Version: 1.0



### **Exposure Scenarios**

Safety Data Sheet: Miles Unleaded 95

### **Table of contents:**

Identified uses according to the SDS, section 1.2:

Identified Uses	Workers?	Tittle:
Manufacture of substance	YES	Industrial
Use as an Intermediate	YES	Industrial
Fuel Distribution	YES	Industrial
Formulation & (re)packing	YES	Industrial
Use in coatings	YES	Industrial
Use in Cleaning Agents	YES	Industrial
Use as a fuel	YES	Industrial
Use as a fuel	YES	Professional
Use as a fuel	NO	Consumer
Rubber production and processing	YES	Industrial

### **Abbreviations:**

PC13 -Fuels

SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

**SU8** - Manufacture of bulk, large chemicals (including petroleum products)

SU9 - Production of fine chemicals; SU10- Formulation [mixing] of preparations and / or repackaging

**SU11-** Manufacture of rubber products

SU 21 -Private households (= general public = consumers)

SU 22 - Professional uses: Public domain (administration, education, entertainment, services, and craftsmen)

PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC3 - Use in closed batch process (synthesis or formulation)

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

**PROC6-** Calendering operations

PROC7 - Industrial spraying

PROC5 Mixing or blending in batch processes

**PROC8a** -Transfer or preparation (charging / discharging) from / to vessels / large containers at non-dedicated facilities

**PROC8b** -Transfer of substance or preparation (charging / discharging) from / to vessels / large containers at dedicated facilities

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



- PROC10- Roller application or brushing of adhesives and other coatings
- PROC13- Treatment of articles by dipping and pouring
- PROC14- Production of preparations or articles by compression
- PROC15 Use as laboratory reagent
- PROC16 Using material as fuel sources, limited exposure to unburned product to be expected
- PROC19- Hand mixing, direct contact
- PROC21- Fluorescent manipulation of substances bound in materials and / or articles
- ERC1 Production of fabrics
- **ERC2** Formulation of preparations
- **ERC3** Formulation in materials
- ERC4 Industrial use of processing aids in processes and products
- ERC5 Industrial use resulting in inclusion into or onto a matrix
- ERC6a Industrial use resulting in manufacture of another substance (use of intermediates)
- ERC6b Industrial use of reactive processing aids
- ERC6C Industrial use of monomers for the production of thermoplastic
- ERC6d -Industrial use of process regulators for polymerization processes in production of resins, rubbers, polymers
- **ERC7** Industrial use of sub-agents in closed systems
- ERC8a-Invasive indoor use of processing aids in open systems
- ERC8d- Invasive outdoor use of processing aids in open systems
- ERC8f-Invasive outdoor use resulting in inclusion into or onto a matrix
- ERC8e- Invasive indoor use of substances in closed systems
- ERC9a Wide dispersive indoor use of substances in closed systems
- **ERC9b** Wide dispersive outdoor use of substances in closed systems



# **Exposure Scenarios**

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# 1. Manufacture of Low Boiling Point Naphthas (Gasoline) - Industrial

Section 1 Exposure Scenario		
Title		
Low boiling point naphthas (Gasoline) that is classified as H350, H340, H361.		
Free short title		
Manufacture of substances		
Use Descriptor		
SU (Sector(s) of Use)	3, 8, 9	
PROC (Process Categories)	1, 2, 3, 8a, 8b, 15	
ERC (Environmental Release Category		
SERC (Specific Environmental Releas Category)	· ·	
Processes, tasks, activities cov		
contained systems. Includes in	or use as a process chemical or extraction agent within closed or cidental exposures during recycling/ recovery, material transfers, aboratory activities, maintenance and loading (including marine bulk container).	
Assessment Method		
See Section 3.		
Section 2 Operational con	ditions and risk management measures	
•	<u> </u>	
Section 2.1 Control of wor	ker exposure	
Product characteristics		
	Liquid, vapour pressure > 10 kPa at STP OC5.	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated differently) G13.	
	Not applicable	
	Covers daily exposures up to 8 hours (unless stated differently) G2.	
use/exposure	, , , , , , , , , , , , , , , , , , ,	
Human factors not influenced by risk management	Not applicable	
conditions affecting workers 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.	
	Specific Risk Management Measures and Operating Conditions	
General measures (skin	Avoid direct skin contact with product. Identify potential areas for indirect	



# **Exposure Scenarios**

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 (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). + CS54 Continuous process.	Handle substance within a closed system. E47.
CS15 General exposures (closed systems). + CS55 Batch process.	Handle substance within a closed system. E47. Ensure operation is undertaken outdoors. E69.
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.  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.	Ensure operation is undertaken outdoors. E69. Store substance within a closed system. E84.



