.26
		2007	0.98

¹³ 2008 data in Airbase

¹⁴ The raw data were not examined. Annual means based on daily averages were used. Data has not been filtered according to completeness (e.g. some values in the table provided are based on partial data).

Country	Station id	Year	Concentration
,		2008	μg/m ³ 1.44
DE	DENW147	2005	4.10
DL	DEINWITT	2006	4.48
	DENW152	2005	1.50
	DEIWW132	2006	1.59
	DENW149	2005	1.60
	DEIWW143	2006	1.36
	DEBW022	2005	1.20
NL	NL00415	1997	2.48
145	14200410	1998	1.52
		1999	1.41
		2000	1.29
		2001	1.33
		2002	1.75
		2003	1.68
		2004	1.22
		2005	1.21
		2006	0.98
		2007	1.13
		2008	0.94
BE	BE0457A	1996	3.37
		1997	2.38
		1998	1.66
		1999	1.48
	BEVR833	1994	2.90
		1995	2.44
		1996	2.11
		1997	18.13
		1998	1.46
		1999	1.60
		2000	1.27
		2001	1.08
		2002	1.36
		2003	1.27
		2004	1.17
		2005	1.26
		2006	0.17
		2007	0.14
		2008	1.11
	BETR833	2007	1.23
		2008	1.37
FR	FR20029	2004	6.35
		2005	6.64
		2007	5.78
		2008	2.62

0	Ctation is		Concentration
Country	Station id	Year	μg/m ³
	FR10007	2005	1.51
		2007	1.43
		2008	0.99
ES	ES1279A	2002	2.21
		2003	2.30
		2004	2.48
		2005	2.17
		2006	1.00
		2007	3.23
		2008	3.21
	ES0892A	2004	0.23
		2005	0.37
		2006	0.63
		2007	1.21
		2008	1.48
	ES0893A	2008	2.01
	ES0651A	2005	1.20
		2006	1.40
		2007	1.32
		2008	1.10
	ES1312A	2007	2.28
		2008	1.98
	ES1666A	2005	1.22
		2006	1.17
		2007	1.13
		2008	0.99
	ES0556A	2005	1.55
	ES0556A	2006	1.57
IT	IT1270A	2003	1.90
		2004	1.78
		2005	1.02
		2006	2.86
		2007	3.01
		2008	5.54
	IT1269A	2002	0.69
		2003	1.00
		2004	0.93
		2005	0.65
		2006	1.13
		2007	1.33
		2008	1.59
	IT1373A	2004	1.26
		2005	0.63
		2006	1.30
		2007	1.41

Country	Station id	Year	Concentration
		2000	μg/m ³
	IT40000A	2008	1.19
_	IT12688A	2008	8.44
	IT0461A	2003	3.95
		2004	2.25
		2005	2.03
		2006	2.40
		2007	2.79
		2008	3.46
	IT0462A	2001	1.58
		2008	3.85
	IT0463A	2008	1.58
	IT1153A	2003	2.27
		2004	1.22
		2005	0.75
		2006	0.86
		2007	0.82
		2008	0.82
	IT1611A	2004	1.08
		2005	1.09
		2007	1.52
		2008	1.59
	IT1751A	2007	2.35
		2008	1.48
	IT0612A	2007	1.02
		2008	0.92
	IT1786A	2006	2.06

3. Overview of Refinery Monitoring Data

A summary of the refinery survey data is given in Table 2 below. To preserve anonymity the refineries are only referenced according to their internal CONCAWE codes used in the REACH Risk Assessments for refined hydrocarbon products.

Also shown is the risk characterisation ratio derived from the Low Boiling Point Naphthas (Gasolines) REACH risk assessment and the implied "typical" benzene air concentration. A value of 3.25 μ g/m³ (1 ppb) represents a risk characterisation ratio of one in the risk assessment. A more useful (but almost identical value) of 3.5 μ g/m³ is the upper monitoring threshold under the Air Quality Directive. Results are provided in reverse sorted risk order (highest to lowest) for refineries who replied to the survey request. Refineries provided documented evidence of surveys made or monitoring system results. In some cases reports of (independent) local authority investigations were submitted. In a few cases no data were reported. It was hoped that there might be a correspondence between sites responding to the survey and those covered by the Airbase network but this proved not to be the case so there is not a robust evidence base for comparing refinery monitoring fenceline concentrations with those captured by the AQ network.

