SPERC factsheet – Industrial use of lubricants in high energy open processes

General Information	
Title of Specific ERC	Industrial use of lubricants in high energy open processes
Applicable ERC	4
Responsible	*ATIEL-ATC*
Version	V1
Code	*ATIEL-ATC SPERC 4.Fi.v1*
Scope	Industrial use of lubricants in high energy open processes, e.g. in high speed machinery such as metal rolling forming or metalworking fluids for machining and grinding. *Substance Domain:* Applicable to typical constituents of lubricants and metal working fluids
Coverage	Sectors of Use: SU 3 (Uses of substances as such or in preparations at industrial sites) Process Categories: PROC 1 (Use in closed process, no likelihood of exposure), PROC 2 (Use in closed, continuous process with occasional controlled exposure), PROC 8b (Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities), PROC 17 (Lubrication at high energy conditions and in partly open process) PROC 18 (Greasing at high energy conditions)

	Characteristics of specific ERC	Type of Input Information	Processing of Input Information
Operational Conditions	Water-based (oil in water emulsion) or straight oil (contains no water) process.	Release Factor based on oil-water phase partitioning and limits for oil discharges[1]	
Obligatory onsite RMM	User sites are assumed to be provided with oil/water separators or equivalent and for waste water to be discharged via public sewer system		
Substance Use Rate	5 000 kg/day [2]	Typical maximum site tonnage, based on sector knowledge	None
Days Emitting	100 - 300 days/year	Default approach of the REACH guidance[3]	None
Environmental Parameters for Fate Calculation	Local freshwater dilution factor : 10 [EF1] Local marine dilution factor : 100 [EF2] Receiving surface water flow is 18000 m3/d [EF3]	ERC default settings [4]	These values can be scaled with site specific data

[1] OECD Emission Scenario Document on Lubricants and Lubricant Additives, Number 10, November 2004 for details of principles and www.ATIEL.org/REACH_GES for explanation and application.
[2] Substance Use Rate is Msperc (k/d) which is defined as the maximum amount of Risk Determining Substance (RDS) used in a typical process.
[3] ECHA Guidance on information requirements and chemical safety assessment, Chapter R.16: Environmental Exposure Estimation, Section R.16.3.2
[4] ECHA Guidance on information requirements and chemical safety assessment, Chapter R.16: Environmental Exposure Estimation, Section R.16.6.3

	Characteristics of Specific ERC		Justification
Emission Fractions	***To Air***	5 E-05	Based on sector knowledge information and responses to the ATIEL-ATC questionnaire 2010 Release estimations are based on emission data for VOC and hydrocarbons.[5]
	To Municipal Wastewater/Sewer/ Water courses	Depends on physico-chemical properties of RDS	Release fraction is after application of assumed Risk Management Measures based on sector practices and other regulatory requirements for risk determining substances in base oil, consistent with respect to OECD lubricants ESD [6]
	To Soil	0.0	Surveys (ATIEL-ATC questionnaire responses 2010) have revealed that no biosolids of industrial origin are applied to land (in line with national regulations) and are incinerated.

[5] See www.ATIEL.org/REACH_GES for responses to questionnaire.
[6] OECD Emission Scenario Document on Lubricants and Lubricant Additives, Number 10, November 2004 for details of principles and www.ATIEL.org/REACH_GES for explanation and other information such as for the application see the document ATIEL-ATC_Estimating Environmental Releases of Lubricant Additives to Water, and for calculations depending on the physic-chemical properties of the Risk Determining Substance see the spreadsheet.

	Type of RMM	Typical Efficiency
Appropriate Risk Management Measures (RMM) that may be used to achieve required emission reduction	***Air***	
	Local/Onsite Technology a) Wet scrubber - for gas removal, or b) Waste gas treatment - thermal oxidation	a) Default value = 70% and maximum achievable > 99% b) Default value= 98 % and maximum achievable > 99.9% [7]
	Water	
	Offsite Technology Municipal wastewater treatment plant	Waste water is assumed to be discharged via public sewer system.
	Local/Onsite Technology User sites are assumed to be provided with oil/water separators or equivalent and for waste water to be discharged via public sewer system	Minimum 90-95 % [8]

[7] Values as documented in Cefic RMM library see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/ ; for responses to ATIEL-ATC questionnaire values see www.ATIEL.org/REACH_GES.
[8] Values as documented in Cefic RMM library see http://www.cefic.org/Industry-support/Implementing-reach/Libraries/ ; for responses to ATIEL-ATC questionnaire values see www.ATIEL.org/REACH_GES.

Safe Use

Communication in SDS

The REACH registrant establishes a set of standard conditions of safe use for a substance by adopting the conditions specified in this SPERC and recommending a Required Removal Efficiency (RRE) for adequate risk reduction. If RRE = 0, wastewater emission controls (beyond those specified by the operational conditions) are not required to ensure safe use of the substance. If > 0, the RRE may be achieved via offsite municipal sewage treatment (providing substance removal efficiency, $RE_{Offsite}$).
Removal efficiency requirements, as dictated by the assumed operating conditions, are documented in the Chemical Safety Report and communicated in the Safety Data Sheet. All other parameters underlying a substance exposure scenario based on the SPERC 'Industrial formulation of lubricant additives', are implicitly referred to via the reference to this SPERC.

Scaling

Scaling can be performed for example by using this equation which is shown in more detail with explanations in GES related documents[9] and in Cefic guidance[10]:

$$RCR_{DU} = RCR_{ES} * \frac{M_{DU}}{M_{ES}} * \frac{Cdu}{Ces} * \frac{Fwater,DU}{Fwater,ES} * \frac{(1 - f_{abatement,DU})}{(1 - f_{abatement,ES})} * \frac{T_{emission,ES}}{T_{emission,DU}}$$

Guidance is based on assumed operating conditions which may not be applicable to all sites: thus scaling may be necessary to define appropriate site-specific risk management measures [DSU1].
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. [DSU2]
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. [DSU8]

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[9] see www.ATIEL.org/REACH_GES.
[10] Cefic (2010) REACH Practical Guide on Exposure Assessment and Communication in the supply chains. Part IV: Supplement Exposure Estimation.