# **Exposure Scenarios**

Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [Pr	C4a].
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 exposur	e
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 prevent release	
Common practices vary across sites thus conservative process rele	
Technical onsite conditions and measures to reduce or limit dischar releases to soil	
Prevent discharge of undissolved substance to or recover from was environmental exposure is driven by humans via indirect exposure (	
Onsite wastewater treatment required [TCR13].  Treat air emission to provide a typical removal efficiency of (%)	99.0
Treat air emission to provide a typical removal emiciency of (%)  Treat onsite wastewater (prior to receiving water discharge) to	95.2
provide the required removal efficiency ≥ (%)	90.2
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%)	80.4
Organisation measures to prevent/limit release from site	1
Do not apply industrial sludge to natural soils [OMS2]. Sludge shoul reclaimed [OMS3].	d be incinerated, contained o
Conditions and measures related to municipal sewage treatment pla	nt
Estimated substance removal from wastewater via domestic sewage	95.5
treatment (%)	



### **Exposure Scenarios**

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2.0e6
10000
disposal
[4].
/2].

### **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



### **Exposure Scenarios**

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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

conclusion that no refineries have RCRs>1 (Appendix 4 and PETRORISK file in IUCLID section 13

"Tier II worksheet").



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

Section 1 Exposure Scenario	
Title	
Low boiling point naphthas (Gaso	line) that is classified as H350, H340, H361.
Free short title	
Use of substance as intermediate	
Use Descriptor	
SU (Sector(s) of Use)	3, 8, 9
PROC (Process Categories)	1, 2, 3, 8a, 8b, 15
ERC (Environmental Release Category)	6a
SERC (Specific Environmental Release Category)	ESVOC SpERC 6.1a.v1
Processes, tasks, activities covered	
contained systems. Includes incid	ate (not related to strictly controlled conditions) within closed or ental exposures during recycling/recovery, material transfers, pratory activities, maintenance and loading (including marine k container).
Assessment Method	
See Section 3.	
Section 2 Operational condit	ions and risk management measures
•	
Section 2.1 Control of worke	r 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.
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 given operational conditions affecting workers 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 direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact



# **Exposure Scenarios**

	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	Handle substance within closed systems. E47.  Sample via a closed loop or other system intended to avoid
With sample collection.	exposure. E8. Wear suitable gloves tested to EN374. PPE15.
CS15 General exposures	Handle substance within a closed system. E47.
(closed systems). CS67 Storage.	Ensure operation is undertaken outdoors. E69.  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.  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 bacontained in Appendices 1 to 3	asis for the allocation of the identified OCs and RMMs is
Section 2.2 Control of envi	ronmental exposure
Product characteristics Substance is complex LIVCR IP	C3]. Predominantly hydrophobic [PrC4a].
Amounts used	oj. Fredominantiy nydrophobic [F104a].
<b></b>	



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 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)	0.025	
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 prevent release		
to block to be a second to the second to the second to the second to the beautiful to be a second to the second to	ase estimates used [TCS1].	
Common practices vary across sites thus conservative process rele		
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was	tewater [TCR14].	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastey	tewater [TCR14]. [TCR1b].	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9].	tewater [TCR14]. [TCR1b].	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide	tewater [TCR14]. [TCR1b]. vater treatment required	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)	tewater [TCR14]. [TCR1b]. vater treatment required	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide	tewater [TCR14]. [TCR1b]. vater treatment required 80 92.9	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9]. Treat air emission to provide a typical removal efficiency of (%) 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 ≥ (%)	tewater [TCR14]. [TCR1b]. vater treatment required 80 92.9	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9].  Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required	tewater [TCR14]. [TCR1b]. vater treatment required  80 92.9	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9]. Treat air emission to provide a typical removal efficiency of (%) 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 ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge shoul reclaimed [OMS3].	tewater [TCR14]. [TCR1b]. vater treatment required  80 92.9  0  d be incinerated, contained or	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9]. Treat air emission to provide a typical removal efficiency of (%) 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 ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge shoul reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plat Estimated substance removal from wastewater via domestic sewage	tewater [TCR14]. [TCR1b]. vater treatment required  80 92.9  0  d be incinerated, contained or	
Technical onsite conditions and measures to reduce or limit dischar releases to soil  Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge shoul reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment platestimated substance removal from wastewater via domestic	tewater [TCR14]. [TCR1b]. vater treatment required  80 92.9  0  d be incinerated, contained or	
Common practices vary across sites thus conservative process rele Technical onsite conditions and measures to reduce or limit dischar releases to soil Prevent discharge of undissolved substance to or recover from was Risk from environmental exposure is driven by freshwater sediment If discharging to domestic sewage treatment plant, no onsite wastev [TCR9]. Treat air emission to provide a typical removal efficiency of (%) 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 ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge shoul reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment pla Estimated substance removal from wastewater via domestic sewage treatment (%) Total efficiency of removal from wastewater after onsite and offsite	tewater [TCR14]. [TCR1b]. vater treatment required  80 92.9  0  d be incinerated, contained or  nt 95.5	



### **Exposure Scenarios**

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Conditions and measures related to external treatment of waste for disposal

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].