For reasons of space the refinery responses have been summarised in terms of their scope and only indicative concentrations have been provided here. The time-frame the measurements apply to is also noted because they span a period from 1995 to 2010. Within this period the EU air quality standard has decreased (10 μ g/m³ through 2005 then decreasing 9 μ g/m³ in 2006, 8 μ g/m³ in 2007, 7 μ g/m³ in 2008, 6 μ g/m³ in 2009 to 5 μ g/m³ in 2010). All responses are filed in a secure data system in CONCAWE.

Table 2 shows that there is a clear disconnect between the concentrations predicted by the Risk Assessment and the measured values. Overall there is a clear indication that fenceline concentrations are overall low and (even allowing for the preponderance of campaign vs. continuous monitoring) consistent with ambient air quality standards being met by a margin of typically a factor 2.

Table 2. Summary of Refinery Monitoring Data.

The RA code is the Reach Assessment code used to denote refinery sites while preserving anonymity.

The RA RCR is the Reach Assessment Risk Characterisation Ratio.

The Implied Concentration is this ratio multiplied by 3.25 µg/m3 (1 ppb) used in its derivation

The Data Concentration is the best judgment of a representative concentration from the monitoring which may not be a true annual average The Revised RCR is the concentration divided by $3.5 \mu g/m3$ which is an EU wide regulatory value for health protection and for required benzene monitoring. A symbol < means that at least one data point has been reported as less than a value, that maximal value has been used.

RA Code	RCR	Implied Concentration µg/m³	Data Concentration µg/m³	Revised RCR	Comments	Date
5.05	8.61	30.13	2.1 (average of the 8 stations closest fenceline)	0.60	Independent Intensive campaign of measurements at 36 locations over 2 weeks to map community values. Estimated non-industrial sources contribute 20-50% of measured concentrations. Multiple industrial sources. Community concentrations (over the 12 weeks) were on average less than the upper reporting threshold of 3.5 $\mu g/m^3$ (annual). Hot spot (highest average 18.2 $\mu g/m^3$) on access road dividing site.	first quarter 2007
10.02	6.15	21.54			No recent data	1994-1995
13.00	5.87	20.55	1.03 (6 year average)	0.29	Detailed monitoring of boundary and on-site locations. Results consistent over measurement period. Given as average of 8 boundary station measures. Annual results very similar with one year of low concentration means varied 0.19 to 1.56 µg/m³	2003-2009
13.12	5.57	19.49			no data provided	

RA Code	RCR	Implied Concentration µg/m³	Data Concentration µg/m³	Revised RCR	Comments	Date
4.00	4.63	16.21	1 - 4 (1993- 1996) 1 -2 (1997- 2000)	0.57	Continuous monitoring at downwind station for 1993-1996 within boundary and 1997-2000 outside boundary in direction of prevailing wind. Measurements in discussion with environmental authorities and discontinued in 2000 in the face of evidence that concentrations were well below environmental limits. Values are medians.	1993-2000
23.00	4.31	15.08	4, 6, < 1., <1.	0.85 Average RCR	4 monitoring stations taking 1/2 hour samples and reporting daily (362 measures in year) average for two stations below 1 μg/m³. Data precision to 1 significant figure.	2009
2.00	3.75	13.14	3.4 average over all data	0.97	Measurements at 20 locations on site in 2005, 2007 and 2008 including 5 boundary points. Campaigns lasted one month. Average 3.5 μg/m³ in Sep 2005, 5.2 μg/m³ in Nov 2006 and 1.6 μg/m³ in Nov 2008. Overall highest station value was 6.4 μg/m³ in Nov 2006. All stations showed low concentrations in Nov 2008.	2005,2006,2008 one month only
13.11	3.66	12.82	1.28 (2 week average of all sites)	0.37	Thorough survey conducted for 14 day period once a year. No change in observed concentration in 2 years. Sampling locations cover local community. Highest single reading in 2009 was 4 µg/m ³ .	2008 - 2009
13.02	3.62	12.66	2.5	0.71	Local authority monitoring at 2 sites remote from traffic sources since 2004. Little variation all values between 2.03 and 3.25 µg/m³ annual mean. Average is 2.5 µg/m³	2004 - 2008
6.26	3.36	11.75	1.5 boundary one month data	0.43	Measurements at 20 locations in Nov 2007 including 8 on external boundary. All concentrations < 1.5 μg/m³	Nov-07
6.08	3.04	10.66	< 0.3	< 0.08	Benzene concentrations assessed on the basis of dispersion modelling using inventory. Very low concentrations predicted	2006 and 2008
7.00	3.01	10.52	0.83	0.24	Continuous Monitoring . Station location unknown. Year 2010 to date average 0.83 with max 3.42.	2009-2010

