Annex 1: A.I.S.E Sperc fact sheet – Industrial Use of Water-borne Processing Aids

(source: http://www.aise.eu/reach/?page=exposureass_sub4)

General information	
Title of specific ERC	Industrial use of Water-borne Processing Aids
Applicable ERC	4
Responsible	AISE
Version	V1
Code	AISE SPERC 4.1.v1 – Industrial use of Water Borne processing Aids – no RMM
Scope	Industrial uses in water borne processing aid. This definition covers substances in a broad range of specific applications, e.g. surface cleaning, surface treatment, metal treatment, surface finishing, corrosion inhibition, vehicle cleaning, industrial laundry etc.
Coverage	PROC2 Use in closed, continuous process with occasional controlled exposure, PROC3 Use in closed batch process (synthesis and formulation), PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises, PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact), PROC7 Industrial spraying, PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities, PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighting), PROC10 Roller application or brushing, PROC13 of articles by dipping and pouring, PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation, PROC24 High (mechanical) energy work-up of substances bound in materials and/or articles

	Characteristics of specific ERC			Type of Input Information	Processing of Input Information
Operational Conditions	AISE 4.1.v1	Indoor Use. [OOC1] Water-Based Process. [OOC12] Product applied in aqueous process solution with negligible volatilization. [OOC23] Spent fluid discharged to wastewater. [OOC19]		Sector specific classification of detergent formulation sites.	No processing required
Substance use rate	AISE 4.1.v1	Continuous Release [FD2] Optional: Intermittent Release [FD1]	50	Typical maximum site tonnage, based on sector knowledge*	See below*
Days Emitting	AISE 4.1.v1	Emission days (days/year) [FD4]	220	Equivalent to number of working days, based on sector knowledge	None
Environmental Parameters for Fate Calculation	Local freshwater dilution factor [EF1]: 10 Local marine water dilution factor [EF2]: 100 Receiving surface water flow is 18000 m3/d. [EF3]			Default settings of the REACH Guidance.	None

*m_{SPERC} is calculated according to: $\mathbf{m_{SPERC} = m_{Site} \times C_{SP} \times n_{Days}^{-1}}$ with C_{SP} = Concentration of substance in product, m_{Site} = the amount of product manufactured, n_{Days} = number of days emitting. Typical parameters values are given in Table 1.

	Emission Fractions			**Justification**
To air (*f_{Air}*)	AISE 4.1.v1	Release fraction to air from process (initial release prior to RMM): [OOC4]	0	Metal salts in aqueous solutions are involatile and are intended to remain in the application solution. Spray applications are housed-in
To water (*f_{Water}*)	AISE 4.1.v1	Release fraction to wastewater from process (prior to RMM): [OOC5]	1	Water-borne processing aids are disposed off quantitatively to the process wastewater. Prior to discharging, the spent process water may be treated on-site.

Appropriate Risk management measures (RMM) that may be used to achieve required emission reduction			
	Type of RMM		**Typical Efficiency**
Air:	AISE 4.1.v1	Air emission controls are not applicable as there is no direct release to air. [TCR2]	N/A
Water	AISE 4.1.v1	Typical onsite wastewater treatment technology provides removal efficiency of (%) [TCR10]	N/A
	Waste water treatment plant (WWTP)		-
	Selection of typical RMM technologies applied in on-site treatment of wastewaters.		-

Narrative description
Industrial applications of water borne processing aid Industrial applications of water borne processing aids can typically be described as follows. The application fluid is kept in a reservoir. It is pumped to dedicated machine(s) in order to be applied to the substrate or it is kept in a bath. This type of application includes vehicle cleaning, metal working fluids, etc. With each piece of substrate a fraction of the application fluid is carried-over from the treatment bath. Via a sequence of rinsing steps this fraction of the application fluid is continuously emitted to the wastewater. The reservoir is continuously replenished. The application fluid in the reservoir can be disposed off periodically. This may involve disposal as waste. This may or may not involve on-site pre-treatment or disposal to the wastewater. This usually requires on-site pre-treatment of the spent application fluid. As a result, constituents of the application fluid are removed during the on-site treatment according to the efficiency of the selected emission reduction. In addition, raw materials may be recovered. The choice of suitable emission reduction (or RMM) technology depends on the process. In addition, the process can be closed with regards to emissions to the environment. Spent application fluid is not released to the environment. It is disposed of periodically as waste (with or without prior treatment). This type of application includes several surface finishing, water conditioning etc. applications. No emissions to the wastewater occur. The local waste handling regulations have to be followed. Additional instructions for handling waste may be included in the safety data sheet.

