TEXTE
28/2014

Standardisation of release factors for the exposure assessment under REACH Developments since 2010

Umwelt Bundesamt

| TEXTE | 28/2014

Project No. 26785
Report No. 001915/E

Standardisation of release factors for the exposure assessment under REACH Developments since 2010

by

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UMWELTBUNDESAMT

This publication is only available online. It can be downloaded from
http://www.umweltbundesamt.de/publikationen/standardisation-of-release-factors-for-the-exposure

ISSN 1862-4804

Study performed by: Ökopol Institut für Ökologie und Politik GmbH
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Study completed in: October 2013

Publisher: Federal Environment Agency (Umweltbundesamt)
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Dessau-Roßlau, March 2014

Abstract

Industry associations developed specific environmental release categories (spERCs) for the “higher tiered” standardized emission estimation in the context of chemical safety reports under REACH.

The aim of the current project was to assess the plausibility and quality of spERCs developed by industry associations. The project builds up on an earlier assessment conducted for the German Federal Environment Agency in 2010.

The CEFIC guidance on how spERCs should be developed by industry associations was analysed in order to identify changes implemented after the earlier assessment and to check if systematic shortcomings in spERCs can be related to respective guidance. The guidance was found as improved compared to the earlier versions; however some issues remain to be explained in more detail and more consistently.

An overview of spERCs was developed (as of July 2013). All available spERCs were characterized regarding their structure and content; however no assessment of the quality was performed for all spERCs. Based on this basic characterization it was concluded that the spERCs presented by one industry association are similar in structure and content.

A detailed assessment of the plausibility of spERCs and the quality of the documentation of how release factors and other information were derived was performed in addition. 6 spERCs were selected for assessment. 3 of these spERCs had been analysed in 2010 and hence, a comparison was possible between the old and the new version and three spERCs were analysed which had not existed in 2010. The detailed assessment showed that the main shortcoming of spERCs is (still) the transparent, plausible and complete justification and documentation of how release factors (and efficiencies of risk management measures) were derived. However, all in all the spERCs have improved since 2010.

Based on the analyses, recommendations to ECHA, UBA and other Member States together with recommendations for spERC developers and spERC users are derived. All actors should involve in the further work on spERCs and aim to improve their quality.

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Abbreviations

ACEA	European Automobile Manufacturers' Association
A.I.S.E.	Association for Soaps, Detergents and Maintenance Products
AIRC	Association Internationale des Réparateurs en Carrosserie
ATIEL	Technical Association of the European Lubricants Industry
BAT	Best Available Techniques
BREF	Best Available Techniques Reference Document
CEFIC	European Chemical Industry Council
CEPE	European Council of the Paint, Printing Ink and Artists' Colours Industry
CES	Centre Européen des Silicones
CFS	European Committee of Sugar Manufacturers
CONCAWE	Research Association of European Petroleum Industries
CSR	Chemical Safety Report
DU	Downstream User
DU CSR	Downstream User Chemical Safety Report
ECCA	European Coil Coating Association
ECMA	European Catalyst Manufacturers Association
ECPA	European Crop Protection Association
EDANA	International association serving the nonwovens and related industries
EIGA	European Industrial Gases Association
EFCC	European Federation for Construction Chemicals
ECHA	European Chemicals Agency
EPMA	European Powder Metallurgy Association
EPRA	European Phenolic Resins Association
ERMA	European Resin Manufacturers Association
Eurometaux	European Association of Metals
ERC	Environmental Release Category
ES	Exposure Scenario
ESD	Emission Scenario Document
ESIG	European Solvents Industry Group
ESVOC	European Solvents Industry Platform
ETAD	The Ecological and Toxicological Association of Dyes and Organic Pigments Manufacturers

ETRMA	European Type & Rubber Manufacturers Association
EU TGD	European Union Technical Guidance Document on Risk Assessment
RF	Release Factor (emission fraction from a product or process to an environmental compartment)
FECC	European Association of Chemical Distributors
FEICA	Association of European Adhesives and Sealants Manufacturers
FS	Factsheet
IFRA	International Fragrance Association
I&P Europe	Imaging and Printing Association
ISOPA	European Diisocyanates and Polyols Producers Association
Msafe	Maximum amount of a substance that can be safely used at an industrial site
Mlocal	Use amount of a substance at an industrial site assumed in a chemical safety assessment
OC	Operational Condition
PEST	Plastics Exposure Scenarios Team
PPRM	Polyester Powder Resin Manufacturers
PROC	Processing Category
RERMM	Reduction efficiency of risk management measures
RF	Release Factor
RMM	Risk Management Measures
SDB	Safety Data Sheet
STP	Municipal Sewage Treatment Plant
spERC	Specific Environmental Release Category
SRM	Solvent Resins Manufacturers
Temission	Emission days
TEGEWA	German federation of the textile chemical
UBA	Federal Environment Agency
wdu	wide dispersive use

1 SUMMARY

1.1 Background

This study is a follow-up of a first assessment of spERCs conducted for the German Federal Environment Agency in 2010[1]. Its aim was to assess, if the recommendations from the 2010-spERCs study to improve the identified shortcomings of spERCs and the guidance document have been implemented.

1.2 Work process

The project focussed on analysing and evaluating the available spERCs for the emission estimation under REACH. It did neither check for which uses spERCs are missing nor evaluate if the quality of chemical safety assessments based on spERCs differs from CSRs with individually conducted environmental assessments.

The work consisted of four activities: the assessment of the CEFIC guidance document for spERCs development, a screening analysis of structure and content of available spERCs, an in-depth analysis of 6 exemplary spERCs and the derivation of recommendations to all REACH actors.

1.3 CEFIC guidance

CEFIC incorporated all recommendations from the 2010-spERC study in their revised guidance. Compared to the first version, more comprehensive information on how spERCs should be used (including details on the emission estimation), how information should be documented and how to more clearly describe a spERC's scope is included.

The CEFIC guidance does not provide detailed methodological information on how release factors can be derived and what information sources are useful. Instead, examples of spERCs by associations are given. These examples do not reflect best practice, however. CEFIC does also not provide more specific information on how to evaluate the removal efficiencies of RMMs in relation to specific substances / substances groups (with specific properties).

The explanation of how initial release factors, overall release factors and RMM efficiencies are related and how associations should document what is covered by a release factor in the factsheet is still not sufficiently clear.

Other explanations, such as on information to include in the CSR or on how registrants should communicated to downstream users are well structured, understandable and useful.

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[1] Ökopol on behalf of the Federal Environment Agency (UBA, 2010) Project No. 363 01 300 (UFOPLAN)
http://www.reach-info.de/dokumente/exposure_assessment.pdf,
http://www.umweltbundesamt.de/publikationen/standardisation-of-emission-factors-for-exposure

1.4 SpERCs assessment

In July 2013 spERC factsheets were available for 12 associations; six sectors also provided CHESAR files and three planned to do so. A screening analysis of spERC factsheets showed, that the associations use different approaches in their spERCs in all aspects.

The detailed assessment of 6 spERCs showed the following core results:

- All but one of the associations use the CEFIC format for their factsheets; the understanding of the information content differs, however.
- All assessed spERCs have a unique code structured according to the CEFIC recommendation.
- Only one association provides also old spERC versions on the web.
- The overall consistency of spERC factsheets has much improved in all assessed factsheets.
- The scope sections of most of the assessed factsheets have been clarified and made more understandable and concise. Clarification on the coverage of cleaning and maintenance processes is however still lacking in most cases.
- Background information and spERC information for modelling are frequently mixed in the factsheets, which makes it more difficult to understand either information.
- Undefined terms are still used in some of the spERC factsheets and should be specified.
- All factsheets contain release factors to air and water. For the soil compartment many factsheets do not specify a release factor. Some factsheets also contain release factors to waste.
- Reasoning for assumptions are rarely provided at sufficient level of detail to follow the conclusions regarding the modelling values.
- The use of literature data to derive default values of spERCs frequently lacks sufficient justification.
- Qualitative argumentation to justify release factors is frequently logical at first sight but lacks in-depth background for verification.
- If databases or industry surveys are used to justify release factors, the base data and how it was generated is usually not sufficiently documented.
- It is still not clear in all cases, whether release factors integrate the efficiency of RMMs or not.

1.5 Conclusions

Although the revision of the selected spERCs and the CEFIC guidance led to much more clarity in the factsheet structure and the presentation of information, some crucial aspects have not yet been improved to a sufficient extent. This regards in particular the derivation and justification of release factors in relation to the operational conditions and obligatory risk management measures.

Consequently, the currently available spERCs cannot be regarded as sufficiently well documented to allow plausibility checking. Whether or not the release factors are still

conservative or if they actually could lead to wrong emission estimations and risk characterization ratios cannot be judged.

The CEFIC guidance could contribute to further improvement of spERCs by providing clarification of approaches, in particular the inclusion of RMM efficiencies in release factors and the quality of documentation. However, the core work is on the industry associations to revise their factsheets (and potentially spERC values) in order to support registrants with good emission models.

1.6 Recommendations

Several recommendations to ECHA, UBA and the different industry actors, including the associations were derived. Among others spERCs by specific industry which due to their identified shortcomings could be a reason for selecting a dossier for evaluation by ECHA are grouped and the nature of their deficits is pointed out. Industry could use this grouping to organize the improvement work of their spERCs.

All actors should initiate and / or continue the discussion on the relevance of environmental exposure assessment and involve in the improvement of spERCs to promote standardization in the chemical safety assessment and the communication of its results.

2 INTRODUCTION

2.1 Background

The European Chemicals Industry Association (CEFIC) developed the concept of „Specific Environmental Release Categories“(spERCs) in order to concretize the “Environmental Release Categories” (ERCs) in the ECHA guidance[2] with sector-specific information. CEFIC’s first guidance document explained which information a spERC should contain and how it can be used by registrants and downstream users. In addition, it included a documentation format (factsheet) that should be used to provide background information on the spERCs in a harmonized structure.

Several sector associations have developed and published spERCs; some of them already before the first registration deadline in December 2010. Not all industry sectors applied the CEFIC guidance and used the factsheet format.

A first study „Standardisation of release factors for the exposure assessment under REACH – plausibility assessment of the industry-derived spERCs” was conducted in 2010[3] (in the following “2010-spERCs study”). Its aim was to analyse the existing spERCs regarding the defined conditions of use and the plausibility of the release factors derived in relation to them. Furthermore, the quality of the spERCs’ documentation and the understandability of the information for downstream users and registrants were assessed.

The main conclusions from the 2010-spERCs study were that in most of the analysed spERCs:

- the release factors and conditions of use were not transparently derived and justified,
- a clear relation between conditions of use and release factors was missing,
- the justification for release factors, in particular when defined as zero, was not sufficiently convincing
- it was not always evident if the release factors apply with or without (one or more of) the risk management measures listed in the factsheets and
- the documentation was not sufficiently detailed to analyse, whether or not the release factors are plausible or not.

The current project builds up on the conclusions and recommendations of the first project.

[2] ECHA: Guidance on information requirements and chemical safety assessment - Chapter R.16: Environmental Exposure Estimation, version 2.1, Helsinki, October 2012.
http://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf

[3] Ökopol on behalf of the Federal Environment Agency (UBA, 2010) Project No. 363 01 300 (UFOPLAN)
http://www.reach-info.de/dokumente/exposure_assessment.pdf,
http://www.umweltbundesamt.de/publikationen/standardisation-of-emission-factors-for-exposure

2.2 Aim of the current project

The aim of this study is to assess, if the recommendations regarding the possibilities to improve the identified shortcomings of spERCs in their version of 2010 have been implemented by industry. This regards in particular the recommendations on the plausibility of release factors and the transparency of documentation. The following steps are therefore undertaken:

- Identification and analysis of the current development status and plausibility check of the spERCs which are available (July 2013); inclusive analysis of the availability of spERCs for use by the stakeholders and in the assessment tool CHESAR (Chapter 4)
- Analysis if the recommendations of the 2010-spERCs study regarding the plausibility (of the derivation) of release factors, the transparency of documentation and the structure of factsheets are implemented in the spERCs which were newly developed or revised; (Chapter 5: revised spERCs and 6 newly developed spERCs)
- Analysis of industries concept to develop spERCs: analysis of the plausibility of the revised CEFIC Guidance, analysis if the recommendations of the 2010-spERCs study were implemented, analysis of the factsheet format regarding completeness, plausibility and information content (Chapter 3)

The results of the project should point out further improvement potentials of spERCs in general and, if useful and relevant, for specific spERCs or sectors in particular.

Secondly, recommendations will be derived on which spERC-related criteria could be used to target compliance checks of registration dossiers. The criteria could be based on identified shortcomings in the plausibility of release factors, deficits in the transparency of the derivation of release factors or shortcomings in the quality of documentation. Criteria could also be based on the expectation that spERCs are not used as intended, e.g. because the description of coverage is vague / ambiguous, or because many release factors are provided (depending e.g. on substance groups/properties) or other criteria, which may be detected during the detailed assessment.

3 WORK PROCESS

An initial discussion to project implementation took place on the 16th of May between ECHA, Ökopol and Federal Environment Agency Germany.

The project was started with a kick-off meeting as telephone conference on 23rd of May 2013. A second conference call was held on June 12th to agree on the selection of spERCs for detailed assessment in the analysis.

The analysis of CEFIC's guidance document and the selected spERCs was carried out as desk work and document analysis. The current report was presented for the first time to UBA on July 19th and provided as final version after revision on October 31st, 2013.

4 ANALYSIS OF THE CEFIC GUIDANCE

CEFIC published a first guidance document[4] for the development of spERCs in July 2010. The guidance was revised and a new version published in October 2012[5] after the results of the previous project[6] were published and discussed with CEFIC, industry representatives and authorities at a workshop in Brussels in April 2011. The assessment of the revised CEFIC guidance is one of the tasks of the current project.

4.1 Quality criteria for the CEFIC guidance

The 2010-version of the CEFIC guidance was analysed in the first project and commented by the consultants, in particular regarding the factsheet structure and the description of how to derive and communicate release factors and the coverage of spERCs.

Apart from a general comparison of the old with the revised guidance inclusive an analysis if the recommendations of the 2010-spERCs study are implemented, the revised guidance is assessed regarding the following questions:

- Are concept and role of spERCs in exposure assessments well described (in a separate chapter) and understandable for the various stakeholders?
- Are methods and approaches for deriving release factors explained (in a separate chapter) including a discussion of the data poverty regarding substance-specific emission data and related uncertainties in emission estimations (and how to deal with them)? Are the following aspects included?
    1. Release factor derivation, e.g. based on literature values, qualitative argumentation, models or generation of own emission data;
    2. Rules for the documentation of the release factor derivation ensuring transparency and allowing authorities to check plausibility;
    3. Alert that it is important to distinguish between release factors for the release from processes and the factors for the efficiency of risk management measures
- Is the factsheet format complete and its structure plausible? Does the explanation to fill the factsheet support consistency?

[4] CEFIC: CEFIC Guidance Specific Environmental Release Categories (spERCs) Chemical Safety Assessments, Supply Chain Communication and Downstream User Compliance; July 2010, Revision 1; http://www.reach-hamburg.de/fileadmin/user_upload/Newsletter/SPERC_Guidance_100707_FINAL.pdf

[5] CEFIC: CEFIC Guidance Specific Environmental Release Categories (spERCs) Chemical Safety Assessments, Supply Chain Communication and Downstream User Compliance, October 2012, Revision 2; http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf

[6] Umweltbundesamt: Standardisation of Release factors for the Exposure Assessment under REACH; 15. November 2010; http://reach-info.de/dokumente/exposure_assessment.pdf

- Are support and information provided on the downstream communication clear and understandable? Does the guidance recommend information types to (specify and) include in SDS (not relevant / confusing)?
- How does the guidance deal with scaling in the context of spERCs?

Other issues identified during the analysis of the guidance with the need to be clarified in a further revision of the guidance are also described (separation of obligatory and optional RMM, need for communication of optional RMM, additional spERCs quality criteria, information defining a spERC which needs to be communicated).

In the 2010-spERCs study, it was recommended to restructure the factsheet format. The respective proposals are summarized in Table 1.

Table 1 Proposals for changing the spERC factsheets (source: 2010-spERCs study)

Section	Content
Title of spERC	Short title of spERC
SpERC code	Structured code of spERCs (e.g. A.I.S.E. 8a.1a.v1)
Responsible	Could be omitted
Applicable ERC	Could be omitted
Version	Could be omitted
Scope	Limitations of coverage compared to ERC relate to: User groups (if not already obvious from Title) Substance groups or functions (e.g. solvents, additives) Types of products (e.g. coatings, water borne mixtures) Size of installations (e.g. defined by use amounts) Processing conditions (e.g. dry processing, no high temperatures) Conditions or processes explicitly not covered
Related use descriptors	SU, PCs, PROCs or ACs if relevant
Operational conditions	Clear description of the operational conditions that determine the emission. Specification of concepts such as "efficient resource use" by quantified indicators (e.g. % of raw materials use) or qualitative conditions (e.g. processing techniques)
NEW section: obligatory on-site RMMs	Clear description of risk management measures that are to be applied and the existence of which is assumed in the release factors. "no RMMs needed" to be explicitly stated, if release factors apply without any RMM
Substance use rate	No recommendations
Days emitting	No recommendations
Release factors (air, water, soil)	Numeric value Justification of value by reference to literature or methods. Direct link to related documents.
Optional risk management measures for iteration	Extended title of the row If possible and available, risk management measures should be named and efficiencies in relation to substance groups should be provided.
Narrative description	Short and concise flow text description. Relevant items to be specified: Abstract description of full process (e.g. storage, automated pumping of substances to mixing vessels, continuous or batch wise processing, automated packaging, cleaning of equipment, local exhaust ventilation) Explicit mentioning of whether or not cleaning of equipment and side activities are covered. Unambiguous description of conditions regarding waste management and wastewater discharges (e.g. if there are no restrictions in scope, statement that any type of waste disposal is covered). No justification should be included.
Safe use	No information on the processes should be given. Could be omitted
Scaling	Reference to the CEFIC guidance on how to communicate scaling rules to DU Only Scaling information that is specific to the sector / spERC should be provided

4.2 Overall impression of the revised CEFIC guidance

The revised guidance provides more information and more detailed explanation on spERCs, differentiated into information on the spERCs concept, the information to be included in factsheets, the use of spERCs by registrants and by downstream users as well as how associations can develop spERCs.

Furthermore, the guidance contains an overview table of available spERCs, including those for which no factsheets are published. Additional information is provided regarding the implementation of spERCs in CHESAR. The examples in the Annex have been exchanged and several annexes are added concerning the CHESAR implementation, the CEFIC RMM library and experience collected in the spERCs development. In several sections of the CEFIC guidance the need to make spERCs more known is stressed. The actors who should promote the use of spERCs and the communication channels available to do so are mentioned.

In the following sections, the content of the revised CEFIC guidance is discussed in relation to the quality assessment criteria (c.f. Section 4.1).

4.3 Concept and role of spERCs

The concept of spERCs and their role for registrants and downstream users is primarily described in Section 2 ("The spERCs emission assessment concept") of CEFIC's guidance. It explains the emission assessment steps, the distinction between industrial and wide dispersive uses, the terminology and meaning of the different "amounts" relevant in emission estimation (use amounts at EU, regional and local scale) as well as the role of risk management measures and municipal sewage treatment plants (STP). The explanation is in conformity with the exposure assessment rules of the ECHA guidance documents[7].