RA Code	RCR	Implied Concentration µg/m³	Data Concentration µg/m³	Revised RCR	Comments	Date
13.10	2.95	10.33	< 2.9 in any year (average perimeter)	0.83	2 week diffusion tube study carried out every 6 months all around refinery boundary. One non-public "hot spot" less than 400m across where concentrations vary between 4 -11.2 μg/m³ in the 5 year period	2004 - 2009
24.01	2.95	10.33	1.74 (average of 4 stations over 5 years)	0.50	Permanent Community Monitoring with 4 automatic monitoring sites giving annual averages. Maximum was at the closest site in 2005 and was 2.48 μg/m³. Yearly concentrations fluctuate about central values of 1.86, 1.86, 1.32 and 1.92 μg/m³ for the 4 stations respectively.	2005-2009 incl.
5.02	2.88	10.10	3.1 (average of fence and outside measures)	0.89	Measurements for 16 locations both inside and outside the refinery. Duration of monitoring unknown. Average of outside measures 3.2 μg/m³ with max station 6.6 μg/m³. Average of fence line measures 3.0 μg/m³ with max 8.5 μg/m³.	2004
5.12	2.63	9.20	< 2 boundary one month	< 0.57	Measurement campaign at 20 locations including 7 fence line and one external point. Fence line all < 1.5 μg/m³ and external 2.0 μg/m³	Jul-08
12.01	2.48	8.68	< 1 (average concentrations for the year, the 4 month and the 4 x1 month sites)	< 0.29	Thorough survey of refinery environs including a year survey of hourly concentrations downwind of refinery. One month per season at 3 further locations and weekly averages for 4 months at 10 further locations.	2007
6.10	2.47	8.66	0.2 - 0.5 (summer) 0.8 - 1.1 (winter)	< 0.31	Fence line monitoring at 6 locations for 9 weeks (summer) in 2006 and 16 weeks (winter) in 2009	2006 and 2009
9.03	2.25	8.57	0.4	0.11	Dispersion modelling on basis of emission inventory - closest contour to boundary.	unknown

RA Code	RCR	Implied Concentration µg/m³	Data Concentration µg/m³	Revised RCR	Comments	Date
5.11	2.29	8.03	6.5 boundary one month	0.80	Measurements in 28 locations in October 2006 included 7 boundary and 5 external stations. The boundary average was 6.5 μg/m³ and the external average 5.3 μg/m³ due to a high value traffic station (15.6). Excluding this the external average was 2.8 μg/m³ which is used here for the RCR.	Oct-06
5.10	2.15	7.52	2.7 boundary one month	0.77	Campaign in June 2007 included 8 boundary stations average 2.7 µg/m³ and max 4.7 µg/m³	Jun-07
6.17	2.05	7.17	1.6 and 1.3	0.45	Detailed monitoring at two stations (E and W) of refinery.	2009
9.11	1.93	6.77	not available		Permit requires inventory only as per PRTR regulation	
24.00	1.92	6.72	S1 0.53 - 1.96 S2 0.59 - 1.19 S3 0.87 - 1.17	0.56 0.34 0.33	Monitoring for Benzene at 3 locations outside of the fenceline is a requirement of permit. All within 1 km.	2007, 2008, 2009
2.04	1.90	6.65	2.5 (average public access perimeter in survey)	0.71	Survey at 9 perimeter locations for 4 weeks in 2001 when the ambient air quality standard was 10 μg/m μg/m³. "hot spot" of extent < 400 m near loading facility with conc 7.7 μg/m μg/m³.	2001
11.00	1.82	6.36	< 5.2		Five continuous monitoring stations at distances between 0.4 and 1.4 km from fenceline supported by campaigns near an integrated petrochemical site. Unfortunately refinery contributions cannot be determined and so a revised RCR is not estimated. The largest concentrations reported to be 4.5 μ g/m³ in 2008 and 5.2 μ g/m³ in 2009 and short duration campaigns gave support to this number. However, the national air quality network reports less than half this value for 2008 so the figures above may not represent annual averages.	2008-2009
1.00	1.81	6.32	3.5 (year)	1	Fenceline sampling over a year at 9 equally spaced locations and 3 outside stations at up to 2 km downwind. Fenceline measures averaged 3.5 μg/m³ (range 2.2 to 4.6 μg/m³) and external 2.2 μg/m³ (range 2.1-2.2 μg/m³)	April 1995 - March 1996

