

SPERC Fact Sheet Format with Explanations

Purpose of this document

The main purpose of this document is to outline how to summarize Specific Environmental Release Category (SPERC) background documents into SPERC factsheets. This document also provides background on the SPERCs as elements of lower tier emission assessment under REACH and explains the roles of SPERC background documents, SPERC factsheets and use maps in relation to each other.

Function of SPERCs

As outlined in Reihlen et al (2016) SPERCs are an element of emission estimation for chemical safety assessments, which are used in lower tier assessments (see Figure 1). Their primary use is in the registration of substances under the REACH Regulation. They take an intermediate role between the broad environmental release categories (ERC) of the REACH guidance and higher tier estimations of emissions or measured emissions. This also implies that SPERCs still have a broad applicability domain within a specified use but are not intended to cover all emission situations which may occur. They are developed to cover the majority of the situations occurring within the specified use described.

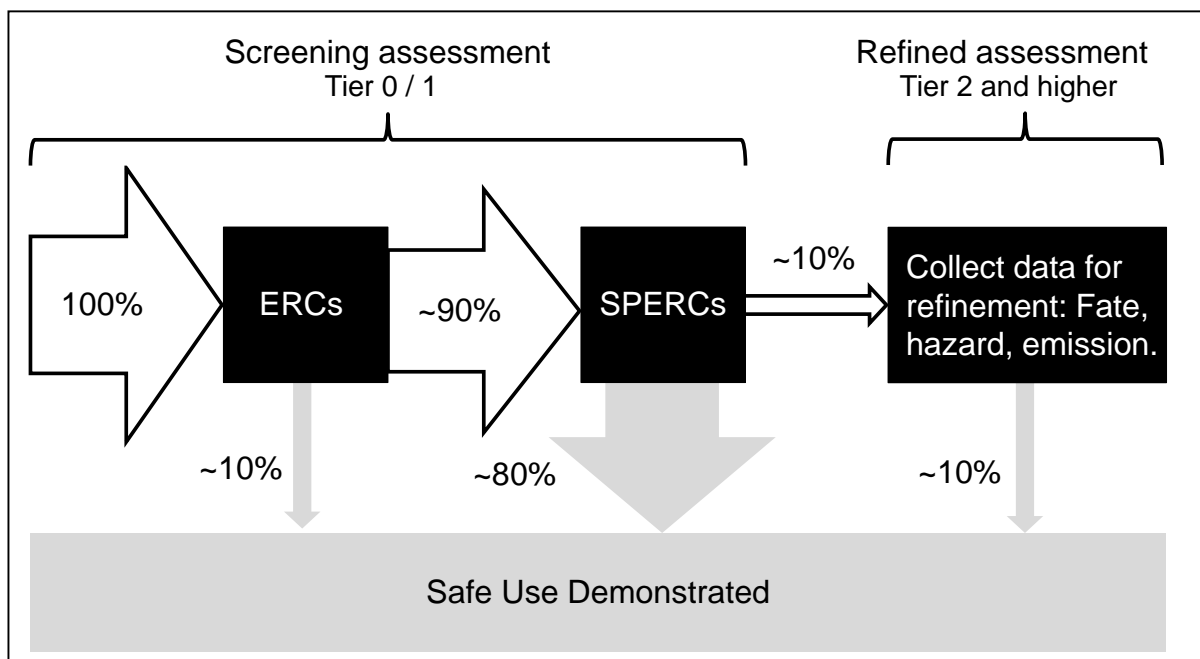


Figure 1: Illustrative scheme of the role of SPERC as an element of a tiered approach to emission estimation. The width of the arrows is indicative of the portion of assessments that need refinement (horizontal) or pass the environmental exposure assessment. (ERC = environmental release category, SPERC = specific environmental release category)¹.