CEFICs and the industry sector's overall understanding of the role of spERCs has not changed since the 2010 analysis, as described in Section 1 ("General Relevance – Registrants & Downstream Users") of the CEFIC guidance. SpERCs are seen as an element to standardise supply chain communication of environmental assessment. The explicit inclusion of the information that spERCs describe the typical operational conditions of use (OC), define realistic default values for release fractions (RF) to water, air, soil and waste as well as the typically employed risk management measures (RMM) adds to the clarification of the spERCs' scope, compared to the earlier guidance version. In Section 4.5 of the CEFIC guidance the spERC assessment is termed a "1.5 Tier assessment", which needs to be refined by higher tier estimations if a risk is identified. In the earlier guidance version of 2010, spERCs were also termed as 1.5 Tier assessment.

Consequently, the role of spERCs remains as it originally was intended, implying that the release fractions to the environment and other default values are supposed to be conservative estimates that incorporate high safety factors.

[7] ECHA: Guidance on information requirements and chemical safety assessment - Chapter R.16: Environmental Exposure Estimation, version 2.1, Helsinki, October 2012; available at: http://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf

In conclusion, the improved explanation of the role of spERCs is likely to create a better understanding of all actors on how to use spERCs. Furthermore, the approach for exposure assessment outlined is in line with the ECHA guidance documents. The descriptions are understandable to registrants and downstream users of the chemical industry (formulators). The guidance part on exposure assessment is not addressed to end-users of chemicals and their understanding of exposure assessment is not generally improved.

4.4 Methods and approaches: Derivation of release factors

4.4.1 Methods of release factor derivation

The introductory section 2 ("The spERCs emission assessment concept") of the CEFIC guidance lists different information sources and methods that were used by sector associations to derive release factors for the development of the currently existing spERCs. Core information sources are the Best Available Techniques (BAT) Reference Documents (BREFs), the OECD Emission Scenario Documents (ESD), the A-and B-tables of the EU-TGD[8], measured emission data, sector knowledge and expert judgement.

The general data poverty regarding substance specific emission data is not highlighted in this part of the CEFIC guidance. Uncertainties in release factor derivation are not discussed here.

Chapter 6.1 ("Quality criteria for spERC derivation and documentation") of the CEFIC guidance specifies that justification should be given but does not include guidance on how the justification should be derived and structured and which information sources could be used. Chapter 6.3 („The spERC development process") only describes the activities to be done for the overall spERC development but does not contain details on the release factor derivation and related methods.

Appendix 5 of the CEFIC guidance compiles the different approaches of the sector associations to derive spERCs. The different examples show different cases of release factor derivation and imply that:

- read-across of release factors from one sector to another is generally possible,
- expert judgment can be used to overwrite release factors from OECD ESDs,
- legal emission related requirements may be used to derive release factors or define the operational conditions of use and risk management measures. In this case only installations covered by the respective legislation are also covered by the respective spERCs;
- the use fraction of substances for wide dispersive use may be altered, e.g. based on market information;

[8] Technical Guidance Document on Risk Assessment in support of Commission Directive 93/67/EEC on Risk Assessment for new notified substances; Commission Regulation (EC) No 1488/94 on Risk Assessment for existing substances; Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market.

- measured data can be used to derive release factors and that the resulting release factors then do not depend on assumptions.

Modelling release factors based on physico-chemical properties of substances and/or specific processing conditions are not mentioned. Also information from suppliers of installations and devices are not listed as potential source.

The information is descriptive and does not include methodological guidance on how to derive the factors nor does it refer to the overall data poverty and related uncertainties. Consequently, the difficulty of relating operational conditions to emissions of substances (with certain properties) still remains. Consequently, there is no specific guidance on how to derive release factors but examples are provided, how other associations worked. However, the analysis carried out in this study showed that at least some of the examples are not best practice and should be improved (c.f. Section 13 and 0). The sector associations are hence asked to use the existing examples and develop their own methodology.

4.4.2 Documentation in the factsheets

Section 3 ("Information in a spERC factsheet") in CEFIC's guidance is dedicated to explain the factsheet structure and content. For each part of the factsheet it is stated why and for whom it is necessary and useful and what type of information it should contain. The factsheet structure is agreed at CEFIC level and provided as overview table.

In section 6.4 ("Guidance on documenting spERCs in spERC factsheets") of the CEFIC guidance, the information presented in the overview of the factsheet structure (Table 3.1 in the CEFIC guidance) is repeated with some additional information regarding the documentation of release factors and scaling information.

Regarding the documentation of how the release factors are derived, which is essential for any user of the spERC as well as the evaluators, no detailed information is provided nor is an information minimum specified.

Two factsheet examples included in the appendix should give guidance in this regard. However, according to the quality criteria of the current project, these examples do not appear to be best practice and hence may not be appropriate to illustrate the proper content of a factsheet. The following critical issues are observed in the examples[9]:

- The second example is not provided in the new factsheet format.
- It is not always clear if an operational condition or RMM are obligatory (application assumed in the release factors) or not[10].

[9] Due to resource constraints it was not possible to make an in-depth assessment of the two examples. However, it was roughly screened which information is provided at which level of detail in the examples.

[10] In the AISE spERC, it is stated that reduced emissions to wastewater exist ***e.g.*** due to re-use of rinsing water. In the description of the scope the reduced wastewater emission is not mentioned.
ESIG/ESVOC state in their spERC (section "obligatory RMMs") that RMMs "***may be required*** under some circumstances".

- Undefined terms are used, such as “reduced emission”, “highly efficient use of raw materials” or “negligible air emission”.
- The justification of release factors partly lacks a plausible relation between the value of the factor and the substance properties[11] or operational conditions[12].
- Scaling information is partly confusing[13].

Consequently, the quality criteria and information on spERC documentation in factsheets as well as the spERC examples do not comprehensively indicate to the sector associations (and the registrants), how a high quality spERC justification can look like.

During the analysis two slight inconsistencies within the CEFIC guidance between provisions described for the documentation in the factsheets and other parts of the guidance which may confuse its users:

- In CEFIC’s Table 3.1 a list of information types necessary to describe a spERC’s scope is provided. The list contains the product type as one element to define the scope. The product types are however not mentioned in Section 6.4 which explains how spERCs should be documented in the fact sheets.
  It is unclear if the product type should always be specified or not.
- The provision of information on the maximum risk characterisation ratio (RCR) that can be applied in scaling is not included in Section 6.4 but is mentioned as relevant for communication in Section 4.4. (“SpERC-based environmental assessments in the safety data sheet”)
  This may cause confusion on whether or not the RCR should be provided.

4.4.3 Distinction between initial release factor and RMM efficiency

The CEFIC guidance explains in the chapters 2.4 and 2.5 that the initial release factors ($F_{Release}$) for most spERCs define the release fraction form a product or process without taking into account the mitigating effects of risks management measures. The limitation to “most spERCs” addresses the fact that some industry associations, such as Eurometaux and ETRMA, derived release factors that integrate the effect of RMMs[14].

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[11] The AISE spERC e.g. states that metal salts are not volatile in aqueous solutions but no scientific literature or measured vapour pressures are provided.

[12] AISE simply states that no emissions to soil occur without explaining how these can be excluded.

[13] In AISE’s spERC, the total removal efficiency (RE) “of the spERC” is assumed to be 0, although the mentioned obligatory RMMs have a RE of 95 or 99%. The REs are included in the next two rows in the scaling table but according to the guidance and general understanding the “RE of the spERC” would include the obligatory RMMs. In the ESIG/ESVOC spERC the scaling section appears to relate to the users of the final product rather than the formulators. Hence, it is unclear if the formula is applicable.

[14] Whether or not the RMMs are integrated in the release factors or not depends on the information basis used to derive them. These two associations used reported company data which included information on the input amount of substances and the emissions from the site, after the RMMs. Hence, the derived release factors integrate the efficiency of RMMs. The RMMs used are described in addition.

The differentiation into initial release factors and efficiency of obligatory and optional RMMs is also obvious from the separation of these values in the factsheet format.

However, the guidance is not fully clear with respect to whether the RMMs are integrated in the release factors stated in the fact sheets or not. In Section 2.5 ("RMM Efficiencies in Emission Estimation") of the CEFIC guidance it is stated:

"For most spERCs, the initial release factors ($F_{Release}$) define the primary emissions from a process. The risk management measures are explicitly addressed by accounting for their efficiency ($RE_{Total,\ RMM\text{-}Water}$). [...] The release factor for the primary emission and efficiency of the risk management measure are combined according to Equation 2.1 to obtain the resulting overall release factor $F_{Overall}$.

$F_{Overall,\ water} = F_{Release,Water} \times RE_{Total,\ RMM\text{-}Water}$ Equation 2.1

For a number of spERCs (e.g. those of Eurometaux) the effect of the risk management measures is already accounted for in the initial release factors. For such spERCs, $F_{Overall}$ equals $F_{Release}$ and is not deduced according to Equation 2.1."

According to this paragraph, CEFIC recommends that an initial release factor and the efficiency of RMMs are provided separately in the fact sheet.

In Table 3.1 ("Overview of the spERC factsheet format") of the CEFIC guidance, which explains the content of the fact sheets, the following is included to describe which information should be included under "obligatory RMMs":

"Clear description of risk management measures that are to be applied and the existence of which is assumed in the (initial) release factors. No RMMs needed to be explicitly stated, if release factors apply without any RMM."

The brackets in this explanation make it unclear, if the initial release factors could include obligatory risk management measures or not. The brackets should probably address the spERCs by Eurometaux and other, who have "integrated release factors". However, this explanation causes confusion as the term initial release factors is introduced (also in the ECHA guidance) as release from the process without RMM.

In conclusion, CEFIC does not recommend or provide guidance for one method or the other (inclusion of RMMs in the release factors or derivation of initial release factors and providing the RMM efficiency as separate value). This is acceptable, as the different methods for release factor derivation may require different approaches regarding the release factors. This means that sector associations are likely to continue implementing different approaches.

This makes it even more necessary that the terminology and explanation of initial (without RMM) and overall release factors (with obligatory RMM) is explained consistently in CEFIC's guidance. This is currently not the case and should be improved; i.e. even if RMMs are called "obligatory" in the spERC fact sheet, it may be possible that an initial release factor and a RMM efficiency are specified separately, e.g. to facilitate iteration.

4.5 Completeness and plausibility of the factsheet format

A comparison of the factsheet overview in CEFIC's Table 3.1 and Section 6.4 ("Guidance on documenting spERCs in spERC factsheets") with the proposed changes for the factsheet format as derived in the 2010-spERCs study (c.f. 0) shows that all recommendations were implemented; i.e.:

- The sections proposed for omission in the 2010-spERCs study (responsible, applicable ERC, version) are actually omitted in the CEFIC factsheet format. Definite identification

of the spERC is provided in the section “SpERC code”. Explanation on how to build the spERC codes is provided in Section 1.4 of the CEFIC guidance “Naming spERCs”, so no information is lost.

- The information proposed in the 2010-spERCs study to include in the section “Scope” is almost completely considered in the revised factsheet format, with the exception of identifying the installation sizes[15].
- It is now described that a release factor to waste should be indicated in the section “Release factor”, if relevant.
- The clear separation of descriptions of obligatory and optional risk management measures is implemented in the factsheet structure. However, as mentioned above, it is still not unambiguously described how industry associations should make clear if the provided release factors apply with or without the “obligatory” risk management measures.
- Further proposals for more concise wording and removal of doublings are also reflected in the factsheet table.

In addition to the recommended changes an appendix to the spERC is proposed by CEFIC to include the information that is used as determinants in the chemical safety report (CSR) and the CHESAR spERC files.

It can be concluded that the structural recommendations from the 2010-spERCs study regarding the presentation of spERC information is taken into account in the revised CEFIC guidance.

4.6 Information on how to communicate to downstream users

In Section 4.4 (“SpERC-based environmental assessment in the safety data sheet”) of CEFIC’s guidance, the communication to downstream users via the safety data sheet is explained. A differentiation is made between communication on products for wide dispersive uses and industrial uses. The downstream communication refers to safety data sheets (SDS) and exposure scenarios (ES) provided by the registrants to the first-level DUs; further forwarding of information with safety data sheets for mixtures is not addressed.

For wide dispersive uses it is recommended to translate the information on the safe conditions of use into instructions that could be communicated to professional users via the safety data sheet and on the product label to consumers. Examples are provided.

For industrial users, it is recommended to communicate:

- the identity of the relevant spERC;
- the operational conditions to be implemented (standard phrases);
- the RMMs to be implemented including their efficiency (standard phrases) and

[15] This recommendation of the first spERCs study was derived from the fact that some sector associations, such as CEPE and ETRMA, differentiated their spERCs according to installation size / capacity.

- an indication on whether scaling is appropriate.

The guidance also includes a section on how DUs can check if their uses are covered by the spERCs / spERC information communicated to them (Section 5 of the CEFIC guidance("SpERCs and checking Downstream User Compliance")).

Both recommendations on communication are appropriate because it is highlighted that the information flow should be limited to the necessary, it is indicated that information from the spERC factsheets (and iterations) should be processed / translated before communication and it is specified which type of information should be forwarded.

It might have been useful to include a note that any of the registrants' assumptions to iterate an assessment deviating from the spERC values, e.g. the use of an additional RMM, have to be communicated as obligatory measure for the downstream user.

4.7 Scaling

CEFIC states in Chapter 4.4 ("SpERC-based environmental assessments in the safety data sheet") that the registrants are to communicate whether or not scaling of the OCs and RMMs provided by the spERC is possible. If so, the following assumptions used in the chemical safety assessment need to be communicated according to the guidance:

- the dilution factor;
- the maximum amount of the substance that can be safely used (M_{safe}) or the amount assumed to be used at site (M_{local}) per year and/or per day;
- the RCR values;
- the maximum value of the RCRs to which the assessment may be adjusted[16].

This information is in line with the current version of the ECHA guidance for downstream users[17].

4.8 Other issues identified in the analysis

4.8.1 Information on risk management measures (separation of obligatory and optional RMM)

According to the factsheet structure proposed by CEFIC, a clear separation into obligatory measures (and their efficiency) and additional / optional RMMs should be implemented in the spERCs[18].

[16] This provision relates to the discussion that scaling should not result in higher RCRs than those resulting from the registrants' assessment of safe use. This is because it is not known if and which safety margins were taken into account in the registrants' CSR.

[17] ECHA: Guidance for downstream users; Draft Version 2.0, March 2013. The guidance is currently being discussed.

[18] However, even in the example provided in Appendix 1 of the CEFIC guidance, there is ambiguous information on obligatory risk management measures due to the wording in the factsheet.

In Section 3.3 ("Use conditions determining the releases") of the CEFIC guidance provides information sources for removal efficiencies of RMMs (RE_{RMM}), e.g. the BREFs and the CEFIC RMM-library and highlights that the risk assessor is responsible to check, whether these values are applicable to his specific situation. CEFIC does mention that the efficiency of RMMs may be dependent on the substance properties (CEFIC guidance, Section 3.3) but does not provide guidance how to check, if the efficiency given in one of the sources are appropriate (associations developing a spERC) or that associations could/should provide information on how the efficiency of the RMM could be checked by the registrant.

The guidance emphasises that the registrant is fully responsible for selecting appropriate additional risk management measures and realistic removal efficiencies, when iterating the assessment. It is also mentioned that the registrant should assess, whether the effects of RMMs are linear and hence the overall removal efficiency can be calculated by multiplying the individual efficiencies.

The guidance fails to mention that "additional risk management measures" listed in a spERC factsheet which are used by the registrant to iterate an assessment in order to identify safe use (RCR < 1) become obligatory RMMs, because they are then part of the conditions of use. It is not emphasised and clearly explained that then the registrant must communicate these RMMs (which are listed as optional in the spERC factsheet) as obligatory in his safety data sheet and pertaining exposure scenario. He must also include them in his documentation in the CSR.

As mentioned in Section 4.8.1 of this report it is not fully clear if downstream users may exchange obligatory RMMs with optional RMMs listed in the fact sheet when checking compliance with the exposure scenario, because the ECHA scaling guidance is not yet available. Hence, it may be necessary to check and potentially adapt this section in CEFIC's guidance.

In conclusion, the CEFIC guidance includes more information on RMMs and how to derive their efficiency than the earlier version of the guidance and also more clearly assigns the responsibilities for deriving / applying efficiency values to the REACH actors. However, similarly as for the release factors, no guidance is provided on how to actually verify a given efficiency and decide whether or not a value is appropriate / conservative enough to make a valid emission estimation.

4.8.2 Use of optional risk management measures (need for communication)

Fact sheets may include information on optional risk management measures. This information may include a specification of the type of measure and indication of its efficiency. According to the CEFIC guidance, this information should be clearly separated from the obligatory RMMs.

However, the description of how optional[19] risks management measures can be used and by whom is not fully consistent in CEFIC's guidance.

CEFIC states that optional RMMs could guide downstream users in varying the type of RMM in case the recommended ones do not fit to his use. Whether or not modifying RMM is in line with the overall understanding of scaling (modifying the conditions of use by downstream

[19] In contrast to obligatory RMM that are part of the justification of a certain release factor.

users checking if the received exposure scenarios cover their conditions of use) or if it has to be addressed in a DU CSR is not fully clear and cannot be assessed, as the related guidance document is not yet finalised by ECHA. In any case an indication as to that exchanging RMMs by DUs may cause a change of legal obligations and responsibilities is missing.

In Table 3.1 of the CEFIC guidance the use of optional risk management measures is also mentioned as a possibility for registrants to iterate an assessment. The registrant could for example add an optional RMM and thereby increase the RMM efficiency in his assessment to avoid a potentially identified risk in the primary assessment. This would make the RMM formerly indicated as optional in the spERC fact sheet an obligatory RMM (as it is necessary to ensure safe use). This however needs to be communicated to the downstream users. This is mentioned in the CEFIC guidance and regarded as consistent with ECHA's principles for exposure assessment and the use of spERCs.

4.8.3 Additional spERC quality criteria

Section 6.1 ("Quality criteria for spERC derivation and documentation") lists quality criteria for the spERC derivation and documentation in factsheets. CEFIC's quality criteria correspond to a large extent to the criteria developed for the detailed spERC assessment in this project (c.f. Section 5.4).

The following quality criteria applied in this project are not explicitly reflected in CEFIC's quality criteria but could be regarded as implied by other aspects:

- The spERC should be consistent and include no doublings.
  This criterion could be regarded as covered by the provision of an overall structure avoiding doublings.
- No undefined terms should be used.
  This criterion is covered in the explanation on how the spERCs should be documented in Section 6.4 of the CEFIC guidance.
- The dependency of the release factors on the operational conditions and RMMs should be clearly described.
  This criterion is regarded as covered by the consideration of scaling information; however, it also relates to checking the plausibility of release factors as such.