### **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].



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

Section 1 Exposure Scenario		
Title		
Low boiling point naphthas (Gasoline) that is classified as H350, H340, H361.		
Free short title		
Distribution of substance		
Use Descriptor		
SU (Sector(s) of Use)	3	
PROC (Process Categories)	1, 2, 3, 8a, 8b, 15	
ERC (Environmental Release Category)	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	
SERC (Specific Environmental Release Category)	ESVOC SpERC 1.1b.v1	
Processes, tasks, activities covered		
	ssel/barge, rail/road car and IBC loading) of substance within	
	uding incidental its sampling, storage, unloading, maintenance	
and		
associated laboratory activities. Assessment Method		
See Section 3.		
	ione and rick management magazines	
Section 2 Operational condit	ions and risk management measures	
Coation 2.4 Control of works	<b></b>	
Section 2.1 Control of worke	r exposure	
Product characteristics	1'. 'I	
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.	
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 given operational	Assumes use at not more than 20°C above ambient temperature,	
conditions affecting workers	unless stated differently. G15. Assumes a good basic standard of	
exposure	occupational 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	
irritants) G19	indirect skin contact. Wear gloves (tested to EN374) if hand contact	
	12	



# **Exposure Scenarios**

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(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 (closed systems). OC9 Outdoor.	Handle substance within closed systems. E47.
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 and unloading.	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.  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.	Ensure operation is undertaken outdoors. E69. Store substance within a closed system. E84.

Product characteristics



Substance is complex UVCB [PrC3]. Predominantly hydrophobic [Pr	·C4a1
Amounts used	C4aj.
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	
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	T. C.
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 prev	vent release
Common practices vary across sites thus conservative process rele	ase estimates used [TCS1].
Technical onsite conditions and measures to reduce or limit dischar releases to soil	ges, air emissions and
Risk from environmental exposure is driven by humans via indirect inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsi	
Risk from environmental exposure is driven by humans via indirect inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsi required [TCR9].	te wastewater treatment
Risk from environmental exposure is driven by humans via indirect inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsi required [TCR9]. Treat air emission to provide a typical removal efficiency of (%)	te wastewater treatment
Risk from environmental exposure is driven by humans via indirect inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsi required [TCR9]. Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide	te wastewater treatment
Risk from environmental exposure is driven by humans via indirect inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsi required [TCR9].  Treat air emission to provide a typical removal efficiency of (%) Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) If discharging to domestic sewage treatment plant, provide the required	te wastewater treatment
Risk from environmental exposure is driven by humans via indirect inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsi required [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)	90 12
Risk from environmental exposure is driven by humans via indirect inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsi required [TCR9].  Treat air emission to provide a typical removal efficiency of (%) 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 ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge shoul reclaimed [OMS3].	te wastewater treatment  90 12 0 d be incinerated, contained or
Risk from environmental exposure is driven by humans via indirect inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsi required [TCR9].  Treat air emission to provide a typical removal efficiency of (%) 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 ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge shoul reclaimed [OMS3]. Conditions and measures related to municipal sewage treatment plant	te wastewater treatment  90 12 0 d be incinerated, contained or
Risk from environmental exposure is driven by humans via indirect inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, no onsi required [TCR9].  Treat air emission to provide a typical removal efficiency of (%) 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 ≥ (%) Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils [OMS2]. Sludge shoul reclaimed [OMS3].	te wastewater treatment  90 12 0 d be incinerated, contained or



### **Exposure Scenarios**

Safety Data Sheet: Miles Unleaded 95

(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (Msafe) (kg/d)	1.1E6
Assumed domestic sewage treatment plant flow (m <sub>3</sub> /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].