SPERCs describe the conditions of use and related release factors for a specific use. They do not depict emission situations at concrete sites but address generic emission situations such as relate to good practice in industry and in particular in the downstream industries. They attempt to be applicable to typical emission situations during the

¹ after Reihlen et al. 2016 (permission requested)

use of a substance or mixture. To that end, SPERCs strike a balance between the degree of detail needed for describing a given use situation, the generic character of a safety assessment under REACH and the scope of the coverage that is affordable. Hence, if the expected risk is low the SPERCs are defined to cover broad use ranges, i.e. if it addresses uses of substances with a not too critical environmental hazard profile and if emissions from a process are intrinsically low. However, there are SPERCs for narrower uses, e.g. if higher environmental risks are expected that may need a relatively tight technical control of the process.

Document types

SPERCs are defined by different types of document. These are the SPERC background documents, SPERC factsheets and in use maps. SPERC background documents are reference documents, which provide the description of the emission situation(s) for a use specified by a sector of industry, the justification and applicability domain of the environmental release factors put forward, and the references/information sources/methods used in the derivation of the release factors. The SPERC factsheets summarize the key facts provided in the background documents in order to give an overview of the SPERC essential input for the chemical safety assessment.²

Finally, references to SPERCs (corresponding to environmental contributing activities) may be included in sector use maps: By means of the use maps, registrants are easily directed to

- relevant environmental release information on uses and conditions of use that allow them to carry out chemical safety assessments (CSAs) easily and realistically
- advice from customers on how substances can be used further down the supply chain.

Hence, the SPERCs in the use maps inform the registrant which emission estimation is fit-for-purpose for any given use listed. Thereby, the use maps including the SPERCs support that environmental exposure scenarios covered in the chemical safety assessments adequately address the corresponding uses.

Literature

1. Rheilen, A.; Bahr, T.; Boegi, C.; Dobe, C.; May, T.; Verdonck, F.; Wind, T.; Tolls, J.; Zullo, L. SPERCS – a tool for environmental emission estimation. *Integr Environ Assess Manag.* (2016, in press).
Corresponding author:: Johannes.Tolls@henkel.com
<http://onlinelibrary.wiley.com/doi/10.1002/ieam.1745/pdf>

² The sector organizations have agreed to make the SPERC essential input for the Chemical Safety Assessment available as input-files that can be directly imported into Chesar <https://chesar.echa.europa.eu/>

Explanation for presenting information in SPERC Factsheet Format

The following Table defines the fields of a SPERC factsheet and provides explanations on the field contents. It also indicates whether the information is meant to be communicated with the CSR to the authorities (“Y” in Column CSR) and/or with the extended Safety Data Sheet to the downstream users (“Y” in Column eSDS). Details on how to provide the information is included in the Table. The information can be provided as phrases from picklists, numerical values, or as free text. This factsheet is to be prepared by industry sectors and the registrants are then responsible to use them as an input to their assessments and place each field in its place: CSR, eSDS, etc.

A sector may want to provide some explanation/justification to be transferred into the registrant’s CSR. Therefore, the format includes a number of fields to enter such explanations (justification/reference). For conditions of use (section 3³), and obligatory RMM (section 4) such fields are not specifically defined. Nevertheless such further explanations may still be provided in the same cell.

The information that is to be communicated to downstream users via the eSDS can be in the form of standard phrases. Where available, a standard phrase may be selected from the ECom catalogue and the corresponding phrase ID should be provided in the factsheet. When no phrase is available yet in the catalogue, a short (one or two sentences) freetext entry should be included in the factsheet. This may be the basis for later development of a standard phrase.

For standard picklist items, such as use descriptors, lists of phrases already exist in the ECom phrase catalogue. These fields are marked with an *.

At present very few operational conditions and RMMs are expressed as phrases. However, in future it may turn out that more and more conditions of use can be expressed in a harmonised way across sectors, and thus phrase development can be rationalised. Hence, additional standard phrases will be developed by sectors. Two asterisks (**) designate those fields, for which the content may already be adopted from existing ECom phrases.

Some fields are framed in **bold**. These fields are repeatable blocks to be used (independent from each other)

- where the sector defines multiple conditions of use impacting on the releases (a sector can define as many conditions as relevant) and/or
- where a sector provides different release factors for different the substance types involved in the activity covered by the SPERC (i.e. sub-SPERCs).

³ These sections of the fact sheet are not be confused with the ES sections.