4.8.4 Information to be communicated in the CSR

According to the CEFIC guidance Section 4.3 ("SpERC-based environmental assessments in the CSR") the following information should be provided by the registrants in the CSR:

- spERC determinants (CHESAR), which are supposed to contain the essential information on OCs and RMMs, including justification of the values used;
- name(s) / code(s) of used spERC(s);
- values used for calculating, i.e.
  1. use amounts per time period;
  2. release factors;

- assessment results, i.e. resulting PECs, RCRs and maximum amount of the substance, that can be safely used.

The above information is sufficient for the authorities to follow the emission estimation / safety assessment and decide if the modelling is correct. It does also include all relevant information for checking the plausibility of the spERC, i.e. whether or not the chosen values are realistically reflecting a use situation of the substance and whether the assumed RMM efficiencies are appropriate.

Table A2.2 in Appendix 2 of the CEFIC guidance is a useful tool to identify which information should be transferred from the spERC factsheet to the CHESAR import files and how registrants can use it.

4.9 Summary of findings related to the CEFIC guidance

SpERCs are still considered a Tier 1.5 assessment tool with conservative assumptions regarding release fractions and other default values assumed for emission estimation.

CEFIC does not provide specific guidance on how to derive release factors and does not explain how exactly to use or generate information:

- there are no clear criteria for when a qualitative justification of an release factor (of zero) is sufficiently well founded;
- it is not stressed that quoting values from acknowledged literature sources (e.g. OECD ESD) only is sufficient, if it is accompanied by an analysis and discussion that the operational condition (and risks management measures) assumed in the source correspond to the conditions of use of the spERC
- there are no indications on how the process of information collection via surveys (methodology, number of participants etc.) should be documented and how information processing should be presented either in an appendix to the fact sheet or in an extra document as background information or justification for release factors or RMMs
- it is not discussed that the “expert judgement” as such is not sufficient information to justify a (modified) release factor

Instead, CEFIC describes general approaches for spERC development which have been applied by sector associations[20].

The information and examples provided in the guidance do not clearly point out which information to provide at which level of detail and containing which argumentation / data to fully justify the values proposed for emission estimation. The guidance is comprehensive in informing and exemplifying a good quality description of the scope / coverage of the spERC.

Although the guidance is not fully consistent, it gives sufficient information and structure to ensure that associations developing spERCs are aware of clarifying whether or not release factors assume that (obligatory) RMMs are implemented or not. Nevertheless, it does not recommend a unified approach.

[20] This is likely due to the lack of a “standard method” and that its development is/was not intended by CEFIC.

Compared to the first version of the guidance, CEFIC now provides more comprehensive information on RMMs, including how respective information should be presented in the factsheet. Guidance on how to evaluate the appropriateness of removal efficiencies of individual RMMs in relation to specific substances / substances groups (with specific properties) is not provided.

The recommendations on which information needs to be included in the CSR are regarded as well reflecting the authorities' needs to assess the chemical safety assessment of registrants.

The recommendations to registrants on their downstream communication are well structured, understandable and useful. A note highlighting the need to communicate assumptions made in iterations of a safety assessment using spERCs could have been added.

The scaling information is concise and does not provide specific guidance to DUs but only explains which information registrants should provide, when scaling is possible. There are no criteria given for when scaling is not appropriate and a DU chemical safety assessment (DU CSR) would be required. CEFIC refers to the on-going discussion on scaling at EU level as reason for not providing more detailed information.

5 OVERVIEW OF AVAILABLE SPERCS (JULY 2013)

There are three types of analyses performed regarding the spERCs:

- an overview of spERCs available in July 2013 with a brief characterisation of the main parameters contained and how they are described / derived in the factsheets (screening analysis),
- an assessment of spERCs which were analysed in detail in 2010 regarding the changes made and an evaluation of whether or not and how the quality has been improved
- an assessment of set of selected spERCs which were not available in 2010

The aim of this chapter is to provide an overview of the available spERCs (27th June 2013).

5.1 Screening of available spERCs

The overview was established based on CEFICs overview table of sector activities[21]. This table by CEFIC lists all EU industry sector associations and provides details on whether or not spERCs (and other implementation tools) are developed.

Based on the list of sectors, for each sector organization the existence of spERCs was verified. It was checked on the websites and by personal contacts to the responsible persons in the association whether or not spERC factsheets which already existed in 2010 were updated and/or if CHESAR import files are available or under development.

The spERCs overview table by CEFIC published in 2010 contained a number of spERCs values without factsheets for documentation. This table has not been updated since 2010. Consequently, spERCs values are available as separate values in excel format only, where sector associations published a corresponding file independently from their factsheets. Otherwise, the new or revised spERCs are integrated in the new or revised factsheets.

The spERCs were then roughly screened with regard to the following questions:

- Number of spERCs and number of factsheets
- Availability of all spERC versions on the associations' websites[22]
- Rough overview of covered processes
- Use of CEFIC template for factsheets
- Type of argumentation / method for deriving release factors
- Existence of obligatory as well as optional risk management measures and how they are described

[21] www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/Overview-associations-activities.xls

[22] This is only relevant for AISE, ECPA, ESIG and Eurometaux because all other sectors only have a first version of spERCs published

- Extent of deviation of release factors from ERC – values (order of magnitudes in average)
- Existence of release factor “to waste”
- Scaling information

Table 2 to Table 5 provide an overview of the results from the spERCs screening, including information on the name of the industry association and the industry sector it represents, the existence of spERC values (tables with release factors and core exposure determinants provided by CEFIC and other associations, such as CEPE) and spERC fact sheets in the years 2010 (first assessment) and July 2013 (current assessment) as well as whether or not CHESAR import files have been prepared or are planned to be prepared. In the third last column the number of spERCs and the number of fact sheets are provided (several fact sheets cover more than one spERC). The last two columns indicate which spERCs were assessed in detail in the 2010-spERCs study and the current study.

Table 2 includes all spERCs, where model values, fact sheets and CHESAR import files existed in July 2013. Table 3 presents all spERCs where model values and fact sheets existed in July 2013 but CHESAR import files were missing. Table 4 includes all spERCs where spERC values were available but no factsheets nor CHESAR import files are published[23]. Table 5 presents a list of industry associations which carry out some type of REACH-related work but have not developed any spERCs.

[23] The CEFIC and the CEPE overview tables including spERCs values was taken off the internet approximately in autumn 2013. Therefore, some of these values are not accessible anymore.

Table 2: Availability of "complete" spERCs in June 2013 (existing model values, factsheets and CHESAR files (partly planned))

Association	Sector	spERC values exist (CEFIC table 2010)	Factsheets available? (2010)	spERC values exist? (separate table, 2013)	Factsheets available? (2013)	CHESAR import files available?	Number of spERCs/ number of factsheets	spERCs assessed in detail in 2010	spERCs assessed in detail in 2013
AISE	Detergents-soaps	Yes	Yes	Yes	Revised, some values changed	Yes	15 / 5	Industrial use of water borne processing aids Wide dispersive use of cleaning agents	Industrial use of water borne processing aids Wide dispersive use of cleaning agents
Cosmetics	Cosmetics	Yes	No	No separate file	New, values unchanged	Yes	18 / 4	--	--
Concawe	Petroleum	Reference to ESIG	Reference to ESIG	Reference to ESIG	Reference to ESIG	Reference to ESIG	c.f. ESIG	--	--
ECPA	Crop protection	Yes	Yes	No separate file	Revised, values unchanged	Yes	2 / 1	--	--
EFCC	Construction	Yes	No	No	New, 1 value changed	Yes	10 / 3	--	Wide dispersive use of non-volatile substances in construction chemicals, outdoor
ESIG	Solvents	Yes	Yes	Yes, for air values before & after RMM	Revised version, values unchanged	Yes	44 / 32	Lubricants (industrial): solvent-borne	Lubricants (industrial): solvent-borne
FEICA	Adhesives and sealants	Yes	No	No	Revised version, some values changed	Yes	12 / 3		Industrial Use of Substances other than Solvents in Paper, Board and related Products / Woodworking and joinery / Footwear and Leather, Textile,

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Association	Sector	spERC values exist (CEFIC table 2010)	Factsheets available? (2010)	spERC values exist? (separate table, 2013)	Factsheets available? (2013)	CHESAR import files available?	Number of spERCs/ number of factsheets	spERCs assessed in detail in 2010	spERCs assessed in detail in 2013
									Others Adhesives
CEPE	Coatings, Inks, Artist colours	Yes	Yes	Revision on-going	Revision on-going	Planned	26 / 8	Manufacture of water-borne coatings and inks	--
ECMA	Catalysts	No	No	Integrated in factsheets (new)	New	Planned	1 / 1	--	Cross-check with Eurometaux
IFRA	Fragrance Material Manufacturers & Compounders	No	No	New version	New	Planned	2 / 1	--	--

Table 3: Availability of spERCs in June 2013 (existing model values and factsheets) where only CHESAR files are missing and are not planned.

Associa-tion	Sector	spERC values exist (CEFIC table 2010)	Factsheets available? (2010)	spERC values exist? (separate table, 2013)	Factsheets available? (2013)	CHESAR import files available?	Number of spERCs/ number of factsheets	spERCs assessed in detail in 2010	spERCs assessed in detail in 2013
ATIEL	Lubricants / Lubricant additives	No	No	Integrated in factsheets (new)	New	Not planned	11 / 11	--	--
ACEA	Automotive	Yes (CEPE overview)	No	No separate tables, spERCs and values differ from CEPE	New	Not planned	9 / 3		Application of liquid water-borne spray coatings, volatile lead substance with water solubility > 10 mg/l
Eurometaux	Metals	Integrated in factsheets	Yes	No	Revised version, values and spERC grouping changed	Possible, unclear	12 / 8	Use of metals and metal compounds in coating	Use of metals and metal compounds in coating
ETRMA	Rubber	Integrated in factsheets	Yes	Integrated in factsheets (old)	2010 version	No	2 / 1	Formulation and industrial use of materials resulting in inclusion on a matrix	--

Table 4: Availability of spERCs in June 2013 (existing model values), where spERC documentation in factsheets is missing

Association	Sector	spERC values exist (CEFIC table 2010)	Factsheets available? (2010)	spERC values exist? (separate table, 2013)	Factsheets available? (2013)	CHESAR import files availa-ble?	Number of spERCs/ number of factsheets	spERCs assessed in detail in 2010	spERCs assessed in detail in 2013
TEGEWA	Textile Fibre processing and leather processing	Yes (textile) No (fibre / leather)	No No	Old version No	No No	Planned	6 / 0 0 / 0	--	--
AIRC (BFL/ZKF)	Vehicle refinishing	Yes (CEPE overview)	No	No (old CEPE values)	No	No	2 / 0	--	--
ECCA	Coil coating	Yes (CEPE overview)	No	No (old CEPE values)	No	No	1 / 0	--	--
EMPAC	Metal packaging	Yes (CEPE overview)	No	Old version (old CEPE values)	No	No	2 / 0	--	--

Table 5: Industry associations where no spERCs were identified

Associa-tion	Sector	spERC values exist (CEFIC table 2010)	Factsheets available? (2010)	spERC values exist? (separate table, 2013)	Factsheets available? (2013)	CHESAR import files available?	Result of information search on the website
CEFS	Sugar factory products	No	No	No	No	No	Use mapping available, no spERCs indicated
EDANA	Nonwovens	No	No	No	No	No	Use mapping available, no spERCs indicated
EIGA	Industrial Gases	No	No	No	No	No	Information only for members
EPDLA	Polymer dispersions	No	No	No	No	No	Use mapping available, no spERCs indicated
EPMA	Powder metallurgy	No	No	No	No	No	GES available indicating ERC for calculation, no mentioning of spERCs
EPRA	Phenolic Resins	No	No	No	No	No	Use mapping available, no spERCs indicated
ERMA	Resin	No	No	No	No	No	No REACH information on the website
ETAD	Pigments	No	No	No	No	No	No REACH implementation activities
FEA	Aerosol	No	No	No	No	Own tool[24]	Own exposure assessment tool available
FECC	Distributors	Not relevant	Not relevant	Not relevant	Not relevant	No	Use mapping available, no spERCs indicated
I&P	Product manufacturers and technology providers for the imaging and printing industry	No	No	No	No	No	Use mapping available, no spERCs indicated
ISOPA	Diisocyanates and polyols	No	No	No	No	No	No REACH implementation activities
PEST	Plastics	No	No	No	No	No	Internal project, results not available to

[24] According to the website, it is being discussed if the exposure assessment tool is integrated into CHESAR

Associa-tion	Sector	spERC values exist (CEFIC table 2010)	Factsheets available? (2010)	spERC values exist? (separate table, 2013)	Factsheets available? (2013)	CHESAR import files available?	Result of information search on the website
							the public
PPRM	Polyester Powder Resin Manufacturers	No	No	No	No	No	Use mapping available, no spERCs indicated
CES	Silicone industry	No	No	No	No	No	No REACH implementation activities
SRM	Solvent resins manufacturers	No	No	No	No	No	No REACH implementation activities
Laboratory use	Laboratory	No	No	No	No	No	No REACH implementation activities

It is assumed that the spERC values in the CEFIC overview table[25], which are not supported by factsheets (ECCA, AIRC[26], EMPAC and TEGEWA) (c.f. Table 4) were derived from A-/B-tables of the European Technical Guidance Document for Risk Assessment[27] and / or OECD emission scenario documents. These spERCs are not considered for further analysis due to lack of information.

The ATIEL spERCs (c.f. Table 3) were developed in the scope of the generic exposure scenarios intended for use by the formulators of lubricants when consolidating information received with the suppliers‘ SDSs into the safety data sheets for lubricants. These spERCs are explicitly not intended for use by the registrants but are explicitly a downstream user communication tool. As these spERCs are not intended for use in registration, they are not included in a detailed assessment.

Consequently the spERCs in Table 2, Table 3 are described with regard to their structure and content (c.f. Chapter 5.2). The spERCs indicated in the last two columns of the two tables are assessed in detail with regard to changes made (comparison of 2010 and 2013 version) and their overall quality (assessment of 2013 version). The results of the comparison / detailed assessments of spERCs are provided in chapters 6 and 0).

5.2 Basic characterization of spERCs

The screening analysis did not aim at assessing individual spERCs within a sector in detail but rather at characterizing the overall approach taken in a sector, i.e. which (types of) release factors exist (and if they are differentiated for groups of substances / substance properties), if they distinguished between release from process and efficiency of RMMs, and the methods and information sources used to derive release factors as well as the existence of scaling information.

For the screening analysis almost all available factsheet of a sector[28] were briefly opened and information to characterize the overall approach of the sector association to derive spERCs was extracted. No further information sources were consulted. The following steps were conducted:

[25] The CEFIC overview was published in April 2010. It has been removed from the internet and cannot be accessed anymore.

[26] The association for vehicle repair is now named as responsible in CEFICs overview table. CEPE still used the abbreviation (BFL/ZKF).

[27] European Commission Joint Research Center: Technical Guidance Document on Risk Assessment in support of Commission Directive 93/67/EEC on Risk Assessment for new notified substances; Commission Regulation (EC) No 1488/94 on Risk Assessment for existing substances; Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market, 2003; http://ihcp.jrc.ec.europa.eu/our_activities/public-health/risk_assessment_of_Biocides/doc/tgd/tgdpart2_2ed.pdf

[28] Due to the high number of factsheets by ESIG, here only random samples were selected. Hence, in this case it is possible that not all information sources / derivation methods of release factors are listed in the overview. Also for some other sectors not all but the majority of factsheets was screened.

- The number of spERCs and factsheets was counted. It should be noted that several spERCs may be covered by one factsheet.
- The structure of the factsheet was identified and compared to the CEFIC format (table with fixed structure and set of headings)
- To identify how the release factors are justified, the respective sections in the factsheets were identified and the justification method and information sources summarised.
- The values of the release factors for air, water and soil were compared to the values of the ERCs in ECHA's guidance document R.16 and checked, if and to which extent they differ from the ERCs.
- For the release factor to waste the mere existence in a spERC factsheet was checked.
- In the sections listing the individual release factors it was looked up, if differ groups are formed e.g. according to substance properties influencing release.
- The way how the risk management measures are described was analysed and documented, including if quantification is provided for (obligatory or optional) measures
- The existence of scaling information was checked and the type of values proposed for scaling was extracted, if available. The mere existence of an M_{spERC} value was also checked.
- A summary list of the processes covered by the spERCs is provided based on the spERC titles
- An impression of the content and quality of the spERCs based on the overview screening.

The main characteristics of the available spERCs are presented in Table 6 to Table 8. Table 6 and Table 7 contain the spERCs regarded as "complete" or "soon complete", i.e. spERC values are available (separately or integrated in factsheets), factsheets are published and CHESAR import files are available (or planned). Table 8 contains the screening results of the spERCs, which are not complete and for which no completion is planned or likely in the near future.

Not all factsheets could be looked at in detail, therefore it is possible that some information was overlooked (e.g. a specific justification for a specific release factor). The overview in the following tables should therefore be regarded as illustrating the "basic approach" implemented by the sectors. It is possible that individual spERCs contain different justifications or that release factors differ from ERCs more or less significantly than specified in the tables.

The row "justification of factors" contains a list of information sources or methods how the release factors were derived and justified by the sector association responsible for the respective spERCs, as identified in the screening analysis. This does not imply that always all sources or methods are used in each of the spERCs of a sector.

The row titled "release factor waste" indicates, if the spERCs contain a release factor to waste. This is not included in ECHA's ERCs but supports the assessment of the waste stage of substances and was recommended for inclusion (also for plausibility checking) in the last project.

Table 6: Overview of spERCs structure and content from screening analysis – spERCs with CHESAR import files (planned)

Sector Parameter	AISE (revised)	Cosmetics for Europe (new)	ECPA (revised)	ESIG (revised)	EFCC (new)
CEFIC format	Yes	Yes	Yes	Yes	Yes
Number of spERCs / factsheets	15 / 5	18 / 4	2 / 1	44 / 32	10 / 3
Availability of "old" versions on the web	No (and values changed)	Not applicable	Old version via google, new version not found	No (however, values unchanged)	Not applicable
Justification of factors	Royal Haskoning Study, Life cycle inventories, EU TGD, qualitative arguments	Study (Royal Haskoning), EU TGD, expert judgment, qualitative arguments	Physical state of mixture; labelling prevents water emissions, OECD ESD plastic additives (solid waste), pesticides field application module in USES 4.0 (RIVM, 2002), own study on packaging waste.	EU TGD, ECHA guidance, PC argumentation (solubility), Ecoinvent, individual studies, OECD ESD, expert judgement (allocation of 100 % emission to compartments), qualitative arguments	OECD ESD for paints and coatings
Release to air[29]	Usually significantly lower than ERC, in most cases "zero"	Lower than ERC	Depends on vapour pressure, partly significantly lower, soil + air 100%	Differences to ERC vary; partly differentiation according to vapour pressure	Lower than ERC
Release to water[29]	Significantly lower than ERC in most cases	Lower than ERC (partly less than factor 10)	Zero (ERC = 100)	Differences to ERC vary; partly differentiation according to water solubility	Significantly lower than ERC
Release to soil[29]	Usually significantly lower than ERC, in most cases "zero"	Lower than ERC	Depends on vapour pressure, partly significantly lower, soil + air always 100%	Differences to ERC vary	Mostly "zero"
Release to	Considered	Considered	Provided (0.001%)	Not provided	Provided as "zero"

[29] The release factors were roughly compared to the values of the ERCs in ECHA's guidance document R16. The expression "significantly lower than ERC" is used, when most values of the spERCs differ by more than one order of magnitude / factor 10. The expression "lower than ERC" is used when most values of the spERCs are lower by at least a factor of 10 compared to the ERC defaults. "Differences vary" is used, when the extent of differences is sometimes very large and sometimes insignificant.

