

FS Section	Content field	Explanation of content	CSR ¹	eSDS
1. Title	1.1 Title of SPERC	Use as a fuel (industrial): solvent-borne	Y	Y
	1.2 SPERC code	ESVOC SPERC 7.12a.v4	Y	Y
2. Scope	2.1 Substance/Product Domain			
	Substance types / functions / properties included or excluded	Applicable to petroleum substances and petrochemicals.	Y	N
	Additional specification of product types covered:	Includes a variety of aliphatic and aromatic hydrocarbons, ketones, alcohols, acetates, glycols, glycol ethers, and glycol ether acetates.	Y	N
	Inclusion of sub-SPERCs	Yes	N	N
	2.2 Process domain			
	Description of activities/processes:	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	Y	Y
	2.3 List of applicable Use Descriptors			
	LCS	IS – Use at industrial sites	Y	Y
SU	SU8 – Manufacture of bulk large-scale chemicals (including petroleum products)	Y	Y	
PC	PC13 – Fuels	Y	Y	
3. Operational conditions	3.1 Conditions of use			
	Location of use	Indoor	Y	Y
	Water contact during use	Yes	Y	Y
	Connected to a standard municipal biological STP	Yes	Y	Y
	Rigorously contained system with minimisation of release to the environment	No	Y	N
	Further operational conditions impacting on releases to the environment	Volatile compounds subject to air emission controls. Wastewater emissions generated from equipment cleaning with water.	Y	Y
	3.2 Waste Handling and Disposal			
Waste Handling and Disposal:	Residual raw materials and are in some cases recycled and fed back into the process reactor to improve efficiencies. In other cases, residues and by-products are used as raw materials for other downstream applications (EEA, 2016). Wastewater generated during cleaning and maintenance operations is directed to a waste water treatment plant for biological degradation. Atmospheric release of waste vapour may be ameliorated using wet scrubbers, thermal oxidizers, solid adsorbents, membrane separators, biofilters, and/or cold oxidizers for trapping residual vapours. All unrecovered waste is handled as an industrial waste that can be incinerated. EU (2016). Best Available Techniques (BAT) Reference Document for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. Report EUR 28112 EN. European IPPC Bureau. Seville, Spain. http://eippcb.jrc.ec.europa.eu/reference/BREF/CWW_Bref_2016_published.pdf	Y	N	

¹ Explanations that are more detailed can be provided for the CSR..

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		EEA (2016). Prevention of hazardous waste in Europe — the status in 2015 European Environment Agency, Report No. 35/2016. Copenhagen, Denmark. https://www.eea.europa.eu/publications/waste-prevention-in-europe/file		
4. Obligatory RMMs onsite	RMM limiting release to air:	No obligatory RMMs.	Y	Y
	RMM Efficiency (air):	Optional RMMs have been assigned a nominal removal efficiency value that is not accounted for in the air release factor. See the background document for more information.	Y	Y
	Reference for RMM Efficiency (air):	EU (2016). Best Available Techniques (BAT) Reference Document for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. Report EUR 28112 EN. European IPPC Bureau. Seville, Spain. http://eippcb.jrc.ec.europa.eu/reference/BREF/CWW_Bref_2016_published.pdf	Y	N
	RMM limiting release to water:	Oil-water separation (e.g. via oil water separators, oil skimmers, or dissolved air flotation) is required.	Y	Y
	RMM Efficiency (water):	The efficiency of this RMM varies dependent on the treatment technology and the properties of the substance.	Y	Y
	Reference for RMM Efficiency (water):	EU (2016). Best Available Techniques (BAT) Reference Document for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. Report EUR 28112 EN. European IPPC Bureau. Seville, Spain. http://eippcb.jrc.ec.europa.eu/reference/BREF/CWW_Bref_2016_published.pdf	Y	N
	RMM limiting release to soil:	The sludge generated from wastewater treatment is not applied to agricultural soil.	Y	Y
	RMM Efficiency (soil):	Not applicable	Y	Y
	Reference for RMM Efficiency (soil):	ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.16: Environmental Exposure Assessment Version 3.0. European Chemicals Agency. Helsinki, Finland. https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf	Y	N
5.3.4 Release Factor – waste	5.1 Substance use rate			
	Amount of substance use per day:	5,000,000 kg/day	Y	Y
	Fraction of EU tonnage used in region:	100%	Y	N
	Fraction of Regional tonnage used locally:	100%	Y	N
	Justification / information source:	ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.16: Environmental Exposure Assessment Version 3.0. European Chemicals Agency. Helsinki, Finland. https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf	Y	N
	5.2 Days emitting			
	Number of emission days per year:	300 (default value)	Y	Y
	Justification / information source:	ECHA, 2016. Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.16: Environmental Exposure Assessment Version 3.0. European Chemicals Agency. Helsinki, Finland. https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf	Y	N
	5.3 Release factors			
	sub-SPERC identifier:	ESVOC 7.12a.a.v4 VP >1000 Pa; WS <0.001 mg/l	Y	N
ERC	ERC 7			