### **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].



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# 4. Formulation & (re)packing of Low Boiling Point Naphthas (Gasoline) - Industrial

Section 1 Exposure Scenario	
Title	
Low boiling point naphthas (Gaso	line) that is classified as H350, H340, H361.
Free short title	
Formulation & (re)packing of subs	tances and mixtures
Use Descriptor	
SU (Sector(s) of Use)	3, 10
PROC (Process Categories)	1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1
ERC (Environmental Release Category)	2
SERC (Specific Environmental Release Category)	ESVOC SpERC 2.2.v1
Processes, tasks, activities covere	
operations within closed or contai	its mixtures in batch or continuous ned systems, including incidental exposures during storage, enance, sampling and associated laboratory activities.
Assessment Method	, <u> </u>
See Section 3.	
Section 2 Operational condit	ions and risk management measures
Section 2.1 Control of worke	r 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.
Amount used	Not applicable
Frequency and duration of use/exposure  Covers daily exposures up to 8 hours (unless stated differently) G2  use/exposure	
Human factors not influenced by risk management	Not applicable
Other given operational conditions affecting workers 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



# **Exposure Scenarios**

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.  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.	Store substance within a closed system. E84.



# **Exposure Scenarios**

Wear suitable gloves tested to EN3	74. PPE15.
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [Pr	C4al
Amounts used	C4aj.
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	1.0e5
Continuous release [FD2].	
	200
Emission days (days/year)	300
Environmental factors not influenced by risk management	40
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposur	
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 prev	
Common practices vary across sites thus conservative process rele	
Technical onsite conditions and measures to reduce or limit dischar releases to soil	ges, air emissions and
Prevent discharge of undissolved substance to or recover from was	tewater [TCR14].Risk from
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastev [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	56.5
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)	94.7
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 shoul reclaimed [OMS3].	d be incinerated, contained or
Conditions and measures related to municipal sewage treatment pla	nt



### **Exposure Scenarios**

Safety Data Sheet: Miles Unleaded 95

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 (Msafe) (kg/d)	1.0E5
Assumed domestic sewage treatment plant flow (m <sub>3</sub> /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].

### **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].



Safety Data Sheet: Miles Unleaded 95

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# 5. Use of Low Boiling Point Naphthas (Gasoline) in Coatings - Industrial

Section 1 Exposure Scenario	)
Title	
	line) that is classified as H350, H340, H361.
Free short title	
Uses in Coatings	
Use Descriptor	
SU (Sector(s) of Use)	3
PROC (Process Categories)	1, 2, 3, 8a, 8b, 15
ERC (Environmental Release Category)	4
SERC (Specific Environmental Release Category)	ESVOC SpERC 4.3a.v1
Processes, tasks, activities covered	
including incidental exposures du transfer from bulk and semi-bulk, cleaning, maintenance and associ	e, inks, adhesives, etc) within closed or contained systems ring use (including materials receipt, storage, preparation and application activities and film formation) and equipment ated laboratory activities.
Assessment Method	
See Section 3.	
Section 2 Operational condit	ions and risk management measures
Section 2.1 Control of worke	r 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.
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 given operational	Assumes use at not more than 20°C above ambient temperature,
conditions affecting workers exposure	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	Avoid direct skin contact with product. Identify potential areas for
irritants) G19	indirect skin contact. Wear gloves (tested to EN374) if hand contact



# **Exposure Scenarios**

	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.
CS99 Film formation - force drying, stoving and other technologies.	Provide extract ventilation to points where emissions occur. E54.
CS15 General exposures (closed systems).	Handle substance within a closed system. E47.  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.
CS3 Material transfers	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.
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 'basic' employee training. PPE16.
CS67 Storage.	Store substance within a closed system. E84
<del>-</del>	·
Section 2.2 Control of envir	ronmental exposure
Product characteristics	
	C3]. Predominantly hydrophobic [PrC4a].
Amounts used Fraction of EU tonnage used in r	ragion 0.4
Fraction of EU tonnage used in r	region 0.1