FS Section	Content field	Explanation of content	CSR ⁴	eSDS ⁵
1. Title	1.1 Title of SPERC. freetext	Indicates the contributing activity / applicability domain of the SPERC	Y	Y
	1.2 SPERC code: picklist (select one)*	This field includes the SPERC codes (systematic naming of SPERCs according to section 1.4 of the Cefic guidance of 2012) http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Environmental-Release-Classes.pdf	Y	Y
2. Scope	2.1 Substance/Product Domain			
	Substance types / functions / properties included or excluded: freetext	Applicability domain of the SPERC may be reported if particular boundaries exist in terms of substance properties or product types that can be covered by the SPERC	Y	N
	Additional specification of product types covered: freetext	Further specify product types covered in the SPERC, if relevant and not already contained in the title. Ensure consistency with PC selected below.	Y	N
	Inclusion of sub-SPERCs: y/n	A single SPERC may specify two or more release factors if it addresses different substance types or substances with different properties: If this is the case, the release factors are differentiated in so-called sub-SPERCs. Indicate whether SPERC includes sub-SPERCs	N	N
	2.2 Process domain			
	Description of activities/processes: freetext	Describes the general processes, application technologies and equipment covered by the SPERC, focussing on environmentally relevant aspects (i.e. sources of release to the environment). These sources should be further addressed in the conditions of use described in later fields.	Y	N
	2.3 List of applicable Use Descriptors			
	LCS: picklist (select one)*	Select a single life cycle stage the SPERC refers to, e.g. use at industrial sites (cf. R.12) (http://echa.europa.eu/documents/10162/13632/information_requirements_r12_en.pdf)	Y	Y
	SU: picklist (multi-select)*	Select one or more sectors of end-use to which the SPERC applies (cf. R.12)	Y	Y
PC: picklist (multi-select)*	Select one or more product categories to which the SPERC applies (cf. R.12)	Y	Y	
3. Operational conditions	3.1 Conditions of use			
	Location of use: pick-list*	Indicate if the process occurs indoor / outdoor / indoor and outdoor	Y	Y
	Water contact during use: y/n	Indicate if process involves that the substances/the product gets into contact with water. Note: if water contact during the process is possible, then the release to water is expected > 0	Y	Y
	Connected to a standard municipal biological STP: y/n	Connection to standard municipal sewage treatment plant as described in R.16.(http://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	Y
	Rigorously contained system with minimisation of release to the environment: y/n	This information is relevant if a sector wishes to flag/claim to the authorities that the use of particular products take place under rigorously contained conditions with minimisation of emissions (and thus there may not be a priority concern for regulatory action). ECHA Practical Guide 16 (Chapter 3) explains what rigorously contained conditions means in practice (http://echa.europa.eu/documents/10162/13655/pg16_intermediate_registration_en.pdf) The conditions of containment themselves are to be described in the fields below, and release factors (corresponding to minimised releases) are to be provided in section 5. If no contact with water takes place during the use, a release factor of 0 can be justified by the description of the conditions of use.	Y	N

⁴ Explanations that are more detailed can be provided for the CSR..

⁵ For the ES for communication a standard phrase may be selected from the ECom catalogue when available. When no phrase is available yet in the catalogue the proposed phrase can be reported here.