RA Code	RCR	Implied Concentration µg/m³	Data Concentration µg/m³	Revised RCR	Comments	Date
6.15	1.79	6.26	1.7	0.49	3 Measuring Stations within 1.1 km. Required Monitoring since 2004. All stations less then 1.5 (2005). The average over the 3 stations was 1.07 for 2007 and the average over all the data was also 1.07.	2004 - 2007
5.04	1.73	6.06	2.9	0.83	2 week long survey at 23 locations both on and off refinery site. Max concentration in habited areas 3.4 $\mu g/m^3$, average refinery boundary 4.04 $\mu g/m^3$ excluding hot spot, 6.76 $\mu g/m^3$ with hot spot. The average in populated areas surrounding the refinery was 2.9 $\mu g/m^3$.	year not known
5.04	1.73	6.06	3 (boundary averaged over the 3 months measured in 3 years)	0.86	Campaign using 23 locations including 7 fenceline and 3 external locations in July 2006. A focus on boundary measurements in September with 8 fenceline and 5 external measurements. A smaller study in July 2008. In July 2006 the average fenceline was 2.8 μ g/m³ and outside stations 3.0 μ g/m³. In Sept 2008 fenceline and external were < 1.5 μ g/m³ and in July 2009 fenceline average was 3.1 μ g/m³ due to one high point.	july 2006, sep 2008, july 2009
13.07	1.68	5.87	0.3 - 2.2 (typical fenceline in range across surveys.)	0.63	Short (2 week long) surveys comprising diffusion tube surveys around fenceline. Measurements include rail-loading facility just inside boundary which is not characteristic of perimeter. Timing survey in 2001 is not known. In the loading zone the spot measures are variable. Overall highest 12.1 µg/m³ but more typically varying in range 3-7 µg/m³	2001, 2003 (summer), 2004 (autumn) 2004(winter)
3.01	1.64	5.76			No Fenceline measurements.	2006
17.00	1.61	5.63	mean 0.83 and 1.2 overall max 3.6	0.34	A year of monitoring reporting 3 times a week (2 stations report 48 hour averages and 1 a 72 hour average). The location of the 2 stations is not known.	2009

RA Code	RCR	Implied Concentration µg/m³	Data Concentration µg/m³	Revised RCR	Comments	Date
6.04	1.60	5.61	0.4 over 3 summer months and 1.6 over 1 fall month.	0.46	2 surveys carried out in residential area next to tanks. One for 3 months in the summer and one for 4 weeks in the autumn. Results compared with city centre measures 65 km away (no refinery) and concentrations were lower than in the city centre (1.3 c.f. 0.4 μg/m³ and 1.9 c.f. 1.6 μg/m³) (city c.f. refinery)	2008
15.01	1.38	4.82	2.1 in 2005	0.60	Two 2-week long surveys with 50 and 52 sampling points (49 data points) to look at community and site values. A reduction in benzene concentrations between 2004 to 2005 was observed for some measuring points which implies VOC control measures were taken. Median reduces 7.38 µg/m³ to 1.2 µg/m³ and mean reduces 10.9 µg/m³ to 2.1 µg/m³ (over all samplers)	January 2004, June 2005
6.24	1.34	4.68	4-7 (background is 3-4)	0.86	Monitoring has taken place since 1988. About 200 spot measurements are made each of the measuring stations. These are sited to take account of the prevailing wind. Since 2004 the concentrations have been fairly similar. On the upwind side of there refinery values are typically 3 - 4 µg/m³ and downwind 4-7 µg/m³.	1995-2008
27.04	1.31	4.57	< 0.1 spot sample	< 0.03	Fenceline samples are taken at 2 locations. Concentrations of 0.1 µg/m³ and 0 µg/m³ detected. Major on-site survey conducted in recent years resulted in major changes to reduce benzene emissions.	2010
4.01	1.13	3.95	1 - 2	0.56	Short term measures to determine values	unknown
10.00	1.01	3.53	1.2 and 1.5 (29 month average)	0.43	2 Monitoring stations on refinery fence generating annual averages using 1-2 month sampling periods. (22 sampling periods at each station). Very low variability. Max sample value 3.9 μg/m³ at station 1 and 2.9 μg/m³ at station 2.	mid 2007- end 2009
21.00	0.97	3.42	1.73	0.49	AQ monitoring station 500m from fence at nearest community, annual average.	2009