Regional use tonnage (tonnes/year)	6.2E3
Fraction of Regional tonnage used locally	1.0
Annual site tonnage (tonnes/year)	6.2E3
Maximum daily site tonnage (kg/day)	2.1E4
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 exposure	e
Release fraction to air from process (initial release prior to RMM)	0.98
Release fraction to wastewater from process (initial release prior to	0.007
RMM)	
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prev	
Common practices vary across sites thus conservative process rele	
Technical onsite conditions and measures to reduce or limit dischar	ges, air emissions and
releases to soil	
	Lauratan ITCD4 41 Diale frans
Prevent discharge of undissolved substance to or recover from wast	
environmental exposure is driven by humans via indirect exposure (	primarily inhalation) [TCR1k].
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew	primarily inhalation) [TCR1k].
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].	primarily inhalation) [TCR1k]. vater treatment required
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)	primarily inhalation) [TCR1k]. vater treatment required
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  Treat onsite wastewater (prior to receiving water discharge) to	primarily inhalation) [TCR1k]. vater treatment required
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  Treat onsite wastewater (prior to receiving water discharge) to provide	primarily inhalation) [TCR1k]. vater treatment required
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)  If discharging to domestic sewage treatment plant, provide the	primarily inhalation) [TCR1k]. vater treatment required
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)  If discharging to domestic sewage treatment plant, provide the required	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6  0
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should reclaimed [OMS3].	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6  0  d be incinerated, contained or
environmental exposure is driven by humans via indirect exposure (If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment plants	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6  0  d be incinerated, contained or
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment pla Estimated substance removal from wastewater via domestic	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6  0  d be incinerated, contained or
environmental exposure is driven by humans via indirect exposure (If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment platestimated substance removal from wastewater via domestic sewage	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6  0  d be incinerated, contained or
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment pla Estimated substance removal from wastewater via domestic sewage treatment (%)	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6  0  d be incinerated, contained or  nt  95.5
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment pla Estimated substance removal from wastewater via domestic sewage treatment (%)  Total efficiency of removal from wastewater after onsite and offsite	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6  0  d be incinerated, contained or
environmental exposure is driven by humans via indirect exposure (If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment plate Estimated substance removal from wastewater via domestic sewage treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6  0  d be incinerated, contained or  nt  95.5
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment pla Estimated substance removal from wastewater via domestic sewage treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)  Maximum allowable site tonnage (Msafe) (kg/d)	primarily inhalation) [TCR1k]. vater treatment required  94.1  92.6  0  d be incinerated, contained or  nt  95.5  2.1E4
environmental exposure is driven by humans via indirect exposure ( If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].  Treat air emission to provide a typical removal efficiency of (%)  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 ≥ (%)  Organisation measures to prevent/limit release from site  Do not apply industrial sludge to natural soils [OMS2]. Sludge should reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment pla Estimated substance removal from wastewater via domestic sewage treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	primarily inhalation) [TCR1k]. vater treatment required  94.1 92.6  0  d be incinerated, contained or  nt 95.5  2.1E4 2000



### **Exposure Scenarios**

Safety Data Sheet: Miles Unleaded 95

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].

### **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].



Safety Data Sheet: Miles Unleaded 95

# 6. Use of Low Boiling Point Naphthas (Gasoline) in Cleaning Agents - Industrial

Section 1 Exposure Scenario		
Title		
Low boiling point naphthas (Gaso	line) that is classified as H350, H340, H361.	
Free short title	· · · · · · · · · · · · · · · · · · ·	
Use in Cleaning Agents		
Use Descriptor		
SU (Sector(s) of Use)	3	
PROC (Process Categories)	1, 2, 3, 8a, 8b	
ERC (Environmental Release Category)	4	
SERC (Specific Environmental Release Category)	ESVOC SpERC 4.4a.v1	
Processes, tasks, activities covered		
including incidental exposures du phase	f cleaning products within closed or contained systems ring transfer from storage, mixing/diluting in the preparatory ipment cleaning and maintenance.	
Assessment Method	iphient cleaning and maintenance.	
See Section 3.		
000 000	tions and risk management measures	
Section 2 Operational conditi	nons and risk management measures	
Section 2.4 Control of works	W OVER OUT O	
Section 2.1 Control of worke	e exposure	
Product characteristics	Limited community and CTD OOF	
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.	
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 given operational	Assumes use at not more than 20°C above ambient temperature,	
conditions affecting workers	unless stated differently. G15. Assumes a good basic standard of	
exposure	occupational hygiene is implemented G1.	
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions	
Canaral magaziros /akin	Avoid direct skin contact with product. Identify potential areas for	
General measures (skin irritants) G19	indirect skin contact. Wear gloves (tested to EN374) if hand contact	