FS Section	Content field	Explanation of content	CSR ⁴	eSDS ⁵
	Further operational conditions impacting on releases to the environment. Free-text **	Describe condition of use impacting on release (create separate fields as relevant for the condition in the sector). These fields can be used to list for instance operational conditions to achieve high raw material efficiency and at the same time significantly impacting on the release, e.g. <ul style="list-style-type: none"> • optimized cleaning process (e.g. pig systems for tubes, "Cleaning in Place (CIP)", two-liner systems (i.e. single use disposable reactor cover that is incinerated after use as solid waste), etc.) • Dedicated storage tanks for raw materials, premixes and final products with low cleaning frequency • re-use of process grey water for cleaning • closed tubing systems preventing volatilization and spillages • closed reactors preventing volatilization • process automation • smart rinsing techniques • other 	Y	Y
3.2 Waste Handling and Disposal				
	Waste Handling and Disposal: Picklist (multi-select) **	In this field two types of qualitative information can be provided: <ul style="list-style-type: none"> • arguments why no particular risks from waste treatment is expected (cf. ECHA IR&CSA Guidance R.16 and R.18 , http://echa.europa.eu/guidance-documents/guidance-on-information-requirements-and-chemical-safety-assessment) or • specific advice on suitable treatment techniques for waste occurring from equipment cleaning, processing and RMM and how they are handled/disposed of <p>Picklist (not exhaustive):</p> <ul style="list-style-type: none"> • No (no waste); No (low risk); No (low amount); No (low concentration); No (other reason:) • Dedicated re-collection infrastructure required; Biological treatment not appropriate; Incineration not appropriate; Prevent formation of hazardous break down products in thermal destruction; Closed system required to prevent any release to the environment; Other: 	Y	Y
4. Obligatory RMMs onsite	RMM limiting release to air: freetext **	Describe RMM applied	Y	Y
	RMM Efficiency (air): numerical value	Where relevant, provide detailed information on sub-SPERC level (e.g. related to phys/chem properties of substances). Note, that the effectiveness is already accounted for in the release factor for air.	Y	Y
	Reference for RMM Efficiency (air): freetext	Provide reference to the source for the selected RMM and its efficiency	Y	N
	RMM limiting release to water: freetext **	Describe RMM applied	Y	Y
	RMM Efficiency (water): numerical value	Where relevant provide detailed information on sub-SPERC level (e.g. related to phys/chem properties of substances) Note, that the effectiveness is already accounted for in the release factor for water.	Y	Y
	Reference for RMM Efficiency (water): freetext	Provide reference to the source for the selected RMM and its efficiency	Y	N
	RMM limiting release to soil: freetext **	Describe RMM applied	Y	Y
	RMM Efficiency (soil): numerical value	Where relevant, provide detailed information on sub-SPERC level (e.g. related to phys/chem properties of substances). Note that the effectiveness is already accounted for in the release factor for soil.	Y	Y
	Reference for RMM Efficiency (soil): freetext	Provide reference to the source for the selected RMM and its efficiency	Y	N
5. Exposure Assessment Input	5.1 Substance use rate			
	Amount of substance use per day: numerical value	Enter numerical value for a local use rate. The daily use amount at the local site corresponds to a typical amount of a substance used daily at an industrial site and may be indicative (i.e. for the assessor as a realistic starting point for the assessment).	Y	Y