RA Code	RCR	Implied Concentration µg/m³	Data Concentration µg/m³	Revised RCR	Comments	Date
5.03	0.95	3.33	1.9 average since campaign	0.54	Monitoring Program since 2001 comprising quarterly campaigns on process plant, storage, waste water treatment and external boundary. Boundary concentrations were on average 4.8 up to and including 2007. A campaign to reduce VOC emissions resulted in average concentration below 2.1 µg/m³ in 2008 and 1.6 µg/m³ in 2009.	2001 - present
8.07	0.87	3.04	2.74 (year average excluding non detects) 1.98 (with nondetects as 0.0)	0.78	Local authority monitors refinery with station 300 m from fence. Daily averages reported for entire year.	2009
5.08	0.85	2.97	< 3.8 (typical concentration is 2.5)	0.71	Set of 6 2 week long campaigns (12 weeks) downwind of refinery.	Oct 2007 - Jan 2008
11.01	0.84	2.92	2	0.57	Continuous monitoring information is supported by campaigns. Monitoring stations (4) cover local community at distances up to 1.07 km from fence line. In 2008 and 2009 only one station measured above its detection limit and this was 500m from boundary. Campaigns verified concentrations < 1.5 μ g/m³ in 2008 and < 1 μ g/m³ in 2009 at stations.	2008 - 2009
5.07	0.83	2.92	2.7	0.77	Passive Samplers across region surrounding the site with focus on nearby town. One continuous sampler. Data for 4 months June to September. Average over nearest samples was 2.7 µg/m³. Highest single monthly measure was 5 µg/m³. At sample location away from town (opposite side of site) average concentration was 1.1 µg/m³ (maximum 1.7 µg/m³)	2006

RA Code	RCR	Implied Concentration µg/m³	Data Concentration µg/m³	Revised RCR	Comments	Date
7.01	0.75	2.64	3	0.86	Continuous monitoring. Station location unknown. Value for 2009 was 3 μg/m³. Jan - May 2010 average was 1.8 μg/m³	2009 - 2010
14.00	0.71	2.48	2.8 +/- 1.05	0.80	One month survey making 1/2 hour averages 1.7 km (approx) from fenceline	2010
9.02	0.68	2.36	1.85 one month	0.53	Campaign in September 2009 with 6 of 7 measurement stations on the boundary measuring < 1.5 μ g/m³ and one measuring 1.85 μ g/m³. Two outside stations one reported < 1.5 μ g/m³ and the other 3.82 μ g/m³.	Sep-09
5.06	0.52	1.81	1.3 for year. 1.63, 1.73, 1.77 for Q1 at stations.	0.51	Local authority monitoring outside of refinery at distances of 1.6, 1,7 and 2.8 km from fence. Whole year at one station which is also in town, Jan-Mar at other stations. Monitoring station at nearby (5.2 km to Ref) storage depot shows concentrations. of 1.2 µg/m³ in 2007 and 1.0 µg/m³ in 2005.	2009
5.16	0.34	1.19	7.3 average one month with 2 high values.		Campaign in Feb 2009 measured 3 fence line and 3 outside locations. One outside and one boundary measure were high 15.5 and 10.8 respectively - not known if there were traffic sources or location on hot spot so implied RCR not given. Other data-points suggest 3.8 - 4.0 µg/m³ which is within AQ standard but above threshold requiring monitoring Average 7.3 µg/m³	Feb-09

4. Conclusions

The combination of evidence from site monitoring and ambient AQ network monitoring shows that the estimated concentrations, coming from the REACH risk assessment for Low Boiling Point Naphthas (Gasolines), have no basis in fact.

Benzene is a priority chemical and risk management processes need to be in place to limit its accidental release to the environment. Evidence obtained here shows that such management takes place widely in the form of campaign or continuous monitoring of benzene.

The evidence points to annual average concentrations at the boundary of refinery sites being within the current European Ambient Air Quality standard of 5 µg/m³ by a significant margin.

Using the measured benzene air concentration all reporting location have RCRs <=1. The air quality monitoring network measurements suggest a typical annual benzene concentration of 2 μ g/m³ for the industrial areas surrounding refineries which would set the RCR to be 0.6 using the current upper assessment threshold of the Air Quality Directive.