Sector Parameter	AISE (revised)	Cosmetics for Europe (new)	ECPA (revised)	ESIG (revised)	EFCC (new)
waste					
Differentiation of release factors	No	No	Yes (air and soil: vapour pressure)	In some spERCs (air: vapour pressure; water: water solubility)	No
Obligatory RMM	Partly provided, not always with efficiency	Not required	Labelling and best practice	Basic information	Not required
Optional RMM	Partly provided, not always with efficiency	Provided in some cases, no efficiency	Not applicable	"none assumed" or "may be required under certain circumstances", no efficiencies	Some specified, no efficiency
Scaling information	Partly provided: Scalable parameters (M_{spERC}, removal efficiency RMMs, dilution in STP and surface water)	For industrial spERCs	Not applicable	For industrial spERCs formulas provided, depending on the risk driving compartment	No
M_{spERC}	Provided, based on sector knowledge	Provided, also regional tonnage like AISE	Not appropriate; regional default to be used	Provided	Provided , based on sector knowledge
Processes covered	Formulation of detergents / maintenance products (granular - large / medium / small scale; liquid: low/high viscosity – large / medium / small scale) Industrial use of water-borne processing aids; Me-salts in conversion coating (Ni - Zn, Cr, Cu, Mn) Wide dispersive use of cleaning products (down the drain; aerosol: non-propellant / propellant)	Formulation of low/high viscosity liquids (small / medium / large scale) Formulation of fragrances - cleaning with water Formulation of non-liquid creams (large / medium / small scale) Formulation of cosmetics involving cleaning with organic solvents Formulation of solid cosmetics (large / medium / small scale) Wide dispersive use (down the drain / aerosol (propellants and non-propellants)	Indoor and outdoor use of substances as co-formulants in plant protection products by consumers and professional users The spERCs can only be used for regional assessments but not the direct exposure at local scale.	Many different processes, including manufacture/recycling, formulation and use differentiated according to product categories containing solvents	Formulation of Construction chemicals (volatiles main / volatiles additive / non-volatile) Industrial use of Construction chemicals (volatiles main / volatiles additives / non volatiles) Wide dispersive use indoor / outdoor (volatiles / non-volatiles)
Overall first impression	Quite detailed descriptions and thorough data for derivation of release factors, including references to sources	One spERC with "zero emission" including wastes; justification not sufficient?	Argumentation regarding release factors to water questionable, overall release 100% reasonable, distribution to compartments may	Risk management measures unclear, documentation improved during revision	Justification of release factors based on OECD may not be sufficient.

Sector Parameter	AISE (revised)	Cosmetics for Europe (new)	ECPA (revised)	ESIG (revised)	EFCC (new)
			be wrong due to lack of water emissions.		

Table 7: Overview of spERCs structure and content from screening analysis – spERCs where CHESAR import files exist (or are planned planned)

Sector Parameter	FEICA (v2)	CEPE (2010)	ECMA (new)	Ifra (new)
CEFIC format	Yes	Yes	No (Eurometaux)	Yes
Number of spERCs / factsheets	12 / 3	26 / 8	2 / 1	2 / 1
Availability of "old" versions on the web	No	Not applicable	Not applicable	Not applicable
Justification of factors	OECD ESD for paints and coatings adapted by sector specific information and expert judgement	OECD ESD, requirements of Solvent Emission Directive, "industry data", qualitative arguments	BREF documents, defaults and release factors based on measured data (19 sites)	ERC, specific survey
Release to air[30]	Usually significantly lower than ERC	Differences to ERC vary	50% of ERC	As ERC
Release to water[29]	Usually significantly lower than ERC	Differences to ERC vary	STP assumed in place, release factor higher than in spERC	Lower than ERC
Release to soil[29]	"zero"	Differences to ERC vary	"zero"	Lower than ERC
Release to waste	Provided as "zero"	Not provided	Qualitative information	No
Differentiation of release factors	No	Some spERCs (air: vapour pressure; water: water solubility)	No	No
Obligatory RMM	Only for few spERCs (air), including efficiency	Available for some spERCs, incl. efficiency	Quite specific description including efficiencies	No RMM needed
Optional RMM	Only for few spERCs (air), including efficiency	Partly in description	Alternatives stated suitable, if as efficient as obligatory measures	Some provided
Scaling information	"may be required"	Provided for some spERCs; formulas depending on the risk driving compartment	Recommendation to use metals scaling tool by ARCHE	No
M_{spERC}	Provided, based on sector knowledge	Provided only for few	Yes, including explanation	No

[30] The release factors were roughly compared to the values of the ERCs in ECHA's guidance document R16. The expression "significantly lower than ERC" is used, when most values of the spERCs differ by more than one order of magnitude / factor 10. The expression "lower than ERC" is used when most values of the spERCs are lower by at least a factor of 10 compared to the ERC defaults. "Differences vary" is used, when the extent of differences is sometimes very large and sometimes insignificant.

Sector Parameter	FEICA (v2)	CEPE (2010)	ECMA (new)	Ifra (new)
Processes covered	Formulation of adhesives (solvent borne / water borne / solvent-less; solids / volatiles ; large scale / small scale) Industrial use of solvents / substances other than solvents in adhesives (various sectors) Wide dispersive use of solvents / substances other than solvents in adhesives / sealants / other products	Formulation of paints, coatings and inks (liquid / powder at large / small scale and differentiated according to solids / volatiles) Industrial / professional / consumer use of paints, coatings and inks (indoor / outdoor - spraying / brushing / rolling - solids / volatiles)	Manufacture of metal-containing catalysts	Formulation of fragrances (small and large sites)
Overall first impression	Documentation not sufficient	Unclear coverage, justification of release factors not transparent, some mistakes in figures, RMM implementation and OCs not clearly separated	Justification appears not sufficient, concise in general	Long descriptions and illustration for checking coverage, use conditions specific, documentation not sufficient

Table 8: Overview of spERCs structure and content from screening analysis – spERCs <u>where CHESAR import files are missing</u> (and are not planned)

Sector Parameter	ETRMA (2010)	Eurometaux (revised)	ACEA (new)	ATIEL (New)
CEFIC format	No	No	Yes	Yes
Number of spERCs / FS	2 / 1	12 / 8	9 / 3	11 / 11
Availability of "old" versions on the web	Not applicable	Yes	Not applicable	Not applicable
Justification of factors	EU TGD, ECHA guidance, survey within the industry, argumentation based on reference substances and measured data as well as modelling	Measured data from "multi metals database" used for risk assessment under ESR (data of 2000 - 2010), PC argumentation (partitioning coefficient water - suspended matter)	Description of emissions and how they are generated; no justification of values in the FS. Detailed values and reasoning in excel-sheet, no sources referenced	EU TGD, sector knowledge, questionnaire responses, physical laws (water / oil partitioning)
Release to air	Tiered approach, values from EU TGD	Usually significantly lower than ERC	In most cases significantly below ERC	Usually significantly lower than ERC
Release to water	Tiered approach; values based on assessment of wastewater concentrations and use amounts	Usually significantly lower than ERC	In most cases significantly below ERC	Usually significantly lower than ERC
Release to soil	As ERC	Like or lower than ERC	Always "zero"	Usually lower than ERC
Release to waste	No	Partly provided	Provided	No
Differentiation of	No	No	spERCs as such are differentiated (partly)	No

Sector Parameter	ETRMA (2010)	Eurometaux (revised)	ACEA (new)	ATIEL (New)
release factors			according to water solubility	
Obligatory RMM	Reference to ES on the website; these contain detailed RM information	Provided including technology information and efficiency ranges or minimum efficiencies	Yes, type (physical-chemical treatment) provided and efficiencies	Seldom provided ("sites are assumed to be equipped with"), no efficiency
Optional RMM	No	Partly provided	Provided, partly including efficiencies	Provided in some cases
Scaling information	Separate scaling tool provided	Reference to scaling tool	M_{spERC}, removal efficiency RMMs, dilution in STP and surface water	In some cases
M_{spERC}	available	Ranges provided for identification of coverage, normally not for calculation	Yes, indicative worst case values, derivation documented in appendix	In some cases, also regional use fraction explicit
Processes covered	Manufacture and processing of rubber products and tires	Manufacture and recycling of metals / metal compounds (massive, powder, compounds) Formulation using metals / metal compounds (alloys, plastics, rubber, paints and coatings, other) Industrial use of metal compounds in sectors plastics, rubber, textile, glass, ceramics, crystal, metallic coating Industrial use of massive metals in shaping and Industrial use of metal (compounds) in batteries	Industrial use of liquid spray coatings with wet scrubber Withdrawal of residues and deposits from electrodeposition installations Industrial sanding operations for applied coatings with wet sanding dust collection	Formulation of lubricants/lubricant additives Industrial handling of metal working fluids Industrial / professional use of lubricants in vehicles/open systems/high energy open processes Consumer use of lubricants in closed systems
Overall first impression	No revision has taken place, c.f. 2010 report	RMMs are unchanged text blocks in all FS; FS provides good overview, quality of documentation could be rechecked.	Quite detailed descriptions and thorough data for derivation of release factors, however no justification of their value	Operational conditions not clear, justification not sufficient

5.3 Reasoning for the selection of spERCs for in-depth assessment

SpERCs for more in-depth analysis include the spERCs which were assessed in the first project in 2010 and which have been revised. In addition, 3 new spERCs are selected for assessment.

5.3.1 SpERCs assessed in 2010 which have been revised

In 2010, the following spERCs were assessed. Since then they have been revised and hence they are assessed again:

- **AISE**[31]: Industrial use of water-borne processing aids
- **ESIG**: Lubricants – Industrial (solvent – borne)
- **Eurometaux**: Use of metals and metal compounds in coating

The CEPE spERC / factsheet "Manufacture of water-borne coatings and inks" and the ETRMA spERC / factsheet "Formulation and industrial use of materials resulting in inclusion on a matrix" were assessed by Ökopol on behalf of the UBA in the 2010 project. Since then no revision of the spERC / factsheet was done to either one. Therefore, no further analysis is rational for spERCs of these two associations.

5.3.2 New spERCs selected for assessment

The following new spERCs are assessed in detail:

- **ACEA**: Application of liquid water-borne spray coatings, volatile lead substance with water solubility > 10 mg/l
  Reason: The process is widely used, also in other industries and relevant substance amounts are used.
- **EFCC**: Wide dispersive use of non-volatile substances in construction chemicals, outdoor
  Reason: the spERC has high relevance for the environment, including potential long-term releases from articles, it may be possibility to cross-refer to the construction products regulation.
- **FEICA:** Industrial Use of Substances other than Solvents in Paper, Board and related Products / Woodworking and joinery / Footwear and Leather, Textile, Others Adhesives
  Reason: the spERC covers a broad range of applications, including the paper industry and it is regarded as relevant for the environment.

In the following, the reasons why spERCs from other sectors were NOT selected are summarised (besides a cross-check of the ECMA spERC).

- The factsheets by Cosmetics for Europe and IFRA are rather similar to those developed by AISE and cover only formulation processes.

[31] For the spERC "Wide dispersive use of cleaning agents" only the derivation of the regional use amount was assessed; therefore in this case only potential changes to the derivation method or documentation of how the factor was derived will be analysed.

- The ECMA spERC is very similar and bases on similar data and argumentation as the Eurometaux spERCs. A brief "cross-check" is provided comparing the ECMA and the Eurometaux factsheets
- Although the use of plant protection products (including co-formulants) is of high relevance for the environment the spERCs are not selected because they may only be used for regional assessments and the total release is 100% (conservative estimate).
- The ATIEL spERCs are not intended for use by registrants. Hence an assessment with regard to the use in registration and emission estimation is not appropriate.

5.4 Quality requirements used in the spERCs assessment

The same approach and methods as applied in the 2010-spERCs study are used to assess the spERCs, which existed in 2010 and have been revised up to now as well as for the new spERCs selected for detailed assessment. The following questions guided the assessment process. The questions were derived from the recommendations of the previous studies, some additional aspects brought up by industry[32] and our experience regarding the understandability and applicability of spERCs (consolidated list from our offer). The underlined aspects were already roughly checked in the screening analysis (c.f. Section 5.2) but were assessed in more detail for the selected spERCs.

Criteria for the spERC analysis

1. The factsheet structure accords with the (revised) factsheet format[33].
   This criterion applies to the fact sheet as such.
2. Each spERC has a unique code.
   This criterion applies to the section "SpERC Code" in the fact sheets.
3. The current and the old spERC versions are provided on the association's website.
   This criterion was assessed by checking the spERC and fact sheet availability on the association's websites.
4. SpERCs are consistent – they don't contain doublings and descriptions of the same issue / fact using different wording.
   This criterion was applied across all factsheet sections. It is particularly relevant comparing the sections on "Scope", "Narrative", "OCs", "obligatory and optional RMMs" as well as the appendices (if available) listing the CHESAR determinants.
5. The applicability / coverage of the spERC is unambiguously described and understandable to all actors (specifically registrants, but also authorities and downstream users):

[32] C.f. presentation by Johannes Tolls on spERCs at the "REACH in der Praxis Workshop 3" on 06 June 2012 in Berlin

[33] Some associations explicitly decided not to use CEFIC's format (e.g. Eurometaux and ETRMA). If this is the case, we will assess if the documentation includes the same type of information and is of similar quality regarding the understandability of information and transparency of sources and methods.

- Covered main and auxiliary processes can be recognized.
- Processes / parts of uses are explicitly excluded, if they are not covered (in analogy to uses advised against).

This criterion applies to the sections „scope“, „narrative“ and the title section in relation to the description of the operational conditions.

6. Information describing the coverage of the spERC (OCs, RMM) are clearly separated from information which was used to derive release factors (background data).
   This criterion is used in the assessment of the overall information structure in the factsheet with focus on the sections “coverage”, “operational conditions” and “narrative description”.
7. No undefined terms are used (e.g. optimized processing).
   This criterion applies to all fact sheet sections
8. SpERCs contain release factors to water, air and soil.
   This criterion applies to the section “release factors”.
9. Assumptions and methods on default values and release factors are described and justified:

- If possible and relevant or necessary, release factors (release and efficiency of RMMs) are differentiated for substance properties or groups of substances.
- Methods, assumptions and information sources used to derive release factors are appropriate and suitable for the use.
- The dependency of release factors from different processing conditions is considered and described, if relevant.

This criterion applies to the section “release factors” and their justification as well as the section “operational conditions”.

10. Release factors and efficiency of RMMs are separately described in the factsheet. It is unambiguous which RMMs are considered as implemented in the release factors (obligatory RMM).
    This criterion addresses the sections “operational conditions”, “obligatory RMMs”, and “release factors”.
11. If RMMs are provided as iteration option, respective efficacies should be provided, which could be differentiated according to specific substance groups or properties (optional RMM).
    This criterion is used to assess the factsheet section “optional RMMs”.
12. Release factors to waste should be provided if these are relevant.
    This criterion is used to assess the factsheet section “release factors”.
13. All assumptions, values, information sources and conclusions for a spERC are plausible and can be followed (sufficiently documented).
    This criterion applies to all fact sheet sections, in particular those on the OCs, RMMs and the release factors.

6 ASSESSMENT OF SPERCS ANALYSED ALREADY IN 2010

6.1 Assessment of the spERC AISE 4.1.v2 – Industrial use of water-borne processing aids

Criterion 1: Accordance with the factsheet format

The AISE factsheet is structured in accordance with the agreed CEFIC format. However, the structure and content of the section "Scaling" differs in this factsheet from the other factsheets[34] developed by AISE.

Criterion 3: Provision of old and new spERC versions on the website

AISE does not provide the first version of the spERCs and factsheets on its website.

6.1.1 Information to identify the (relevance of the) spERC

Criterion 2: the spERC has a unique code

A unique, systematic code exists. The extension with "no RMM" is useful for registrants and downstream users to understand the spERCs coverage.

Table 9: Title section – AISE 4.1.v2 spERC "Industrial use of water-borne processing aids"

Section	New / changed content in AISE 4.1.v2	Assessment of changed / new content
Title of spERC	Same as V1 Industrial use of water-borne processing aids	Concise, telling title The title could be narrowed down to washing and cleaning agents (use descriptors)
SpERC code	Same as V1 AISE spERC 4.1.v2 – Industrial use of water-borne processing aids – no RMM	Criterion 2: Unique code -->exists Specification "no RMM" is helpful

The information in the title sections was not changed in the revision. The title is sufficiently clear to identify if the spERC could be relevant and to get a first understanding of its content.

6.1.2 Information describing the spERC's scope

Criterion 5: the spERC's coverage is unambiguous and understandable to all relevant actors; main and auxiliary processes are identified, not covered processes are explicitly excluded

Criterion 6: Information describing the spERCs coverage is clearly separated from justifications and background data.

[34] There is no scaling information included in the factsheet addressing wide dispersive use.

Table 10: Descriptive sections; AISE 4.1.v2 spERC "Industrial use of water-borne processing aids"

Section	New / changed content in AISE 4.1.v2	Assessment of changed / new content	Possible improvement
Scope	Same as V1 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.	The scope of the spERC is very broad, however narrower than ERC 4 (limitation to water-borne processing aids). Potential confusion could arise, as vehicle cleaning may not be understood as industrial processing. It is unclear, if cleaning and auxiliary processes are covered or not. AISE indicated clarification needs in the first study regarding the definition of an industrial process (permit exists, technical emission controls can be implemented, little manual handling). Respective information is provided in the CEFIC guidance; hence no further action is necessary in the spERC.	Include information if cleaning and maintenance processes are covered.
Sector of use	New Main User Group: SU3	SU3 specifies that the use is industrial (consistent, clear)	
Environmental release category	New Environmental Release Category: ERC 4	ERC4 specifies that the use of processing aids is addressed (consistent, clear)	
Processing category	Revised: The meaning of spERCs was included in V1 and is deleted here Process Categories: PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC24	The PROCs further describe which processes are covered; there could be some confusion as many PROCs relate to formulation processes, which are not listed under the scope (partly confusing in relation to scope)	Formulation should be mentioned in the section "scope"
Product category	New Product Categories : PC 35	PC35 the specification "washing and cleaning product" further narrows down the scope of the spERC (i.e. other processing aids, such as lubricants, are excluded) According to information provided to first study, the list of PROCs is meant to support the registrant in identifying the applicable spERCs but not as process descriptions.	Replace "processing aid" with "cleaning and washing agent" in the title to clarify the scope
Narrative description	Same as V1 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	The narrative is consistent with the scope and use descriptors and adds useful explanation enabling to visualize the processes and decide if the spERC is applicable. The description of the disposal of spent processing fluids to wastewater mentions that RMM may be necessary, which is a	It could be included in brackets at the end of the third paragraph: "If RMMs are added, i.e. when iterating the assessment, these

Section	New / changed content in AISE 4.1.v2	Assessment of changed / new content	Possible improvement
	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 or may not involve on-site pre-treatment or disposal to the wastewater. 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.	potential contradiction to the scope of the spERC (no RMM).	additional RMMs become obligatory and need to be communicated respectively.“
Scaling	Same as V1 (c.f. factsheet) The scaling information implies that the user may change the input information on use amount (M_{spERC}), the efficiency of the risk management measures ($E_{ER,spERC}$)the release factor ($F_{release,site}$) and the dilution factor ($q_{Dil,spERC}$). The scaling formula is explained to be applicable for continuous release and the discharge of spent processing fluids.	The section is fairly long and differs from the example (by AISE) in the CEFIC guidance. It is questionable to propose the release factor as scalable parameter of a spERC, because this would require a change of the basic justification and the factsheet as such would not be applicable.	Align this section of the factsheet with the other factsheets Consider if scaling $F_{release,site}$ is consistent with the spERC approach
Appendix	New (relates to CHESAR implementation). Included determinants: Process: Product applied in aqueous process solution with negligible volatilization. Indoor/outdoor: indoor Chemical waste generation (continuous and discontinuous): Spent process fluid discharged to wastewater. Process efficiency: Maximize wastewater reuse	The spERC determinants summarise the content of the sections on scope in a qualitative manner. However, regarding the use of wastewater (maximise; the value description in the factsheet also includes an example (re-use of rinsing water) additional information is provided, which is not mentioned in the spERC before. The phrases include undefined terms (negligible volatilization, maximize wastewater reuse)	Integrate information on the maximisation of wastewater reuse in a specific (define maximize) way in the earlier sections of the factsheet (operational conditions or RMMs)

The description of the spERC's coverage (sections scope, use descriptors, narrative description, scaling and appendix) is not fully consistent and undefined terms are used. Hence, the users may be confused regarding the relevance of the spERC for their application.