FS Section	Content field	Explanation of content	CSR ⁴	eSDS ⁵
		This field may be left empty in the SPERC, and explanations may be provided to support registrants to define such amount, for example providing mixture amount for the use, typical fractions of components in the mixture, etc.		
	Fraction of EU tonnage used in region: numerical value	Relevant for wide spread use only. The regional assessment takes place for a standard region corresponding to a typical densely populated EU-area located in Western Europe with 20 million inhabitants. By default 10% of the annual "tonnage per use" is assumed to be applied in such region. When deviating from the default value of 10% (e.g. based on assessment of regional use pattern – cf. AISE, Cosmetics Europe SPERCs), specify the adapted factor and provide the underlying reasoning in the field below.	Y	N
	Fraction of Regional tonnage used locally: numerical value	Relevant for wide spread use only. The local assessment refers to a standard town of 10 000 inhabitants (i.e. 0.05% of 20 million equivalent to a consumption of 0.05% of the regional tonnage). By default this is multiplied by a "safety factor of 4 to take into account potential variations in time and space (cf. R.16.2.2.1.2.). When deviating from the factor of 4, specify the adapted factor and provide the underlying reasoning in the field below.	Y	N
	Justification / information source:	Add justification and information source (e.g. literature, expert judgement) for i) daily use amount at industrial site or for ii) modification of fraction of EU tonnage used locally per day.	Y	N
5.2 Days emitting				
	Number of emission days per year: numerical value	This number refers to the number of days at which the described process may lead to emissions. This is not always identical with the number of use days per year.	Y	Y
	Justification / information source: freetext	Add justification / information source for the number of emission days, e.g. literature, expert judgement etc.	Y	N
	5.3 Release factors	If the SPERC includes sub-SPERCs (cf. FS 2.1 sub-SPERC = "yes") the below block -in bold frame- needs to be repeated for each sub-SPERC. Where no sub-SPERC is defined fill out this section once. Definition of sub-SPERCs may be appropriate for a differentiation of release factors with regard to physical-chemical properties of substances. Where sub-SPERCs are used it is advised to integrate all sub-SPERCs into one SPERC file.		
	sub-SPERC identifier: freetext	To be filled in only if SPERC includes sub-SPERCs Indicate the respective sub-SPERC using the sub-SPERC identifier (e.g. A, B, C,...).	Y	N
	ERC: picklist (select one)*			
	sub-SPERC applicability: freetext	To be filled in only if SPERC includes sub-SPERCs. Indicates applicability domain of the sub-SPERC within the applicability domain of the SPERC. This can be for example (non-exhaustive): <ul style="list-style-type: none"> a range of vapour pressures or boiling points for which the sub-SPERC is applicable. a range of water solubilities for which the sub-SPERC is applicable. a range of octanol-water, sediment-water, soil-water partition coefficients for which the sub-SPERC is applicable. any additional characteristic may be reported here to enable proper selection of the sub-SPERC	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air): numerical value	The RF describes the total release from the contributing activity to air (taking into account the OC and RMM specified in section 3 and 4).	Y	Y
	Justification of RFs (Air): freetext	Provide the method for determining the RF (see Reihlen et al. 2016, e.g. use of measured data, use of literature data, use of release model, expert judgement e.g. employing qualitative arguments, argumentation based on physical-chemical data) and a reference to the source of information (published literature; company data unpublished; expert statement).	Y	N

5.3.2 Release Factor – water				
Numeric value / percent of input amount (Water): numerical value	The RF describes the total release from the contributing activity to water (taking into account the OC and RMM specified in section 3 and 4).	Y	Y	
Justification of RFs (Water): freetext	Provide the method for determining the RF (see Reihlen et al. 2016, e.g. use of measured data, use of literature data, use of release model, expert judgement e.g. employing qualitative arguments, argumentation based on physical-chemical data) and a reference to the source of information (published literature; company data unpublished; expert statement).	Y	N	
5.3.3 Release Factor – soil				
Numeric value / percent of input amount (Soil): numerical value	The RF describes the total release from the contributing activity to soil (taking into account the OC and RMM specified in section 3 and 4).	Y	Y	
Justification of RFs (Soil): freetext	Provide the method for determining the RF (see Reihlen et al. 2016, e.g. use of measured data, use of literature data, use of release model, expert judgement e.g. employing qualitative arguments, argumentation based on physical-chemical data) and a reference to the source of information (published literature; company data unpublished; expert statement).	Y	N	
5.3.4 Release Factor – waste				
Percent of input amount disposed as waste: numerical range	Estimate fraction of substance disposed of as waste. Take into account OC/RMM reducing or preventing emissions via waste water or air by transferring the substance to waste treatment. The estimate can be provided as a range, depending on the contributing activities addressed in the SpERC.	Y	N	
Justification of RFs: freetext	Provide the method for determining the RF (see Reihlen et al. 2016, e.g. use of measured data, use of literature data, use of release model, expert judgement e.g. employing qualitative arguments, argumentation based on physical-chemical data) and a reference to the source of information (published literature; company data unpublished; expert statement).	Y	N	
References to SPERC Background Document ⁶				
Reference to Background Document	Provide the reference to the background document, which provides the details underlying this SPERC factsheet. This includes the title and where the document can be retrieved.	Y	N	

* picklists with exhaustive lists of phrases are available as ECom phrases

** the content may be adopted from ECom phrases

⁶ The objective of this factsheet is to summarize the SPERC key facts provided in the corresponding SPERC background documents. It gives an overview of the SPERC essentials for the chemical safety assessment. A SPERC background document is a reference document, which provides the description of the emission situation(s) for a use specified by an industrial sector, the justification and applicability domain of the environmental release factors, and the references/information sources/methods used in the derivation of the release factors.