	with substance likely. Clean up cont they occur. Wash off skin contamina employee training to prevent / minin any skin effects that may develop.	ation immediately. Provide basic nise exposures and to report
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 / flus equipment, where possible, prior to maintenance.  Where there is potential for exposure: Restrict access to authorist staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls 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.	
CS 14 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 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 'basic' employee training. PPE16.	
CS67 Storage.	Store substance within a closed system. E84	
	is for the allocation of the identified	
Section 2.2 Control of enviro	nmental exposure	
Product characteristics		
	21 Prodominantly hydrophobic [Pr	C4a1
Substance is complex UVCB [PrC3	oj. Fredominantiy nyarophobic (Fre	<b>υ</b> - α , .
Amounts used		<b>5</b> -тај.
	gion	0.1 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	9
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)	0
Technical conditions and measures at process level (source) to prev	
Common practices vary across sites thus conservative process release	
Technical onsite conditions and measures to reduce or limit dischargeleases to soil	ges, air emissions and
Prevent discharge of undissolved substance to or recover from wast	ewater [TCR14].Risk from
environmental exposure is driven by humans via indirect exposure (	primarily inhalation) [TCR1k].
If discharging to domestic sewage treatment plant, no onsite wastew [TCR9].	vater treatment required
Treat air emission to provide a typical removal efficiency of (%)	70
Treat onsite wastewater (prior to receiving water discharge) to provide	4.4
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 reclaimed [OMS3].	·
Conditions and measures related to municipal sewage treatment pla	nt
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 (%)	<del>ອ</del> ວ.ວ
Maximum allowable site tonnage (Msafe) (kg/d)	2.9E4
Maximum allowable site tonnage (Msafe) (kg/d) Assumed domestic sewage treatment plant flow (m₃/d)	2000
Maximum allowable site tonnage (Msafe) (kg/d)	2000 lisposal



### **Exposure Scenarios**

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### 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].

### **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,

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].



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# 7. Use of Low Boiling Point Naphthas (Gasoline) as a fuel - Industrial

Section 1 Exposure Scenario		
Title		
Low boiling point naphthas (Gasoline) that is classified as H350, H340, H361.		
Free short title		
Use as a fuel		
Use Descriptor		
SU (Sector(s) of Use)	3	
PROC (Process Categories)	1, 2, 3, 8a, 8b, 16	
ERC (Environmental Release Category)	7	
SERC (Specific Environmental Release Category)	ESVOC SpERC 7.12a.v1	
Processes, tasks, activities covere		
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 condit	ions and risk management measures	
у при		
Section 2.1 Control of worke	r 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.	
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 given operational conditions affecting workers 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	



# **Exposure Scenarios**

	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.
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. <u>E66</u> .
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 from 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)	Handle substance within closed systems. E47.
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 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.  Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16.
CS67 Storage.	Store substance within a closed system. E84.



# **Exposure Scenarios**

Dravida a good standard of	general ventilation. Natural ventilation	
	general ventilation. Natural ventilation	
is from doors, windows etc. Controlled ventilation means a supplied or removed by a powered fan. E1.		
supplied or removed by a powered fan. £1.		
Castian 2.2 Cantral of anying manual averaging		
Section 2.2 Control of environmental exposure		
Product characteristics	1: 17.04.1	
Substance is complex UVCB [PrC3]. Predominantly hydrophe	obic [PrC4a].	
Amounts used	0.4	
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].		
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 R		
Release fraction to wastewater from process (initial release p RMM)	orior to 0.00001	
Release fraction to soil from process (initial release prior to F	<b>RMM)</b> 0	
Technical conditions and measures at process level (source)	to prevent release	
Common practices vary across sites thus conservative proce	ess release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit releases to soil	<u> </u>	
Risk from environmental exposure is driven by humans via in inhalation) [TCR1k]. If discharging to domestic sewage treatment plant, required [TCR9].	no onsite wastewater treatment	
Treat air emission to provide a typical removal efficiency of (		
Treat onsite wastewater (prior to receiving water discharge) to provide	<b>76</b> .9	
the required removal efficiency ≥ (%)		
If discharging to domestic sewage treatment plant, provide the required	ne 0	
onsite wastewater removal efficiency of ≥ (%)		
Organisation measures to prevent/limit release from site		
Do not apply industrial sludge to natural soils [OMS2]. Sludg	e should be incinerated, contained o	



### **Exposure Scenarios**

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reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
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 (Msafe) (kg/d)	4.6E6
Assumed domestic sewage treatment plant flow (m <sub>3</sub> /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].

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;

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



# **Exposure Scenarios**

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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].



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

Section 1 Exposure Scenario		
Title		
Low boiling point naphthas (Gasoline) that is classified as H350, H340, H361.		
Free short title		
Use as a fuel		
Use Descriptor		
SU (Sector(s) of Use)	22	
PROC (Process Categories)	1, 2, 3, 8a, 8b, 16	
ERC (Environmental Release Category)	9a, 9b	
SERC (Specific Environmental Release Category)	ESVOC SpERC 9.12b.v1	
Processes, tasks, activities covered		
	dditives and additive components) within closed or contained osures during activities associated with its transfer, use, te.	
Assessment Method		
See Section 3.		
Section 2 Operational condit	ions and risk management measures	
<b>J</b>		
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.	
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 given operational	Assumes use at not more than 20°C above ambient temperature,	
conditions affecting workers exposure	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	
	22	



# **Exposure Scenarios**

General Measures (carcinogens). G18.	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  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.