6.1.3 Operational conditions and risk management measures determining release

Criteria 4, 6, 7 and 13: The following table includes information on the operational conditions (OC) and risk management measures (RMMs) in the AISE spERC. The assessment criteria (c.f. Section 5.4) related to this information in the fact sheet are: consistency (criterion 4), separation of information on the OCs and RMMs from background information justifying release factor (criterion 6), no use of undefined terms (criterion 7). All information should be plausible and transparently documented (13).

Table 11: OC descriptions; AISE 4.1.v2 spERC "Industrial use of water-borne processing aids"

Section	Characteristics of spERC	Type of input information	Processing of input information	Assessment of changed / new content	Possible improvement
Operational conditions	Same as V1 Indoor Use Water-Based Process. Product applied in aqueous process solution with negligible volatilization. Spent fluid discharged to wastewater.	Same as V1 Sector specific classification of detergent formulation sites.	Same as V1 No processing required	The information clarifies the conditions of use (indoor, discharge of spent fluid to water, negligible volatilisation). "Negligible volatilization" is an undefined term. The justification for the operational conditions is based on the "sector specific classification of detergent formulation sites. This is not understandable without explanation (which is missing) or knowing the original source (no link or reference provided) and appears to be an insufficient information basis for covering all mentioned processes (PROCs, scope).	Specify "negligible volatilisation" e.g. by limiting the vapour pressure range of substances in the cleaning and washing agent, limiting processing temperatures and specifying that any aerosol forming processes are to be housed in. Clarify if processes are open/closed

Table 12: RMM descriptions; AISE 4.1.v2 spERC "Industrial use of water-borne processing aids"

Section	Emission pathway	Type of RMM	Typical efficiency	Assessment of changed / new content	Possible improvement
Obligatory on-site RMMs	Air	Air emission controls are not applicable as there is no direct release to air.	Same as V1 N/A	The information, together with the code "no RMM" in the title section is fully clear: no risk management measures are taken into account as obligatory (and hence they are not integrated in the release factors). The description is consistent with the scope	
Obligatory on-site RMMs	Water	Typical on-site wastewater treatment technology provides removal efficiency of (%)	Same as V1 N/A	It is clear that no obligatory RMMs are considered and hence integrated in the initial release factor.	
Obligatory on-site RMMs	Water	Wastewater treatment plant (WWTP)	-	It is clear that no obligatory RMMs are considered and hence integrated in the initial release factor.	It could be considered to delete the option WWT, as no RMMs are considered in the spERC (avoid confusion).
Obligatory on-site RMMs	Water	Selection of typical RMM technologies applied in on-site treatment of wastewaters.	-	It is clear that no obligatory RMMs are considered and hence integrated in the initial release factor.	It could be considered to delete the option typical RMM technologies, as no RMMs are considered in the spERC (avoid confusion).

The operational conditions and RMMs are clearer than in the previous version and enable spERC users to check, which conditions are covered. The undefined terms should be specified.

6.1.4 Release factors

Criteria 8, 9, 12 and 13: Regarding the release factors, the following criteria are used in the assessment: spERCs exist for water, air, soil and waste, where relevant; factors are differentiated according to substance properties (8); Assumptions and methods are described and justified; relation of release factors to operational conditions is described (9). Release factors to waste are provided, if relevant (12). All information should be plausible and transparently documented (13).

Table 13: Release factors and justification; AISE 4.1.v2 spERC "Industrial use of water-borne processing aids"

Release to	Value	ERC default	Justification	Assessment	Possible improvement
Air	Same as V1	1	Same as V1 Processing aids in aqueous solutions are not volatile and	Same as V1: It is not sufficiently justified why "0 emission" occurs; from the 2010-spERCs study it is	Define negligible volatilization and/or further justify why processing aids don't

Release to	Value	ERC default	Justification	Assessment	Possible improvement
	0		are intended to remain in the application solution. Spray applications are housed-in	understood that "0" is a translation of "negligible emission pathway", however also this negligibility is not defined.	evaporate from the process, e.g. via further limitations in the operational conditions (processing temperature) or the scope (vapour pressure of used substances)
Water	Same as V1 1	1	Same as V1 Water-borne processing aids are disposed of quantitatively to the process wastewater. Prior to discharging, the spent process water may be treated on-site.	Same as V1: Realistic worst case assumption	
Soil	New 0	0,05	New Water-borne processing aids are disposed of quantitatively to the process wastewater. Releases to soil do not occur during normal operation.	The justification does not explain why exactly no emissions to soil occur. The ERC specifies 5%	Include reasons, why no soil emissions occur, e.g. industrial use indoor, safe storage and spill prevention during transport.
Waste	Not included		Not included	As one option for using the spERC is a closed system with full disposal of spent processing fluids to waste treatment (involving or not on-site pre-treatment), it is confusing that no information is provided on waste.	Set release factor to waste as "1" and explain that this applies to applications closed to the environment, where spent fluids are disposed of as waste.

The release factor for water is the same as in the ERC. The release factors to air and soil are (significantly lower) as in the ERC and lack clear and transparent justification. A specification of undefined terms and some more qualitative arguments to exclude emissions to these compartments are necessary to allow plausibility checking.

In a "dummy CSR" generated by ECHA and provided to the project team (c.f. Section 8), a text block is included under the spERC section "chemical waste". It contains the information that the RF to waste is 0%. The same justification as for soil is provided. In the "dummy CSR" no control of risk was calculated for a substance with a PNEC of ca. 90 mg/l.

In the following table, further information contained in the fact sheet is presented and discussed. The criterion 11 "information on optional RMMs is provided" is applied to the last row.

Table 14: Other information; AISE 4.1.v2 spERC "Industrial use of water-borne processing aids"

Section	New / changed content in AISE 4.1.v2	Assessment of changed / new content	Possible improvement
Substance use rate	Same as V1 50; continuous release (M_{spERC} in kg/d) Optional: intermittent release	In the first study, AISE clarified that the values are at the upper range of use amounts and result from interviews with sector experts. This information could be included in the detailed overview of substance use rates in Table 1 of the factsheet. It is not clear if the use rates apply also to intermittent releases.	Include how information on use rates was obtained, including number of experts interviewed and representativeness of company sizes / use amounts Clarify if use rates apply also to intermittent releases
Days emitting	Same as V1 220	Information on how to assess intermittent releases is missing.	Provide average release days for intermittent release (frequency of discharging spent fluids)
Optional risk management measures for iteration	n/a	As it is specified that RMMs may be required when spent fluids are released "not applicable" seems not appropriate.	Replace with "additional RMMs may be necessary, these are process specific and no respective guidance is provided in this spERC factsheet)

The information on substance use rate and days emitting could be improved, however as the information is only indicative this is not a priority.

6.1.5 Overall conclusion on AISE spERC 4.1.v2

Apart from modifying the factsheet structure and including a release factor to soil, the content of the factsheet was not changed compared to the previous version.

Improvements compared to the last version are that the factsheet is more consistent, information is better structured and it is clear that no RMMs are considered in the release factors.

As the release factors are fairly "simple", i.e. for water emissions the worst case is assumed and for air and soil "zero emission" is claimed, the argumentation is qualitative and no information sources other than expert judgement are used.

The considerations and assumptions or information sources of the expert judgement should be better described as it is not clear how many persons were consulted, if all sectors covered by the spERC were represented and how the individual information was processed. The justification is hence not sufficiently transparent.

It is unclear why only some of the information is presented in the appendix of the factsheet as CHESAR determinants.

Table 15 summarizes the assessment results. Criterion 13 applies to different sections of the factsheets and is included in the evaluation of the other criteria.

Table 15: Assessment overview – AISE spERC 4.1.v2

#	Criterion	Assessment
1	CEFIC factsheet format	Yes
2	Unique code	Yes
3	Old and new version on the web	No
4	spERC is consistent; no unnecessary doublings	Yes
5	Coverage is clear and unambiguous; inclusion of auxiliary/cleaning processes clear; potential exclusion of processes	Yes
6	Information on coverage clearly separated from background data	Yes
7	Undefined terms not used	No
8	Release factors to water, air and soil exist	Yes
9	Assumptions and methods for deriving release factors are sufficiently documented	No
9.1	Relation between RF and OC is clear	Partly
9.2	Information sources are provided or referenced and related to spERC conditions	Yes
9.3	Differentiation according to substance properties	No
10	RF and RMM efficiency are described separately; clear which RMMs are obligatory	Yes
11	Efficiencies of optional RMMs are provided	Not applicable
12	RF to waste is provided	No

6.2 AISE: spERC 8a.1.a/b/c.v2 - Justification of use rates for wide dispersive use

The derivation of the use rate in the spERC on wide dispersive use of cleaning and maintenance products (AISE 8a.2a/b/c. v2) was assessed in the 2010-spERCs study. The factsheet was revised but no changes were implemented in the justification of the use rate.

The first assessment showed that the overall method applied is in line with the EU TGD. However, some background documentation should be made available so that authorities can fully verify if the assumptions and the input data for the derivation of the fraction of the

regional tonnage which is used locally are seen as sufficient. This regards the reduction of the safety factor in the equation

$F_{\text{regional tonnage used}} = n_{\text{inhabitans,region}} / n_{\text{inhabitants,standard town}} \times 4$

to 1.5 and the respective justification which was taken from the study Fox et al. (2002)[35]: Here, the mean of the measured to calculated boron ratio was 1.05 and the 90th percentile was 1.49, which suggested that even in a worst-case scenario the local STP is unlikely to receive more than 1.5 times the average STP substance input[36].

6.3 Assessment of the spERC ESIG 4.6a.v2 – Lubricants (industrial): solvent-borne

Criterion 1: Accordance with the factsheet format

The ESIG factsheet is not structured in accordance with the agreed CEFIC format. It includes the rows of the former factsheet format[37]. Furthermore, the row headings are not harmonised with the CEFIC format, e.g. the section for listing use descriptors is called "coverage" and the section "release factor (air, water, soil, waste" is called "emission fractions (from the process).

Criterion 3: Provision of old and new spERC versions on the website

ESIG does not provide the first version of the spERCs and factsheets on its website.

6.3.1 Information to identify the (relevance of the) spERC

Criterion 2: the spERC has a unique code.

As the factsheet was not renumbered (v2), no unique code exists.

Table 16: Title section; ESIG 4.6a.v2 spERC "Lubricants (industrial): solvent-borne"

Section	New / changed content in ESIG 4.6a.v2	Assessment of changed / new content
Title of spERC	Same as V1 Lubricants (industrial): solvent-borne	Concise but rather broad application area
SpERC code	Same as V1 ESIG spERC 4.6a.v1	A unique code does not exist, as the version number was not changed; hence the same code applies to two factsheet versions.

The title is sufficiently clear to identify if the spERC could be relevant and to get a first understanding of its content.

[35] Fox KK, Cassani G, Facchi A, Schroder FR, Poelloth C, Holt MS. 2002. Measured variation in boron loads reaching European sewage treatment works. Chemosphere 47:499–505. Die Studie wurde im Rahmen des Projektes nicht überprüft.

[36] The explanation was not assessed in detail; therefore it was not checked from which sources the boron was discharged to the sewage treatment plant and if the measurement results on the single substance can be extrapolated also to other substances. Regarding the transparency of the documentation it can be stated that the reasoning is based on scientific studies which are available on request (one of the sources is explicitly mentioned in the factsheet the other (Fox et.al) is not) and are hence available for detailed checking.

[37] Applicable ERC, responsible, version, environmental parameters and safe use

6.3.2 Information describing the spERC's scope

Criterion 5: the spERC's coverage is unambiguous and understandable to all relevant actors; main and auxiliary processes are identified, not covered processes are explicitly excluded.

Criterion 6: Information describing the spERCs coverage is clearly separated from justifications and background data.

Table 17: Descriptive sections; ESIG 4.6a.v2 spERC "Lubricants (industrial): solvent-borne "

Section	New / changed content in ESIG 4.6a.v2	Assessment of changed / new content	Possible improvement
Scope	Revised (last two sections added) Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes. Substance Domain: Applicable to petroleum substances (e.g., aliphatic and aromatic hydrocarbons) and petrochemicals (e.g., ketones, alcohols, acetates, glycols, glycol ethers, and glycol ether acetates). Size of installation: Assumed that 1000 tonnes/year of substance is used, based on a medium sized industrial operation Processing conditions – dry process	Compared to the earlier version, the spERC's scope is concretised by the addition of the processing conditions (dry processes) and the average installation size (use amount of the substance). As the use amount at site is normally scalable, downstream users should be aware that they may be covered even if the use amount is higher than specified in the scope. The list of processes is easy to understand and compare. It is unclear if the term "equipment maintenance" includes cleaning activities.	Clarify, if cleaning or equipment is covered by the spERC.
Main user group	No Main User Group specified	The use descriptor sector of use (SU) is missing. As many REACH actors use the codes, it is useful to include them; also to further clarify the scope.	Change the row title to "related use descriptors. Add SU
Environmental release category	No Environmental Release Category specified	The use descriptor environmental release category (ERC) is missing. As many REACH actors use the codes, it is useful to include them; also to further clarify the scope.	Add ERC
Processing category	Same as V1 1 (use in closed process, no likelihood of exposure), 2 (use in closed, continuous process with occasional controlled exposure), 3 (use in closed batch process (synthesis or formulation)), 4 (use in batch and other process (synthesis) where opportunity for exposure arises), 7 (industrial spraying), 8a (transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities), 8b (transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities), 9 (Transfer of substance or preparation into small containers (dedicated filling line, including weighing)), 10 (roller application or brushing), 13 (treatment of articles by dipping and pouring), 17 (Lubrication at high energy conditions and in partly open process), 18 (Greasing at high energy conditions)	As the scope of the spERC is fairly broad, no inconsistency is detected with regard to the use descriptors. However, there are some PROCs, such as "industrial spraying" or "treatment of articles by dipping and pouring", where it is not obvious how and why a lubricant is used and in how far these processes are "dry" as specified in the scope.	Clarify (scope or narrative) how lubricants are used in some PROC (e.g. industrial spraying).
Product category	No Product Category specified	The use descriptor product category (PC) is missing. As many REACH actors use the codes, it is useful to include them; also to further clarify the scope.	Add PC

Section	New / changed content in ESIG 4.6a.v2	Assessment of changed / new content	Possible improvement
Narrative description	Same as V1 Industrial use of solvent-borne lubricants encompasses a wide range of activities such as transfers, operation and maintenance of industrial equipment and engines, and waste disposal. Substance losses are reduced through use of general and site-specific risk management measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs; and through use of closed or covered equipment/processes to minimize evaporative losses of VOCs. Substance properties and uses result in limited to no discharge to air, wastewater or soil from the industrial site. Emissions to wastewater through cleaning operations are not applicable	The description is quite general and no inconsistencies with the scope and use descriptors are identified. However, the narrative is abstract and raises questions. The information on RMMs to maintain workplace exposure limits are not relevant for the environment (except that a high degree of emission capturing is implemented), as no information on the actual final treatment is provided. If "no discharges" occur, then all release factors should be "zero" The last sentence is ambiguous; either cleaning operations are not covered by the spERC or no equipment cleaning involving water use takes place.	Describe how lubricants are used in different processes, e.g. those which are mentioned in the previous section. Delete information on workers exposure. Add information on where and how emissions could occur in general. Delete statements on the size of emissions. Clarify if equipment cleaning is covered if it is a condition that no water is used.
Scaling	Same as V1 (c.f. factsheet) Scaling is explained in general, the scalable parameters are specified (M_{site}, $T_{emission,site}$, $RE_{total,site}$ and local dilution) Scaling equations are provided depending on the risk driving compartment. It is noted that scaling the release rates is not useful and outside the scope of the spERC.	The scalable parameters are specified and the scaling of the release factor is explicitly excluded.	Delete all general explanation on scaling; refer to the CEFIC guidance instead.
Appendix	New (relates to CHESAR implementation); spERC determinants: Indoor/outdoor: indoor Process efficiency: Process optimized for efficient use of raw materials On-site treatment of wastewater acclimated biological treatment; effectiveness water 70% On-site treatment of off-air: air filtration – particle removal; effectiveness 70% (70-99%).	The spERC determinants don't include the full information on the process. The process efficiency is described with an undefined term (efficient use) The information on the on-site treatment of wastewater and off-air is not consistent with the respective section on obligatory RMMs (but with the additional ones). For the obligatory RMMs no efficiency values are provided.	Provide complete determinants. Specify "efficient use of raw materials" Add efficiency to RMM section in factsheet or remove from CHESAR file (FS specifies it as additional / not obligatory).

The description of the spERC's coverage is still not consistent and the user of the spERC may have difficulties understanding if it is relevant to him or not. In particular the narrative description, which should explain the coverage in easy words, is contradictory to the other information.

6.3.3 Operational conditions and risk management measures determining release

Criteria 4, 6, 7 and 13: The following table includes information on the operational conditions (OC) and risk management measures (RMMs) in the ESIG spERC. The assessment criteria (c.f. Section 5.4) related to this information in the fact sheet are: consistency (criterion 4), separation of information on the OCs and RMMs from background information justifying release factor (criterion 6), no use of undefined terms (criterion 7). All information should be plausible and transparently documented (13).