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility <0.001 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.000000006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.b.v4 VP >1000 Pa; WS 0.001-0.01 mg/l	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility 0.001-0.01 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.00000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	sub-SPERC identifier:	ESVOC 7.12a.c.v4 VP >1000 Pa; WS 0.01-0.1 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility 0.01-0.1 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe,	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.d.v4 VP >1000 Pa; WS 0.1-1.0 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility 0.1-1.0 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017).	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.e.v4 VP >1000 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility 1-10 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.00002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Siting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.f.v4 VP >1000 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility 10-100 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.g.v4 VP >1000 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility 100-1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities.	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.h.v4 VP >1000 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility >1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.i.v4 VP 100-1000 Pa; WS <0.001 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water solubility <0.001 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.5%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.000000006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.j.v4 VP 100-1000 Pa; WS 0.001-0.01 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water solubility 0.001-0.01 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.5%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.k.v4 VP 100-1000 Pa; WS 0.01-0.1 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water solubility 0.01-0.1 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.5%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe.	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .		
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.l.v4 VP 100-1000 Pa; WS 0.1-1.0 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water solubility 0.1-1.0 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.5%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant.	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .		
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.m.v4 VP 100-1000 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water solubility 1-10 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.5%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.00002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .		
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners. Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.n.v4 VP 100-1000 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water solubility 10-100 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.5%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .		
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.o.v4 VP 100-1000 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water solubility 100-1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.5%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.p.v4 VP 100-1000 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water solubility >1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.5%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners. Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.q.v4 VP 10-100 Pa; WS <0.001 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water solubility <0.001 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.000000006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.r.v4 VP 10-100 Pa; WS 0.001-0.01 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water solubility 0.001-0.01 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.00000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .		
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.s.v4 VP 10-100 Pa; WS 0.01-0.1 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water solubility 0.01-0.1 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category.	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .		
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.I.t3 VP 10-100 Pa; WS 0.1-1.0 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water solubility 0.1-1.0 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .		
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.u.v4 VP 10-100 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water solubility 1-10 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.00002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .		
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners. Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.v.v4 VP 10-100 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water solubility 10-100 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0002%	Y	Y

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners. Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.w.v4 VP 10-100 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water solubility 100-1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Numeric value / percent of input amount (Water):	0.002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.x.v4 VP 10-100 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water solubility >1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.y.v4 VP 1-10 Pa; WS <0.001 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water solubility <0.001 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.05%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2,	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf		
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.00000006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Siting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners. Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.z.v4 VP 1-10 Pa; WS 0.001-0.01 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water solubility 0.001-0.01 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.05%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM).	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf		
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.00000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Siting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners. Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.aa.v4 VP 1-10 Pa; WS 0.01-0.1 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water solubility 0.01-0.1 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.05%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)		
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.bb.v4 VP 1-10 Pa; WS 0.1-1.0 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water solubility 0.1-1.0 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.05%	Y	Y

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.cc.v4 VP 1-10 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water solubility 1-10 mg/l	Y	N
5.3.1 Release Factor – air				

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Numeric value / percent of input amount (Air)	0.05%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.00002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Siting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.dd.v4 VP 1-10 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water solubility 10-100 mg/l	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.05%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners. Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.ee.v4 VP 1-10 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 7		

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water solubility 100-1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.05%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners. Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.ff.v4 VP 1-10 Pa; WS >1000 mg/l	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water solubility >1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.05%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	sub-SPERC identifier:	ESVOC 7.12a.gg.v4 VP <1 Pa; WS <0.001 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water solubility <0.001 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.000000006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe,	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.hh.v4 VP <1 Pa; WS 0.001-0.01 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water solubility 0.001-0.01 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017).	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.ii.v4 VP <1 Pa; WS 0.01-0.1 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water solubility 0.01-0.1 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Siting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.jj.t3 VP <1 Pa; WS 0.1-1.0 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water solubility 0.1-1.0 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.01% This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	Y
	Justification of RFs (Air):	European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.000002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.kk.v4 VP <1 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water solubility 1-10 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.00002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities.	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
		The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .		
	sub-SPERC identifier:	ESVOC 7.12a.II.v4 VP <1 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water solubility 10-100 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Siting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	0.2%	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.mm.v4 VP <1 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water solubility 100-1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.002%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N
5.3.4 Release Factor – waste				

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
	sub-SPERC identifier:	ESVOC 7.12a.nn.v4 VP <1 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 7		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water solubility >1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A3.8, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.006%	Y	Y
	Justification of RFs (Water):	The factor was established after identifying the geometric mean for eight water solubility categories along with information on fuel use and wastewater generation for the operation of gas turbines at an electric power generation station. The volume of effluent wastewater generated at a power plant using distillate fuel oil for turbine operation was reported to be 0.06 m ³ /tonne (CSC, 1998). This value was used to calculate a release factor for each water solubility category. CSC, 1998. Docket No. 189 - An Application by Lake Road Generating Company for Certificate of Environmental compatibility. Connecticut Sitting Council. New Britain, CT. https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_189A/189/189Fofpdf.pdf .	Y	N
5.3.3 Release Factor – soil				
	Numeric value / percent of input amount (Soil):	0.001%	Y	Y
	Justification of RFs (Soil):	The release factor for soil is based on surrogate information from a multi-year examination of oil pipeline spills and leaks, including the losses associated with mechanical failures at pump stations, operational repair problems, and corrosion issues (Concawe, 2021). The annual release to soil did not exceed 10 parts per million parts of oil transported in the pipeline or 0.001%, which provides a reasonable approximation of the release expected for the large-scale use of fuels at a power plant. Concawe, 2021. Performance of European Cross-Country Oil Pipelines: Statistical Summary of Reported Spillages in 2019 and Since 1971. Report No. 4/21, Conservation of Clean Air and Water in Europe. Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/Rpt_21-4.pdf .	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (Concawe, 2017). Concawe, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf .	Y	N
References to SPERC Background Document				
	Reference to Background Document	ESIG/ESVOC (2023). SpERC Background Document. Specific Environmental Release Categories (SpERCs) for the use of solvents and solvent borne substances in the industrial production and/or use of water treatment chemicals, polymers, mining chemicals, and fuels. European Solvents Industry Group. Brussels, Belgium.	Y	N