Product characteristics Substance is complex UVCB [PrC3]. Predominantly hydrophobic [P Amounts used	
Amounts used	rC4a].
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	
Local freshwater dilution factor	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)	0.01
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	event release
Common practices vary across sites thus conservative process rele	ease estimates used [TCS1].
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 inhalation)	exposure (primarily
[TCR1k]. If discharging to domestic sewage treatment plant, no ons	site 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	3.4
provide	
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the	0
required	
onsite wastewater removal efficiency of ≥ (%)	
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge shoureclaimed [OMS3].	ıld be incinerated, contained or
Conditions and measures related to municipal sewage treatment pl	ant
	95.5



### **Exposure Scenarios**

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treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95.5
Maximum allowable site tonnage (Msafe) (kg/d)	1.5E4
Assumed domestic sewage treatment plant flow (m <sub>3</sub> /d)	2000
Conditions and measures related to external treatment of waste for disposal	

Combustion oniccione limited by required exhaust emission controls [ETW/1]

Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions

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 generated [ERW3].

### **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].



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# 9. Use of Low Boiling Point Naphthas (Gasoline) as a fuel - Consumer

Section 1 Exposure Scer	Section 1 Exposure Scenario		
Title			
Low boiling point naphthas (Gasoline) that is classified as H350, H340, H361.			
Free short title	<del>-</del>		
Use as a fuel			
Use Descriptor			
SU (Sector(s) of Use)		21	
PROC (Process Categories)		13	
ERC (Environmental Release Categoria	ory)	9a, 9b	
SERC (Specific Environmental Rele	ase Category)	ESVOC SpERC 9.12c.v1	
Processes, tasks, activities co	overed	·	
Covers the consumer use of s	substance in liquio	d fuels	
Assessment Method			
See Section 3.			
Section 2 Operational co	nditions and ri	sk management measures	
		5	
Section 2.1 Control of wo	rker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)	Vapour pressure > 10 kPa at STP OC5		
Concentration of substance			
in product			
Amounts used Unless otherwise stated, covers use amounts up to 37500g [Cor		stated, covers use amounts up to 37500g [ConsOC2];	
	covers skin contact area up to 420cm2 [ConsOC5]		
Frequency and duration of		stated, covers use frequency up to 0.143 times per	
use/exposure	day [ConsOC4]; covers exposure up to 2 hours per event [ConsOC14]		
Other given operational	Unless otherwise stated assumes use at ambient temperatures		
conditions affecting workers			
exposure	with typical ventilation [ConsOC8].		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		
PC13:Fuels OC		stated, covers concentrations up to 1% [ConsOC1];	
Liquid -		52 days/year[ConsOC3]; covers use up to 1 time/on	
subcategories	day of use[ConsOC4]; covers skin contact area up to 210.00 cm2		
added:	[ConsOC5]; for each use event, covers use amounts up to 37500g		
Automotive Refuelling	[ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m3[ConsOC11]; for each use event, covers exposure up to		
Kerueiling	0.05hr/event[Con		
	o.oom/eveniloon	المارين عربي عربي الماري المار	



# **Exposure Scenarios**

	RMM	No specific RMMs developed bey	ond those OCs stated
PC13:Fuels Liquid - subcategories added: Scooter Refuelling	OC	covers use up to 52 days/year[Coday of use[ConsOC4]; covers skir [ConsOC5]; for each use event, c [ConsOC2]; covers outdoor use [0.03hr/event[ConsOC14];	overs use amounts up to 3750g ConsOC12]; covers use in room size of event, covers exposure up to
PC13:Fuels	RMM OC	No specific RMMs developed bey	concentrations up to 1% [ConsOC1];
Liquid - subcategories added: Garden Equipment - Use	OC	covers use up to 26 days/year[Coday of use[ConsOC4]; for each us 750g [ConsOC2]; covers outdoor	onsOC3]; covers use up to 1 time/on se event, covers use amounts up to use [ConsOC12]; covers use in room ach use event, covers exposure up to
	RMM	No specific RMMs developed bey	ond those OCs stated
PC13:Fuels Liquid (subcategories added): Garden Equipment - Refuelling	oc	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 26 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 420.00 cm2 [ConsOC5]; for each use event, covers use amounts up to 750g [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 0.03hr/event[ConsOC14];	
	RMM	No specific RMMs developed bey	
Section 2.2 Cor	ntrol of e	nvironmental exposure	
Product characteri			
Substance is comp  Amounts used	olex UVCB	[PrC3]. Predominantly hydrophobi	ic [PrC4a].
Fraction of EU toni	nage used	in region	0.1
Regional use tonna			1.39E7
	• •		0.0005
Fraction of Regional tonnage used locally Annual site tonnage (tonnes/year)		<del>-</del>	7.0E3
Maximum daily site tonnage (kg/day)		1.9E4	
Frequency and dur			'
Continuous release			
			005
Emission days (day	ys/year)		365
		luenced by risk management	365