Table 18: OC descriptions; ESIG 4.6a.v2 spERC "Lubricants (industrial): solvent-borne "

Section	New / changed content in ESIG 4.6a.v2	Assessment of changed / new content	Possible improvement
Operational conditions	Same as V1 Indoor use. Solvent-based process. Process with efficient use of raw materials (little environmental release). Volatile compounds subject to air emission controls.	The operational conditions are consistent with the scope and use descriptors as well as the narrative description. The terms "efficient" and "little" are undefined and hence don't clarify which processes are covered by the OCs and which aren't. The type of air emission controls is not specified	Specify undefined terms Move information on air emission controls to the section "obligatory on-site" RMMs

Table 19: RMM descriptions; ESIG 4.6a.v2 spERC "Lubricants (industrial): solvent-borne "

Section	Emission pathway	Type of RMM	Typical efficiency	Assessment of changed / new content	Possible improvement
Obligatory on-site RMMs	Not differentiated according to air, water and soil	New Release factors to wastewater are based on water solubility. Assumes no free product in wastewater stream; oil-water separation (e.g. via oil water separators, oil skimmers, dissolved air floatation) may be required under some circumstances.	Not provided	Information on RMMs is not differentiated according to environmental emission pathways. There is no clear statement on if RMMs are required (integrated in the spERC and release factors) or not and which measures are possible. The assumption that no free "product" (undefined term!) is an assumption which should be separated from the core spERC information. Although air emission controls are mentioned as relevant before, they are not included in this section.	Differentiate according to water, air and soil Clarify if RMMs are obligatory Provide a list of possible RMM technologies including minimum efficiencies. Separate assumptions from spERC information.

The sections operational conditions and RMMs, which are the core information of a spERC (factsheet) are neither sufficiently complete for the spERC users to apply the spERC and communicate accordingly (RMMs unclear) nor for the authorities to check if the assumptions and spERC

values are reasonable. Although the row title has been changed to "obligatory RMMs" it is still unclear which measures are assumed to be implemented.

6.3.4 Release factors

Criteria 8, 9, 12 and 13: Regarding the release factors, the following criteria are used in the assessment: spERCs exist for water, air, soil and waste, where relevant; factors are differentiated according to substance properties (8), if relevant; assumptions and methods are described and justified; relation of release factors to operational conditions is described (9). Release factors to waste are provided, if relevant (12). All information should be plausible and transparently documented (13).

Table 20: Release factors and justification; ESIG 4.6a.v2 spERC "Lubricants (industrial): solvent-borne"

Release to	Vapour pressure	Value	ERC default	Justification	Assessment	Possible improvement
Air	Same as V1 VP > 1000 Pa VP 100-1000 Pa VP 10-100 Pa VP 1-10 Pa VP <1 Pa	Same as V1 0.01 0.005 0.001 0.0005 0.0001	1	Same as V1 Due to nature of lubricants, volatilization of the substance will be limited. Estimates on the basis of substance vapour pressure taken from EUTGD (2003) Appendix 1. These values are highly conservative as typical releases to air are practically negligible (i.e., 1 mg_{oil}/m^3air during plant operations)[38].	For all information in the TGD A/B-Tables it is unclear, if they apply with or without RMMs; this is not discussed in the justification. The reference in the footnote is wrong, as Table 3.8 refers to the mineral oil and fuel industry. This puts into question the applicability of the values in the A/B tables as the TGD specifies that these industries process mineral oil to further products. Hence, the broad scope of this spERC cannot be related to the release factors proposed in the spERC. The OECD ESD specifies uses of lubricants as hydraulic fluids and metal processing fluids. The release factors (of the entire lubricant, not the component substances) to air range from zero to 5%; this is higher than the most of the release factors specified in the spERC. If and which RMMs	Provide clear and transparent justification, why the release factors of the EU TGD are applicable, as they relate to another process. Provide justification why release factors to air are lower than in the OECD ESD for lubricants. Clarify whether or not RMMs are considered in the OECD ESD / A/B-tables and, if yes, adapt information on RMMs in the respective factsheet section. Provide translation (exemplary calculation as for wastewater) of oil concentration in waste gas into

[38] OECD ESD on lubricants and lubricant additives

Release to	Vapour pressure	Value	ERC default	Justification	Assessment	Possible improvement
					are assumed in the ESD is not specified and hence the data cannot be related to the spERC. The oil concentration in off-air is not a useful information, because it cannot be compared to a release factor relating to the overall use amount at a site.	overall release factor for the site. For reasons of clarity, state that the release factor is an initial release factor.
Water	Same as V1 WS < 1 mg/L WS 1-10 mg/L WS 10-100 mg/L WS 100-1000 mg/L WS >1000 mg/L	0.000001 0.000003 0.00003 0.0003 0.001	Same as V1 1	Same as V1 Release factors to wastewater are conservatively calculated based on wastewater volume generated and substance aqueous solubility. Assumption of 1 m^3 of wastewater generated per 1 tonne of substance used is relatively conservative. Example: 1 mg/L x 1 m^3/tonne use x 1000 L/m^3 x 1tonne/109mg = 0.000001 tonnes/tonne used. For WS range (e.g., 1-10 mg/L), the geometric mean (i.e., 3.2 mg/L) is used to calculate the fraction released.	The assumed worst case of the generation of 1m^3 wastewater/tonne substance includes an extrapolation from a lubricant blending to a lubricant using plant. The factor of 10 is not justified; hence it cannot be judged if this represents the worst case in all mentioned applications.[39] The calculation based on the OECD method and the physical chemical properties are reasonable and can be followed. However, there is no justification provided why the lubricant substances cannot be present in wastewater as non-dissolved liquid. The release factors for the use of lubricants in hydraulic fluids and as metal working fluids include release factors ranging from 0.3 to 7%. This is more than a factor 10 higher than the values provided in the spERC.	Justify the derivation of worst case wastewater generation. Provide clear justification for the differences in release factors to the OECD ESD. Clarify why covered substances are not present in wastewater in excess of their water solubility. For reasons of clarity, state that the release factor is an initial release factor.
Soil	Not specified	Same as		Same as V1	c.f. assessment of RF_{air}	Provide clear and transparent

[39] As the scope specifies that only dry processes are covered, this is very likely; however, justification is missing.

Release to	Vapour pressure	Value	ERC default	Justification	Assessment	Possible improvement
		V1 0.001	0,05	EU TGD Appendix 1		justification, why the release factors of the EU TGD are applicable, as they relate to another process.
Waste	Not specified	Not included		Not included	At least qualitative information on the waste generation would be useful.	Include information on the generation and treatment of waste.

The justification of release factors is not consistent with the scope of the spERC. It lacks explanation of how the spERC release factors are related to those of the OECD ESD and why it is justified to use the A/B-table values of the EU TGD for lubricant production processes. It is not demonstrated that in the literature sources no RMMs are assumed and that hence the use of the values is appropriate.

Table 21 presents information on the substance use rate and the emission days provided in the spERC. No criteria apply for their evaluation.

Table 21: Other information; ESIG 4.6a.v2 spERC "Lubricants (industrial): solvent-borne"

Section	New / changed content in ESIG 4.6a.v2	Assessment of changed / new content	Possible improvement
Substance use rate	Same as V1 5,000 kg/d	The justification is also the same as in the former version. Information is concise and reference to the source is provided.	
Days emitting	Same as V1 220	The justification is also the same as in the former version. Information is concise and reference to the source is provided.	

The information on the substance use rate and emission days is regarded as appropriate.

In the following table, information on optional RMM contained in the fact sheet is presented and discussed. The criterion 11 "information on optional RMMs is provided" is applied to the last row.

Table 22: Optional RMMs; ESIG 4.6a.v2 spERC "Lubricants (industrial): solvent-borne"

Section	Emission pathway	Efficiency	Justification	Assessment
Row title	Not relevant	Not relevant	Not relevant	The row title is not aligned with the CEFIC format and is confusing when viewed together with the information on "obligatory RMMs"
Optional risk management measures for iteration	Air (on-site) Air filtration – particle removal	80-99+% "default of 70% selected"	CEFIC RMM library; BREF	No specific measures are provided, the selection of 70% as default is not justified (as the lower bound of the provided range is 80, this cannot be followed)
Optional risk management measures for iteration	Water (off-site) STP	Estimate with EUSES or ECETOC TRA		EUSES / ECETOC TRA are standard models and well applicable to organic substances, hence this information is regarded as sufficient.
Optional risk management measures for iteration	Water (on-site) Acclimated biological treatment	Varying efficiency; 80%	CEFIC RMM library, Simple treat to derive lower bounds	The default of 80% may be too high for substances, which are not readily degradable. It is not justified why the value is chosen.

The justification of information on optional RMMs is not sufficiently transparent to follow the efficiency values. The factsheet is not aligned with the CEFIC format.

6.3.5 Overall conclusion on ESIG spERC 4.6a.v1 (version 2)

The factsheet structure and in particular the row headings were not revised. This causes confusion, in particular regarding the application of (obligatory) risk management measures as also the information provided in the respective section is not fully clear.

Some rather long sections (safe use and scaling) are part of the factsheet which contain either superfluous information on the use of spERCs and/or the principles of scaling and should be removed.

The spERC values for calculation, namely the release factors and the efficiencies for RMMs were not changed or (still) not provided.

The only real and obvious improvement compared to the last version is that the scope is narrowed and clarified by the addition of two processing condition in the section "scope".

With regard to the release factors, justification on why the values of the TGD A/B-tables of the mineral oil and fuel industry are applicable and justification of worst case assumptions as well as a discussion on the sameness of operational conditions in the spERC and the literature as well as the existence / integration of RMMs in these factors are missing.

The currently listed data for CHESAR import are not sufficient to document the assessment.

Table 23 summarizes the assessment results. As criterion 13 applies to several aspects of the fact sheet it is not included separately but is integrated in the other criteria.

Table 23: Assessment overview – ESIG spERC 4.6a.v2

#	Criterion	Assessment
1	CEFIC factsheet format	No
2	Unique code	No
3	Old and new version on the web	No
4	spERC is consistent; no unnecessary doublings	No
5	Coverage is clear and unambiguous; inclusion of auxiliary/cleaning processes clear; potential exclusion of processes	Cleaning unclear
6	Information on coverage clearly separated from background data	Yes
7	Undefined terms not used	Few
8	Release factors to water, air and soil exist	Yes
9	Assumptions and methods for deriving release factors are sufficiently documented	No
9.1	Relation between RF and OC is clear	No
9.2	Information sources are provided or referenced and related to spERC conditions	No
9.3	Differentiation according to substance properties	Yes
10	RF and RMM efficiency are described separately; clear which RMMs are obligatory	No
11	Efficiencies of optional RMMs are provided	Yes
12	RF to waste is provided	No

6.4 Assessment of the spERC Eurometaux 5.1.v2.1 – Industrial use of metals and metal compounds in metallic coating

Criterion 1: Accordance with the factsheet format

The Eurometaux factsheet is structured in accordance with the agreed CEFIC format.

Criterion 3: Provision of old and new spERC versions on the website

Eurometaux provides the old and the revised version of the spERC on the website (next to each other).

6.4.1 Information to identify the (relevance of the) spERC

Criterion 2: the spERC has a unique code

The information in the title sections was changed in the revision and now clarifies that only industrial uses are covered and that also metal compounds can be assessed. This facilitates the identification if the spERC is relevant.

Table 24: Title section; Eurometaux 5.v1.1 spERC "Industrial use of metals in metallic coating"

Section	Content in version 1	New / changed content	Assessment of changed / new content
Title of spERC	Use of metals in metallic coating	Industrial use of metals and metal compounds in metallic coating	More specific information on types of substances and the use are integrated; allows better identification of spERC relevance
SpERC code	Eurometaux 5.v1.1	Eurometaux 5.1.v2.1	A unique code -->exists

6.4.2 Information describing the spERC's scope

Criterion 5: the spERC's coverage is unambiguous and understandable to all relevant actors; main and auxiliary processes are identified, not covered processes are explicitly excluded.

Criterion 6: Information describing the spERCs coverage is clearly separated from justifications and background data.

Table 25: Descriptive sections; Eurometaux 5.v1.1 spERC "Industrial use of metals in metallic coating"

Section	New / changed content in Eurometaux 5.1.v2.1	Assessment of changed / new content	Possible improvement
Scope	Revised Limitations of coverage compared to ERC relate to: User groups: Industrial use of metals and metal compounds in plating, galvanising. Substance groups or functions: Release defaults are derived from measured emissions. Metal representativeness of background data: (Figure showing shares of data from zinc, nickel and tin processing). Metal (compound) is defined here in a broad sense. The definition includes alkali metals, alkaline earth metals, transition metals, post-transition metals, metalloids and their compounds but excludes non-metals, halogens, noble gases and metallo-organic compounds. SpERC valid for metals with solid water partition coefficient for suspended matter between 25,000 L/kg and 400,000 L/kg. Types of products: Metal and/or metal compounds Geographical and Time: Release defaults are derived from measured emissions from various EU member states and between 1998-2009. (Figure showing the Member States and the years of data collection)	In the first version of the factsheet, the section "Scope" only provided the information which metals form the data basis from which the default values are derived. The new version is more specific and therefore improves the understandability of what is covered by the spERC. Metals and compounds are explicitly included or excluded; a range of the water partitioning coefficient further limits the scope. It is not specified whether or not auxiliary and cleaning processes are included. The section on the scope mixes information directly pertaining to the scope (description of what is covered) and the justification for the spERC. This may be confusing, e.g. because the data basis is derived from only three metals, whereas the scope covers more substances. It would be better to include the information on the background data as annex	Include information that spERCs integrate the full process (currently part of narrative description and operational conditions). Remove information on background data and include as Annex to the spERC It may be useful to include the Title of ERC5, because the limitations are provided in comparison to the ERC
User Group	New Main User Group: SU14	SU14 (manufacture of metals and metal compounds) is not consistent, as the title specifies a use rather than the manufacture of the metal (compounds).	Select SU3. Potentially the SU 15 may also be applicable.
Environmental Release Category	New Environmental Release Category: ERC 5	The ERC5 (industrial use with inclusion into/onto a matrix) is consistent with the spERC's coverage.	
Process Category	New Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC13, PROC26	The listing of PROC1 to PROC4 (manufacturing and formulation processes) is confusing, as they don't relate to plating and galvanising (except potentially the mixing of the formulations for use in plating as preparatory process). PROCs 8a/b, 9 and 26 relate to transfer and handling processes, which is consistent. The most relevant core PROC is PROC 13 (plating and galvanizing).	PROC 13 could be highlighted, as it is the core process, PROC 1-4 should be removed, as they are not consistent with the scope; explanation that mixing of galvanising / plating mixtures on-site is covered in the narrative and coverage would be clearer.

Section	New / changed content in Eurometaux 5.1.v2.1	Assessment of changed / new content	Possible improvement
Product Category	Product Categories : Not included		PC14 could be added
Narrative description	Revised Since metal spERCs are based on measured data at end-of-pipe on-site, all indicated PROCs are integrated in the release fractions from raw materials handling to cleaning and maintenance. A distinction can be made between hot dip batch process, continuous hot dip process and continuous electroplating process. Electroplating is a plating process that uses electrical current to reduce cations of a desired material from a solution and coat a conductive object with a thin layer of the material, such as a metal. Mechanical milling to remove oxide layers. Pickling. Chemical treatment or blasting of internal tube surfaces. Cleaning and stain removal. Polishing. Pre-patination. Raw materials handling and storing of produced substances are also included in this spERC. Hazardous wastes from on-site risk management measures and solid or liquid wastes from production, use and cleaning processes should be disposed of separately to hazardous waste incineration plants or hazardous waste landfills as hazardous waste.	The description is consistent with the scope and use descriptors and adds useful explanation, in particular by listing the auxiliary and cleaning processes, which are covered by the spERC. This fills the gaps of the information in the scope and list of use descriptors and allows the user to unambiguously decide, if the spERC is applicable. The information on waste classification and treatment options is useful, also.	
Scaling	New If a site does not comply with the conditions stipulated in the spERC, it is recommended to monitor the air and water releases and apply the Metals DU scaling tool in order to perform a site-specific assessment. Each site can evaluate whether he works inside the boundaries set by the ES through scaling. The Metal EUSES calculator for DUs is freely available to metal industry DUs and can be downloaded from http://www.archeconsulting.be/Metal-CSA-toolbox/du-scaling-tool.	The section provides general advice on scaling and refers to the sector specific scaling tool prepared by the association[40]. This corresponds to the requirement of short and concise information that is useful to the spERC users.	
Appendix	New (relates to CHESAR implementation) The included spERC determinants only relate to the risk management measures	The spERC determinants are not complete, as the operational conditions and processing information is	Add further determinants to the Annex; also as this information is

[40] The tool is provided only to members of the association according to Arche Consulting.

Section	New / changed content in Eurometaux 5.1.v2.1	Assessment of changed / new content	Possible improvement
	for wastewater and waste air. Here, information from BREFs is quoted in the description of values; for import to CHESAR the names of the techniques are specified; the efficiencies, which are provided in the factsheet are not included.	missing. The content of the RMMs corresponds to that provide in the factsheet, hence the information is consistent.	recommended for inclusion in the CSR and is necessary to check plausibility.

The revised description of the spERCs is significantly improved and gives a clear picture of the coverage. From the list of PROCs it can be deduced that auxiliary processes (transfer or substances / mixtures) are covered. The narrative description clarifies that also cleaning processes are covered and lists the auxiliary activities which are in the remit of the spERC.

The SU und some of the PROCs refer to manufacturing and formulation processes (in closed system), which is not consistent with the title and scope. Although to the low exposures from these PROCs they are likely to be factually covered, it may confuse the users of the spERC that they are listed.

6.4.3 Operational conditions and risk management measures determining release

Criteria 4, 6, 7 and 13: The following table includes information on the operational conditions (OC) and risk management measures (RMMs) in the AISE spERC. The assessment criteria (c.f. Section 5.4) related to this information in the fact sheet are: consistency (criterion 4), separation of information on the OCs and RMMs from background information justifying release factor (criterion 6), no use of undefined terms (criterion 7). All information should be plausible and transparently documented (13).

Table 26: OC descriptions; Eurometaux 5.v1.1 spERC "Industrial use of metals in metallic coating"

Section	New / changed content in Eurometaux 5.1.v2.1	Assessment of changed / new content	Possible improvement
Operational conditions	New: Since metal spERCs are based on measured data at end-of-pipe on-site, all processes are integrated in the release fractions from raw materials handling to cleaning and maintenance. Size of installations: Amount used can vary between 1 and 100,000 Tonnes/year. Processing conditions: Open and closed systems, dry and wet processes.	In the first version, no operational conditions were included, hence the revision lead to an improvement of the understandability and clarity of the spERC. Information that the spERC integrates all processes of an installation is already contained in the narrative description. It does not relate to the operational conditions and is hence not appropriate here. It is not fully clear if the use amounts relate to a single substance or formulations. The processing conditions don't specify that continuous and batch processes are covered, as indicated by the PROCs. As this is a doubling but would further characterise the possible operational conditions it could be included here.	Delete information on integrated scope of spERC. Clarify if use amounts relate to substances or mixtures. Consider inclusion of "continuous and batch processes" in the list of processing conditions.