Safe Use

Communication in SDS

The REACH registrant establishes a set of standard conditions of safe use for a substance for industrial use of water borne processing aids by adopting the conditions specified in this spERC and eventually recommending a certain efficiency required for an adequate risk reduction. This may include the removal efficiency of municipal sewage treatment plant ($E_{STP,spERC}$), and the efficiency of an on-site emission reduction ($E_{ER,spERC}$) This information is 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 Use of Water-Borne Processing Aids' are implicitly referred to via the reference to the spERC.

Scaling

The users of water-borne processing aids evaluate their specific situations with regard to compliance with the registrant's information. To that end, the users need to know their own substance use rate (m_{Site}), their on-site emission reduction measures (incl. the efficiency, $E_{ER,Site}$), the factor by which their wastewater is diluted ($q_{Dil,Site}$) and the initial release fraction at their site ($F_{release,Site}$). Those parameters can be accounted according to the following equation. Adequate control of risk is indicated if the condition put forward in the following equation is fulfilled for a specific site.

$$\frac{m_{spERC} \times (1-E_{ER,spERC}) \times F_{release,spERC}}{q_{Dil,spERC}} \geq \frac{m_{Site} \times (1-E_{ER,Site}) \times F_{release,Site}}{q_{Dil,Site}}$$

Scaling is applied to evaluate compliance of a specific use with a generic Exposure Scenario. For that reason, the choice of parameter values which deviate from the default values needs reflect the actual situation. This may have to be justified on demand.

Substance Use Rates

Table 1: Derivation of the default substance use rate m_{SPERC}.for industrial use of water borne processing aids. The derivation is based on typical values of the operational conditions for the various applications covered by this spERC[1].

Operational Conditions – variable between the applications falling under the SPERC 'industrial use of water-borne processing aid.						**Applications**					
Substance Use Rate (m_{SPERC}) in kg/d[2]	Operation days per year	Annual substance consumption (t/y)	Consumption of application fluid (m^3/d)	Substance concentration in product	Dilution of product in application	Metal Working	Water conditioning	Industrial Laundry	Metal Treatment	Surface Finishing	Vehicle Cleaning
50	220	11	5	25.0%	4%						
50	220	11	20	25.0%	1%						
50	220	11	5	10.0%	10%						
50	220	11	20	10.0%	2.5%						
50	220	11	50	10.0%	1%						
50	220	11	5	5.0%	20%						
50	220	11	20	5.0%	5%					???	
50	220	11	50	5.0%	2%						
50	220	11	10	2.5%	20%						
50	220	11	50	2.5%	4%						
50	220	11	5000	1.0%	0.1%						
Emissions – Disposal of Spent Application Fluid with wastewater											

[1] Numerical values need to be confirmed based on association input.
[2] Refers to the substance, not the product.

The scaling equation provided above can also be used for modifying the spERC for the disposal of the spent application fluid. In that case, the substance emission rate is calculated by dividing the amount of substance discharged by the number of days during which the discharge occurs. The amount of substance can be obtained by multiplying the volume of the reservoir (m3) with the concentration of the product in the application fluid (kg/kg), and the concentration of the substance in the product (kg/kg) and the fraction of the substance not being retained by the emission reduction measure applied.

The disposal of a substance with spent application fluid can be considered safe if its according substance emission rate is equal to or lower than the one specified for this substance in the above SPERC taking into account the risk management measure efficiency recommended by the substance supplier.