### **Exposure Scenarios**

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Local marine water dilution factor	100
Other given operational conditions affecting environmental expos	sure
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
Conditions and measures related to municipal sewage treatment	plant
Risk from environmental exposure is driven by humans via indiinhalation) [STP71k].	rect exposure (primarily
Estimated substance removal from wastewater via domestic sewage treatment (%)	95.5
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	1.8E5
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 [ETW1]. Combustion emissions

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 generated [ERW3].

### **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.



### **Exposure Scenarios**

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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 (<a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a>) [DSU4].



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

Section 1 Exposure Scenario		
Title		
Low boiling point naphthas (Gaso	line) that is classified as H350, H340, H361.	
Free short title		
Rubber production and processing	g	
Use Descriptor		
SU (Sector(s) of Use)	3, 10, 11	
PROC (Process Categories)	1, 2, 3, 8a, 8b, 9, 15	
ERC (Environmental Release Category)	1, 4, 6d	
SERC (Specific Environmental Release Category)	ESVOC SpERC 19	
Processes, tasks, activities covered		
	ubber articles within closed or contained systems, including	
	essing of raw (uncured) rubber, handling and mixing of rubber g, cooling and finishing as well as maintenance.	
Assessment Method	<u> </u>	
See Section 3.		
Section 2 Operational condit	ions and risk management measures	
•		
Section 2.1 Control of worke	r 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	
in product	stated 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 given operational	Operation is carried out at elevated temperature (> 20°C above	
conditions affecting workers	ambient temperature). OC7. Assumes a good basic standard of	
exposure	occupational 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	
irritants) G19	indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as	
	with substance intery. Steam up contamination/spins as soon as	



# **Exposure Scenarios**

	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.	
CS3 Material transfers CS107 Storage and bulk transfers of rubber	Store substance within a closed system. E84. Ensure material transfers are under containment or extract ventilation. E66.	
chemicals to/from storage		
CS15 General exposures (closed systems).	Handle substance within a closed system. E47.	
CS3 Material transfers	Ensure material transfers are under containment or extract ventilation. E66.	
CS91 Bulk weighing	Handle substance within a closed system. E47. 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 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.	
CS90 Small scale weighing	Carry out in a vented booth or extracted enclosure. E57.	
CS67 Storage.	Store substance within a closed system. E84.	
	<u> </u>	
Section 2.2 Control of env	ironmental exposure	
Product characteristics		
Substance is complex LIVCD ID	rC3]. Predominantly hydrophobic [PrC4a].	



Regional use tonnage used in region  Regional use tonnage (tonnes/year)  Fraction of Regional tonnage used locally  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 by risk management  Local freshwater dilution factor  Local marine water dilution factor  Other given operational conditions affecting environmental exposure  Release fraction to air from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process (initial release prior to RMM)  Release fraction to soil from process				
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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 (%)  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 ≥ (%)  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 treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	releases to soil	<b>-</b>		
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 ≥ (%)  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 treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	environmental exposure is driven by humans via indirect exposure (	primarily inhalation) [TCR1k].		
the required removal efficiency ≥ (%)  If discharging to domestic sewage treatment plant, provide the required 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 plant  Estimated substance removal from wastewater via domestic sewage treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	Treat air emission to provide a typical removal efficiency of (%)	N/A		
If discharging to domestic sewage treatment plant, provide the required 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 plant  Estimated substance removal from wastewater via domestic sewage treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)		23.9		
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 treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	·	0		
reclaimed [OMS3].  Conditions and measures related to municipal sewage treatment plant  Estimated substance removal from wastewater via domestic sewage treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	Organisation measures to prevent/limit release from site			
Estimated substance removal from wastewater via domestic sewage treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)		d be incinerated, contained or		
sewage treatment (%)  Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)  95.5	Conditions and measures related to municipal sewage treatment pla	nt		
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	sewage	95.5		
	Total efficiency of removal from wastewater after onsite and offsite	95.5		
waxiiiuiii allowable sile loililaye (wsate) (ky/u) 4.∠⊏4	(domestic treatment plant) Nimis (70)			



### **Exposure Scenarios**

Safety Data Sheet: Miles Unleaded 95

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Assumed domestic sewage treatment plant flow (m<sub>3</sub>/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].

### **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].