Table 27: RMM descriptions; Eurometaux 5.v1.1 spERC "Industrial use of metals in metallic coating"

Section	Emission pathway	Type of RMM	Typical Efficiency	Assessment of Changed / new content	Possible improvement
Obligatory on-site RMMs	Air	Revised The statement "direct air emissions should be reduced by implementing one or more of the following RMMs" is followed by a list of possible measures, including technical specifications of their efficiency (maximum release concentration per Nm3). It is recommended to reduce fugitive emissions via several means, too.	Same as V1 95-99% provided in explanatory flow-text. No specification of variations across all measures.	The information on RMMs for air is clear and specifies the technical requirements to the measures regarding the maximum emission concentrations. No individual efficiencies are provided but only a (fairly narrow) range of average reported efficiencies. The information is understandable and useful. Background information justifying the list of measures is provided together with data specifying the RMMs of the spERC. Hence, no clear separation is made between the spERC content and the justification.	Move justification to separate annex or create new column "justification". Provide efficiency of measure as separate value.
Obligatory on-site RMMs	Water	Revised The sentences "Direct air emissions should be reduced by implementing one or more of the following RMMs" is followed by a list of RMMs for wastewater.	For each RMM, the removal efficiency is provided in relation to core parameters, such as the pH value. Values are not separated from text.	The information on RMMs for water is clear and specifies core technical parameters of the RMMs. Typical removal efficiencies are provided, however they are not clearly visible (part of the list): Background information justifying the list of measures (information source: BAT document and industry information) is provided together with data specifying the RMMs of the spERC. Hence, no clear separation is made between the spERC content and the justification.	Move justification to separate annex or create new column "justification". Provide efficiency of RMM separately.
Obligatory on-site RMMs	Waste	New Information that releases to water, soil or floors should be prevented is given and the potential to recover metals, in case certain concentrations in waste are exceeded	Not provided	Releases to water, soil and floors are not normally considered waste. The information corresponds to good practice. Information on recovery is specific for the spERC / process.	Delete information on releases, as it describes good practice and is not normally understood as "waste".

The information on operational conditions and risk management measures in the Eurometaux factsheet is consistent and clear and includes information on the technical specifications of RMMs as well as efficiency values. The justification is not separated from the actual spERC

information. The justification specifies that the measures are present (and hence relevant / applicable) in more than 90% (air) and 66% (water) of the installations. As the risk management measures should be communicated as obligatory, installations which are not covered by the spERC should be able to recognize this quickly.

In order for the authorities to check the plausibility of information, in particular the efficiency range of 95-99% across all measures, the database for this data should be provided on the website with a link/reference in the spERC. The current spERC lacks this documentation and hence the derivation of efficiencies is not transparent.

6.4.4 Release factors

Criteria 8, 9, 12 and 13: Regarding the release factors, the following criteria are used in the assessment: spERCs exist for water, air, soil and waste, where relevant; factors are differentiated according to substance properties (8), if relevant; assumptions and methods are described and justified; relation of release factors to operational conditions is described (9). Release factors to waste are provided, if relevant (12). All information should be plausible and transparently documented (13).

Table 28: Release factors and justification; Eurometaux 5.v1.1 spERC "Industrial use of metals in metallic coating"

Release to	Value	ERC default	Justification	Assessment	Possible improvement
Air	Revised 0.2% (V1: 0.4%)	0,5	Revised The 90th percentile of reported site-specific release factors to air for 97 sites.	The justification provides the result of processing reported release factors from the risk assessment reports and registration dossiers. However, the base data is not made available (not included, no reference) and the method of how the release factors were derived (by the reporting companies) is not provided. It is also not clear if those sites lacking the RMMs specified as obligatory are included in the default derivation or not.	Provide the base data underling the derivation of integrated release factors (e.g. excel-file) and documentation of how the release factors were derived by the individual sites as Annex to the factsheet (or separate document). For reasons of clarity, state that the release factor is an overall release factor.
Water	Revised 0.5% (V1: 0.6%)	0,5	Revised The 90th percentile of reported site-specific release factors to wastewater for 114 sites.	The justification provides the result of processing reported release factors from the risk assessment reports and registration dossiers. However, the base data is not made available (not included, no reference) and the method of how the release factors were derived (by the reporting companies) is not provided. It is also not clear if those sites lacking the RMMs specified as obligatory are included in the default	Provide the base data underling the derivation of integrated release factors (e.g. excel-file) and documentation of how the release factors were derived by the individual sites as Annex to the factsheet (or separate document). For reasons of clarity, state that the release factor is an overall release factor.

Release to	Value	ERC default	Justification	Assessment	Possible improvement
				derivation or not.	
Waste	New 1%	not existing	The 90th percentile of reported site-specific release factors to solid waste for 32 downstream user sites covering zinc, nickel, lead, antimony	The justification provides the result of processing reported release factors from the risk assessment reports and registration dossiers. However, the base data is not made available (not included, no reference) and the method of how the release factors were derived (by the reporting companies) is not provided. It is also not clear if those sites lacking the RMMs specified as obligatory are included in the default derivation or not.	Provide the base data underling the derivation of integrated release factors (e.g. excel-file) and documentation of how the release factors were derived by the individual sites as Annex to the factsheet (or separate document). For reasons of clarity, state that the release factor is an overall release factor.
Soil	Revised n.a. (V1: as ERC)	0,01	Revised Not applicable to local scale	The ERC specifies 1% emissions to soil. The "justification" is confusing and it is unclear, which value should be used for the regional assessment. The justification is not logical, as also the ERCs and spERCs by other associations do contain release factors to soil.	Re-insert the ERC value or include reasons, why no soil emissions occur. Replace the current justification or limit the use of the spERC to local assessments. For reasons of clarity, state that the release factor is an overall release factor.

The base data supporting the derivation of the release factors are not provided by Eurometaux in the factsheet or as additional document. Therefore, it is not possible to check, if the methodology for deriving site-specific release factors is valid and the same for all sites included in the data pool (sources are EU RARs as well as registration dossiers; however, the process of galvanization and plating is not necessarily carried out by the registrant himself), which types of companies took part in the survey and whether or not data from companies lacking the obligatory risk management measures were excluded for the derivation of release factors.

Although information is specific and explains where the data comes from, the actual documentation is missing and hence the release factor derivation is not transparent and cannot be checked.

In the following table, further information contained in the fact sheet is presented and discussed. The criterion 11 "information on optional RMMs is provided" is applied to the last row.

Table 29: Other information; Eurometaux 5.v1.1 spERC "Industrial use of metals in metallic coating"

Section	New / changed content in Eurometaux 4.1.v2	Assessment of changed / new content	Possible improvement
Substance use rate	Same as V1 default as ERC Recommendation to use realistic use rates	The ERC does not specify use rates. Guidance on what could be realistic use rates would be useful.	Derive and include realistic substance use rates.
Days emitting	Revised 220 (V1: 215)	The changed emission days are justified with similar information as the release factors. As the emission days don't influence the emission estimation, the change is not relevant for the overall outcome from using the spERC.	It may be useful to specify if the frequency of releases from batch processes is significantly lower than the provided 220 days/a.
Optional risk management measures for iteration	New For iteration purposes […], it is recommended to measure/monitor the air and/or water releases as a first refinement step. In case further iterations are required, a combination of multiple obligatory on-site measures can be considered.	No additional RMMs are presented but reference is made to the already listed RMMs.	It may be useful to add information if the efficiencies of the RMMs listed in the section on obligatory RMMs can be regarded as linear (combination of efficiencies by multiplying values).

Information on other conditions of use and additional RMMs have been added or changed during the revision of the factsheet. The information is not crucial for the outcome of the emission estimation but provides useful guidance to the spERC users. The addition of information on "realistic use amounts" would be helpful (the applicability is presented in the title sections for installations from 1 – 100.000 t/a) to ensure realism in the emission estimation. Also information on the possibility to combine the efficiencies of RMMs (or if this is not possible, as efficiency is not linear), would also be useful.

6.4.5 Overall conclusion on Eurometaux spERC 5.1.v2.1

Eurometaux revised the entire factsheet. The main changes concern:

- alignment with the CEFIC format
- clarification of the spERC coverage by improving the descriptions in various sections (scope, narrative etc.)
- revision of release factors, RMM descriptions and efficiencies as well as of the number of release days, obviously due to the inclusion of further information into the base dataset from which the information is derived (data from REACH registrations)
- addition of an appendix specifying the determinants for CHESAR import.

The mentioned changes are evaluated as positive, as they provide more clarity and increase the usefulness of the spERC.

The spERC is consistent and does not contain unnecessary doublings,

A core deficit of the spERC factsheet is; however; that the information basis from which the release factors and other values and information are derived is not provided (data extracted from the EU risk assessment reports and registration information). Neither is a description of how the release factors are actually calculated and if this is consistently done for all reporting companies. It should also be noted that the majority of data was collected in the year 2000 and hence the State-of-the-Art in installations may have changed. As changes are likely to decrease the exposure levels (better processing and RMM technologies resulting in lower emissions) this is however not regarded as critical.

A more critical aspect is that the majority of data with known origin comes from northern EU-countries[41], which frequently claim to have higher environmental standards implemented. Hence, it can be questioned if the assumed processing technologies are applicable to other countries and, even if RMMs exist, the release factors may be higher due to higher “losses” (e.g. the RMM efficiency may be the same but the emissions are captured to a much lower degree because processes are less closed, lower numbers of extraction systems exist etc.). This may be critical, as the release factors of the spERC are significantly lower than the conservative defaults of the ERC 5 and the operational conditions are only generally described.

Eurometaux could significantly increase the transparency of the spERC by compiling the background data, describing how it was obtained and processed and making it available.

The spERC does not specify in how far the release factors depend on certain processing conditions, which could be helpful information for the registrants (e.g. if for closed processes significantly lower release factors are to be expected or if air emissions are higher for hot dip processes). An initial release factor is missing (integrated factor), which makes it difficult to iterate the assessment.

[41] A larger fraction of information comes from Italy and some from Spain; no further southern European Member State is included. The eastern European countries are represented by data from the Czech Republic (approximately 1-2%).

The information extracted for CHESAR import is not sufficient to document the assessment in the CSR and the missing determinants should be added.

Table 30 summarizes the assessment results. As criterion 13 applies to several aspects of the fact sheet it is not included separately but is integrated in the other criteria.

Table 30: Assessment overview - Eurometaux spERC 4.1.v2

#	Criterion	Assessment
1	CEFIC factsheet format	Yes
2	Unique code	Yes
3	Old and new version on the web	Yes
4	spERC is consistent; no unnecessary doublings	Yes
5	Coverage is clear and unambiguous; inclusion of auxiliary/cleaning processes clear; potential exclusion of processes	Yes
6	Information on coverage clearly separated from background data	No
7	Undefined terms not used	Few
8	Release factors to water, air and soil exist	Yes
9	Assumptions and methods for deriving release factors are sufficiently documented	No
9.1	Relation between RF and OC is clear	No
9.2	Information sources are provided or referenced and related to spERC conditions	No
9.3	Differentiation according to substance properties	No
10	RF and RMM efficiency are described separately; clear which RMMs are obligatory	Yes
11	Efficiencies of optional RMMs are provided	Indirectly
12	RF to waste is provided	Yes

6.5 Reflection on the spERC factsheet by ECMA

The ECMA spERC factsheet resembles the Eurometaux factsheet and seems to partly build upon a similar database. However, there are also some differences and a rough overall evaluation of the factsheet "Manufacture of metal-containing catalysts" is provided in the following[42].

The title section of the spERC factsheet is even more concrete in limiting the scope by listing distinct metals for which the spERC is applicable. The database upon which the spERC is built consists of data from all of the listed metals, with Nickel slightly dominating. The covered tasks are listed in the section "scope" providing for a very clear picture of the applicability of the spERC. It is further specified that the spERC is applicable only to operations where wastewater is discharged to an on-site treatment plant. In conclusion the information provided in the first sections of the factsheet is concise, clear and sufficiently detailed to allow the users to identify whether or not the spERC is relevant to them (criteria 5 and 6).

The listed use descriptors are consistent with the coverage specified in the former sections listing manufacturing, formulating and transfer processes as being covered[43].

The specification of operational conditions includes basic information relevant for environmental emissions (indoor use, water based, product application in aqueous process

[42] A detailed assessment was not foreseen due to resource constraints.

[43] There is a "PROC 0" as last item in the list of PROCs; such PROC is not contained in the ECHA guidance on use descriptors and can hence not be assigned.

solution, discharge to wastewater, assumption of occupational hygiene being implemented). However, in the section “other operational conditions” also dry processes are mentioned and should rather be included in the main section on operational conditions; this is in conflict with the existence of discharges to wastewater (criteria 6, 7 and 9).

The information provided on where emissions could occur as well as the “free text background” should be moved to the section “narrative description” (criterion 6).

The section obligatory RMMs lists the types of measures recommended for air and water emissions without specifying any technical conditions. The reported efficiency of measures is provided in addition (criterion 10).

In particular for the water RMMs it is not clear why the 50th percentile of the reported efficiencies (99%) is highlighted and not a different one, e.g. the 90th percentile, as implemented by Eurometaux. The section is not clear as to which efficiency of RMMs is required in the spERC, because the reported efficiencies are highlighted but no clear statement is made on whether or not they are obligatory. One easy way of providing clarification would be to separate the required efficiencies (if any) from the justification with a respective heading (criteria 9 and 13).

In contrast to the Eurometaux factsheet a substance use rated is calculated (90th percentile of company reports). The number of emission days (280) is provided without justification. As both intermittent and continuous releases are possible for the process, it could be useful to clarify if a different value applies to the two production situations.

The integrated release factors (after on-site RMM) provided are almost a factor 10 lower than those in the Eurometaux factsheet (0.025% vs. 0.2% (air) and 0.067% vs. 0.5% (water)), which can be explained by the type of process (manufacturing vs. use).

The release factors are derived from reported emission data from catalyst manufacturers in various EU Member States between 2008 – 2010. They represent the 90th percentile of site-specific release factors from 19 sites. As for Eurometaux, neither the data basis nor the method for data collection and deriving site-specific release factors is available for plausibility checking in the factsheet (criteria 8, 9 and 13).

The (incomplete) justification and description of the base data is spread over various sections of the factsheet. It is recommended to compile all information in one annex or separate document that relates to the information basis and methodology for deriving release factors.

No specific optional RMMs are provided (criterion 11).

The narrative description is comparably short and it is suggested to move information from the sections scope and operational conditions to this section in order to better differentiate between spERC information and explanation / justification.

The scaling tool of the metals industry is referenced in the respective section. In addition, the values of the “use rate”, the “emission days” and the “RFs” are listed as parameters for scaling. It should be considered whether scaling the release factors is consistent with the idea of spERCs as this would make the justification invalid. This is particularly true for the metals spERCs, as the release factors integrate the release from the process and the RMM efficiency.

The adaptation of the emission days is not relevant, as it may not be used to calculate a daily use amount from the annual use amount (vice versa is possible, however). Hence, the

modification does not affect the result, except emissions occur on less than 12 days per year and can hence be regarded as "intermittent" according to the ECHA guidance R.16.2.3 ($PNEC_{water}$ may be increased by factor 10).

Table 31 summarizes the assessment results. As criterion 13 applies to several aspects of the fact sheet it is not included separately but is integrated in the other criteria.

Table 31: Assessment overview – ECMA spERC

#	Criterion	Assessment
1	CEFIC factsheet format	Yes
2	Unique code	Yes
3	Old and new version on the web	n.a.
4	spERC is consistent; no unnecessary doublings	Yes
5	Coverage is clear and unambiguous; inclusion of auxiliary/cleaning processes clear; potential exclusion of processes	Yes
6	Information on coverage clearly separated from background data	No
7	Undefined terms not used	Few
8	Release factors to water, air and soil exist	Yes
9	Assumptions and methods for deriving release factors are sufficiently documented	No
9.1	Relation between RF and OC is clear	No
9.2	Information sources are provided or referenced and related to spERC conditions	No
9.3	Differentiation according to substance properties	No
10	RF and RMM efficiency are described separately; clear which RMMs are obligatory	Yes
11	Efficiencies of optional RMMs are provided	n.a.
12	RF to waste is provided	Yes

7 ASSESSMENT OF NEW SPERCS

7.1 Assessment of the spERC ACEA 4.1.c.v4 – Industrial use of coatings in installations with wet scrubber

Criterion 1: Accordance with the factsheet format

The ACEA factsheet is structured according to the CEFIC format. There are no CHESAR determinants extracted and listed in the Appendix[44].

Criterion 3: Provision of old and new spERC versions on the website

As this is ACEA's first published spERC factsheet, the criterion is not relevant.

7.1.1 Information to identify the (relevance of the) spERC

Criterion 2: the spERC has a unique code

Table 32: Title section; ACEA 4.1.c.v4 spERC "Industrial use of coatings (wet scrubber)"

Section	Content in ACEA 4.1.c.v4	Assessment
Title of spERC	Industrial use of liquid spray coatings in installations with wet scrubber for collection of overspray	The spERC title is very precise and enables to directly understand its coverage.
SpERC code	ACEA spERC 4.1.c.v4 Application of liquid water-borne spray coatings, volatile lead substance with water solubility > 10 mg/l There are 5 sub-spERCs covered by the factsheet, which are differentiated according to the type of coating as well as the volatility and water solubility of the lead substance	The sub-spERCs provide further differentiation of the spERC's applicability. The terms "volatile" and "non-volatile" are not defined but it can be assumed that there is a sufficient common understanding. The use of the term "lead substance" may be confusing for registrants, as they don't know whether or not their substance is the lead substance in the coating.

The title and code are very clear regarding the coverage of the spERC. It may be useful; however, to define the terms volatile/non-volatile and to speak of "substances" rather than lead-substances to avoid confusion.

Each sub-spERC has a unique, systematic code. The specification of the RMM to be in place is useful for all spERC users.

7.1.2 Information describing the spERC's scope

Criterion 5: the spERC's coverage is unambiguous and understandable to all relevant actors; main and auxiliary processes are identified, not covered processes are explicitly excluded.

Criterion 6: Information describing the spERCs coverage is clearly separated from justifications and background data.

[44] The preparation of a CHESAR import file is not planned.

Table 33: Descriptive sections; ACEA 4.1.c.v4 spERC "Industrial use of coatings (wet scrubber)"

Section	Content in ACEA 4.1.c.v4	Assessment	Possible improvement
Scope	Covers the process of manual or automatic application of liquid spray coatings in case of transfer of compounds to a process wastewater stream due to the use of wet scrubbers for collection of overspray. This includes paint loss due to colour change operations and small amounts of typical purging and rinsing liquids when the major part of purging liquids is collected separately and not transferred into the wet scrubber. The spERCs are relevant for operations which are linked to a system for separation of paint sludge and water for recirculation and an industrial physico-chemical wastewater treatment plant with discharge of pretreated wastewater to a municipal sewage treatment plant. The spERCs cover large, medium and small operations with usage of aquatically hazardous substances (R 50 to R53, H400 to H413) up to 1,000 kg/d (volatile and/or non-volatile). Typical substance transfer rates have been investigated for large operations, but can be extrapolated to medium and small operations. Professional use (e.g. refinish body-shops) is included as far as small operations work in close-to-industry settings and substance transfer to wet scrubber occurs. Substance Domain: All (see Narrative Description)	The scope section is consistent with the title and code and adds further information regarding the spERCs coverage. This information is clear and useful but could be presented in a shorter form. The last paragraph contains background information on the data basis (derivation of transfer rates and possibility to extrapolate). The term "close-to-industry settings" regarding the use of coatings by professional users is undefined.	Move background information on database for derivation of transfer rates to the Excel-File. Provide argumentation on why the transfer rates can be extrapolated and which assumptions are made with which justification. Define what "close-to-industry settings" means for professional users.
User group	Main User Group: SU 3	Consistent with title and scope	
Sector of use	Sector of Use: SU5, SU6a, SU6b, SU7, SU11, SU 12, SU13, SU15, SU16, SU17, SU18, SU19, SU22, SU24	As spray coating is performed in many different sectors, the list of use sectors is comparatively long. This is in line with the spERCs possible coverage.	
Environmental Release Category	Environmental Release Class: ERC4, ERC5	The spERC contains sub-spERCs relating either to the volatile components (ERC 4) or the non-volatile components (ERC 5). Hence, both ERCs are correct and which of the two is the spERCs basis is visible from the codes.	
Process Category	Process Categories: PROC7, PROC11	PROC 11 is inconsistent with the scope as it relates to non-industrial spraying.	Remove PROC 11
Product Category	Product categories: PC9a, PC9b	The PCs are consistent with the scope.	
Narrative	A number of compounds which are used in coatings are assigned to hazards for the aquatic	The narrative should contain an understandable flow text	Delete the first

Section	Content in ACEA 4.1.c.v4	Assessment	Possible improvement
description	environment and thus have to undergo an assessment of conditions for safe use also when used in mixtures (high-boiling alcohols, aromatic hydrocarbons, terpenes, zinc compounds, catalysts, UV absorbers). As some of these compounds have already been registered under REACH and are assigned to very low PNEC values surface water (e.g. 0.000072 mg/l for isotridecanol, 0.0206 mg/l for zinc orthophosphate), a tier 0 assessment would lead to M(safe) volumes which would not match with industrial consumption figures. spERCs for industrial use of liquid spray coatings in installations with wet scrubber for collection of overspray are based on a calculation model which has been derived from industrial data collection and expert judgment as the relevant substance parameters cannot be measured under real life conditions with reasonable effort. The calculation model is attached. Besides standard scaling algorithms as described hereafter, the model may be widened for substances with higher or lower theoretical solubility in water and for processes with diverging relations between total substance transfer rates and periods with peak releases.	illustrating how the process(es) are carried out. Here, the flow text is already provide in the "scope". The explanation at the beginning is not necessary in a factsheet but could be moved to an explanatory background section / document. The second paragraph outlines the data basis and makes reference to the attached calculation model and the third paragraph allows modifications of the model to assess a wider range of substances (water solubility) and processing conditions. All information is in useful but does not belong into this section.	paragraph Move paragraph 2 to the justification of release fractions. Move paragraph 3 to the excel-file with the calculation model.
Scaling	Scaling options are based on the comparison of the $M_{Safe,spERC}$ with M_{Site} and changes due to RMM (RE) and/or dilution situation on site (q and $G_{Effluent}$). These scaling parameters are explained and the values for the spERC are provided. Furthermore, the general scaling equations for cases, where the risk is driven by the microbes in the STP or where the risk is driven by the water or sediment compartments are quoted.	The scaling section corresponds to the CEFIC format and includes all necessary information. The section "obligatory RMM" states a removal efficiency for non-volatile compounds (sub-spERCs 5.1.a.v4 and 5.1.b.v4); therefore the $RE_{total,spERC}$ cannot be "0" as provided in the scaling section, which applies to all sub-spERCs.	Differentiate $RE_{Total,spERC}$ for the spERCs derived from ERC 4 (0) and ERC 5 (0.9)
Appendix	No appendix	As CEFIC recommends that registrants use the spERC determinants as information input to their CSR and as registrants may want to manually enter the determinants when applying CHESAR it may be useful to provide this information in a concise form in the appendix.	Develop CHESAR determinants and include as appendix

The description of the spERC's coverage is, apart from the listing of a PROC relating to professional use, consistent and no undefined terms are used. They further specify the title and add useful information to determine the relevance of the spERC for the user. Within the factsheet sections information pertaining to the specification of the spERC's scope and information that characterizes how the spERC values were derived is not clearly separated. Furthermore, the content of the "narrative" does not correspond to the proposal by CEFIC. This reduces clarity and increases the length of the factsheet unnecessarily.

7.1.3 Operational conditions and risk management measures determining release

Criteria 4, 6, 7 and 13: The following table includes information on the operational conditions (OC) and risk management measures (RMMs) in the AISE spERC. The assessment criteria (c.f. Section 5.4) related to this information in the fact sheet are: consistency (criterion 4), separation of information on the OCs and RMMs from background information justifying release factor (criterion 6), no use of undefined terms (criterion 7). All information should be plausible and transparently documented (13).

Table 34: OC descriptions; ACEA 4.1.c.v4 spERC "Industrial use of coatings (wet scrubber)"

Section	Content in ACEA 4.1.c.v4	Assessment of content	Possible improvement
Operational conditions Phrases	Applies for solvents and other volatile organic compounds which do not become part of coated objects; release to air in compliance with directive 2010/75/EC and its national transpositions – no applicable standard phrases	The operational conditions repeat the content of the sections "scope" and "use descriptors". The Industrial Emissions Directive (IED) is quoted to specify the conditions of release to air. No information on the actual operational conditions of the spraying process are provided, which could be as a minimum indoor/outdoor use; open/close processing	Provide indicators characterizing how the process of spraying is carried out that determine the initial release factor. Clarify if compliance with IED is pre-condition for application of spERC in section scope and what should be assumed / communicate for companies which are not regulated by the IED (e.g. due to low use amounts).
Operational conditions Free text back-ground	Large installations may use up to 1,000 kg/d of volatile compounds with aquatic toxicity (e.g. aromatic hydrocarbons, terpenes, high-boiling alcohols) in application of coatings. Overspray may be collected by a wet scrubber (Venturi or similar, actually wet scrubbers are more and more replaced by dry systems for collection of overspray). Volatile compounds are only retained at low levels in circulating water, as huge air volumes and water movement lead to a relatively low equilibrium stage, far below theoretical dissolution levels of solvents (typically < 0.1 % for solvent-borne coatings, < 0.5 % for water-borne coatings, measured as COD < 2,000 mg/l resp. < 10,000 mg/l). Circulating water is continuously separated from paint sludge but has to be replaced typically once per year due to increase of salt content and activity of microorganisms. Finally, dissolved solvents are transferred into a process wastewater stream for further treatment on-site or off-site. Only few installations provide biological treatment for the dissolved organic content in wastewater. In order to avoid overload of biological treatment plants, exchanged water from wet scrubbers is typically transferred into a buffer tank from which it can be released at appropriate amounts (e.g. 10 m³/d) for a longer period (between 3 and 100 days).	The first paragraph doubles information in the scope section and is not relevant for the operational conditions. The description of water RMMs is confusing as it states that overspray may be collected by a wet scrubber (pre-condition for applicability of spERC according to title and scope) and further explains that this RMM is being replaced by dry processes (unclear if these are still covered by the spERC). The text also explains how the conditions of use (large air volumes, water movement) influence the concentration of volatile compounds in the water; which is part of the justification for the release factors.	Delete first paragraph. Do not mention non-covered RMMs and differentiate sub-spERCs if different RMMs apply. Move 2nd paragraph to narrative Move 3rd paragraph to justification of release factors or excel-file. Move last paragraph to narrative description.

Table 35: RMM descriptions; ACEA 4.1.c.v4 spERC "Industrial use of coatings (wet scrubber)"

Section	Emission pathway	Type of RMM / typical efficiency	RMM-phrase	Assessment of content	Possible improvement
Obligatory on-site RMMs	--	No / 0	No RMM for volatile comps.	For volatile components, no RMMs are obligatory. This is inconsistent to the spERC title and scope description, where the presence of a wet scrubber is explicitly mentioned. Furthermore it is likely that compliance with the IED requires the presence of off-gas treatment devices which should be mentioned here (this is also indicated in footnote 2).	Separate all descriptions in the factsheet relating to RMMs for sub-spERCs concretizing ERC 4 and 5 to avoid inconsistency. Explicitly state that no RMMs to air are assumed or include respective RMMs.

The information provided on the operational conditions is extensive. However, it does not actually specify how the process is carried out but provides general information on "average coating installation" and its RMMs. Also, parts of the justification for the release rates of volatile compounds from the process to water are given. No information on air releases is specified.

7.1.4 Release factors

Criteria 8, 9, 12 and 13: Regarding the release factors, the following criteria are used in the assessment: spERCs exist for water, air, soil and waste, where relevant; factors are differentiated according to substance properties (8), if relevant; assumptions and methods are described and justified; relation of release factors to operational conditions is described (9). Release factors to waste are provided, if relevant (12). In the table, only information applicable to the sub-spERC under assessment is quoted. All information should be plausible and transparently documented (13).

Table 36: Release factors and justification; ACEA 4.1.c.v4 spERC "Industrial use of coatings (wet scrubber)"

Release to	Value	ERC default	Justification	Assessment	Possible improvement
Air	0.9	1	Volatile compounds are released to air in spray-booths, flash-off zone and drying ovens. Final release to air is depending on required abatement to comply with directive 2010/75/EC (ovens are often connected to abatement which reduces release to air by [...] by 10 to 50 % for water-borne coatings; abatement for	The justification explains where emissions occur but does not provide information on the size of the default value of 0.9.	Provide justification for the specified value of 0.9 Clarify if the efficiency of the RMMs (wet scrubber) are integrated in the release factor ($F_{overall}$) or if the release

Release to	Value	ERC default	Justification	Assessment	Possible improvement
			spray-booths is only typical for solvent-borne basecoats).		factor applies prior to the RMM ($F_{initial}$)
Water	0.05	1	A minor amount of volatile compounds remains in the paint sludge and in the circulating water of the wet scrubber. The content in the water of the wet scrubber depends on a dynamic equilibrium (< 0.5 % for water-borne coatings). Typical solvents for water-borne coatings (alcohols, glycol ethers) have higher water solubility than typical solvents for solvent-borne coatings. The water volume of the wet scrubber is regularly exchanged at rates between twice per year and once every three years. Exchanged volumes are transferred to a buffer tank and released from there to waste-water treatment plants at typical rates of 10 m⁺/d. This results in a peak emission for a few days (typically ten-fold for one tenth of all operating days)	Information in the justification relate to the calculation model in the excel sheet but no reference is made here. The second paragraph implies that it could be possible to average the releases from peak times to the working days; this is explicitly not possible and any misunderstandings should be avoided. It is furthermore difficult to understand of what emission size the peak emission is ten-fold.	Include link to calculation model as justification for the 0.5% release rate to water. Delete paragraph on peak releases (doubles OCs and creates misunderstanding). For reasons of clarity, state if the release factor is an initial release factor or if it already integrates the existence of a wet scrubber ($F_{overall}$).
			In the excel-file the transfer rate from overspray to scrubber water is calculate from the minimum input amount of solvents for car coating and the maximum solvent amount contained in the scrubber wastewater. The use of minimum and maximum values ensure that the resulting transfer values are conservative. Further justification is provided: Transfer is measured per parameter COD (0.1 % = 2,000 mg/l COD), Organic substance measurements are difficult at concentrations < 0.1 %, in practice, substances are part of azeotropic mixtures, hazardous substances (decanol, heptane, aromatic HC) have low solubility.	The calculation as such is valid and correct for the coating of cars. No arguments are provided on why the information can be extrapolated to other sectors (use descriptors include practically all manufacturing sectors) than car coating. The assumptions made in the calculation are not justified and no sources are provided (e.g. no source for minimum amount of solvent in water-borne coatings, unclear who gave feedback on the assumptions (column feedback)). The "further justification" is not understandable and need more explanation; among other, the following questions are raised: did companies measure COD content and was 0.1% the result? Why do measurements below 0.1% justify the release rate of 0.5? What consequences does the fact have that the substances are part of azeotropic mixtures in relation to the release rate? Do hazardous substances really always have a low solubility? In how far does that relate to the release rate? Only the answers to these questions could be regarded as potential justifications for the release rate.	Justify all assumptions and provide links to respective information sources. Describe how the "feedback" was obtained and from whom. Provide justification why the derived release rates are also applicable to other sectors than car coating. Provide more information on the additional justification.
Soil	0	0.05	Paint sludge and filter sludge is hazardous waste which needs to	The justification does not explain the release factor of 0.	Add justification of release rate of

Release to	Value	ERC default	Justification	Assessment	Possible improvement
			be incinerated resp. recovered energetically. Inert residues are not used for agricultural purposes.		"zero" to soil
Waste	0.05	--	Figures refer to volatile and non-volatile compounds which are bound in paint sludge (hazardous waste for incineration).	The justification does not explain the release factor of 0.05	Add justification of release rate to waste.

All release factors are lower than those provided by the respective ERC. The justification of the release factor to water is a calculation model for transfer rates for organic solvents (also other coating compounds for the other sub-spERCs) provided as excel sheet with each calculation step explained in detail. Whereas the calculation itself is plausible, the sources of the used values and assumptions are not provided. Furthermore, it is not discussed why the transfer rates derived from data of the car coating sector can be extrapolated to all other use sectors listed in the use descriptors. A clear justification for the release factors to air, soil and waste are not included in the factsheet. In conclusion, the derivation and documentation of release factors is not sufficient to allow plausibility checks. Finally, it is not clear if the release factors are initial release factors (prior to RMMs) or overall release factors integrating the efficiency of the RMMs.

In the following tables, further information contained in the fact sheet is presented and discussed. The criterion 11 "information on optional RMMs is provided" is applied to the last row of Table 38.

Table 37: Other information; ACEA 4.1.c.v4 spERC "Industrial use of coatings (wet scrubber)"

Section	Content in ACEA 4.1.c.v4	Assessment	Possible improvement
Substance use rate	No value provided	n.a.	Derive M_{spERC} for ACEA 4.1.c.v4
Days emitting	300 for continuous withdrawal 30 (withdrawal from buffer, rate 10 m³/d), (may also be 90 days every three years)	No information source is provided	Include reference to source

Table 38: Optional RMMs; ACEA 4.1.c.v4 spERC "Industrial use of coatings (wet scrubber)"

Section	Content: type of RMM	Content efficiency	Assessment	Possible improvement
Optional RMMs for iteration	Industrial biological WWTP	75% efficiency	The source for the efficiency is not provided; it usually depends on the degradability of the substances.	Provide information source / justification for 75% efficiency
Optional RMMs for iteration	Reduced release rates from buffer	To be determined		

The information on substance use rate and days emitting could be improved, however as the information is only indicative this is not a priority.

7.1.5 Overall conclusion on ACEA spERC 4.1.c.v4

The ACEA spERC is very specific in its scope and the sum of the respective descriptions enables all users to understand which processes are covered and which are not.

However; the information is partly doubling, partly sorted differently than intended in the CEFIC guidance (c.f. Table 3.1 of the guidance) and some information appears to contradict the description of the scope. The separation of the factsheet into one applicable to spERCs concretising ERC4 and another concretizing ERC 5 would avoid most of the confusing information, in particular regarding the application of obligatory RMMs.

In the factsheet information for the registrant to apply for modelling and communicating is not clearly separated from information to present in the CSR as justification for assumptions and providing background information.

The method for deriving the release rate to water, which is documented in the excel-sheet, is plausible and the individual calculation steps are well explained and can be followed. However, without references to information sources and justification of assumptions used as input parameters of the calculation, it is not complete and transparent. Furthermore, it is not discussed why the transfer rates derived from data of the car coating sector can be extrapolated to all other use sectors listed in the use descriptors.

The release rates to all other emission pathways are only described but not justified.

Table 39 summarizes the assessment results. As criterion 13 applies to several aspects of the fact sheet it is not included separately but is integrated in the other criteria.

Table 39: Assessment overview – ACEA spERC 4.1.c.v4

#	Criterion	Assessment
1	CEFIC factsheet format	Yes
2	Unique code	Yes
3	Old and new version on the web	n.a.
4	spERC is consistent; no unnecessary doublings	No
5	Coverage is clear and unambiguous; inclusion of auxiliary/cleaning processes clear; potential exclusion of processes	Yes
6	Information on coverage clearly separated from background data	Not fully
7	Undefined terms not used	Few
8	Release factors to water, air and soil exist	Yes
9	Assumptions and methods for deriving release factors are sufficiently documented	No
9.1	Relation between RF and OC is clear	Yes
9.2	Information sources are provided or referenced and related to spERC conditions	No
9.3	Differentiation according to substance properties	Yes
10	RF and RMM efficiency are described separately; clear which RMMs are obligatory	Partly
11	Efficiencies of optional RMMs are provided	Yes
12	RF to waste is provided	Yes

7.2 Assessment of the spERC EFCC 8f.1.a.v1 – Wide dispersive Use of Substances in Professional and DIY construction chemicals

Criterion 1: Accordance with the factsheet format

The factsheet is structured according to the CEFIC format.

Criterion 3: Provision of old and new spERC versions on the website

As this is EFCC's first published spERC factsheet, the criterion is not relevant.

7.2.1 Information to identify the (relevance of the) spERC

Criterion 2: the spERC has a unique code.

Table 40: Title section; EFCC 8f.1a.v1 spERC "Use in professional and DIY construction chemicals"

Section	Content in EFCC 8f.1.a.v1	Assessment
Title of spERC	Wide dispersive Use of Substances in Professional and DIY construction chemicals	The title gives a first impression of the spERC's coverage
SpERC code	EFCC spERC 8f.1a.v1 Wide dispersive use of non-volatile substances in construction chemicals, outdoor (The factsheet covers 4 sub-spERCs.)	Each sub-spERC has a separate number. The code name further specifies the coverage of the spERC (non-volatile substances and outdoor use). The term "non-volatile" is not defined but regarded as sufficiently understandable. The PCs (below) specify the term construction chemicals.

The title is sufficiently clear to identify if the spERC could be relevant and to get a first understanding of its content.

A unique, systematic code exists. The extension of the spERC code narrows the potential coverage.

7.2.2 Information describing the spERC's scope

Criterion 5: the spERC's coverage is unambiguous and understandable to all relevant actors; main and auxiliary processes are identified, not covered processes are explicitly excluded

Criterion 6: Information describing the spERC's coverage is clearly separated from justifications and background data.

Table 41: Descriptive sections; EFCC 8f.1a.v1 spERC "Use in professional and DIY construction chemicals"

Section	Content in EFCC 8f.1.a.v1	Assessment	Possible improvement
Scope	Covers the application of construction chemicals for a wide range of purposes by consumers and by professional uses. Covers different construction chemicals application techniques for indoor and outdoor use such as brushing or rolling, spraying, dipping, extrusion from a cartridge. Substance Domain: EFCC spERC 8c.1a.v1; EFCC spERC 8f.1a.v1 All substances which do not evaporate to a significant extent upon curing of the construction chemical	Due to the broad scope of the spERC the description is not specific. No further specification of the title section but examples of potential application techniques are provided. The undefined term "do not evaporate to a significant extent upon curing" is used. The scope does not specify if cleaning and maintenance operations are included in the spERC.	Define "evaporation to a significant extent". Clarify coverage of cleaning and maintenance processes.
User Group	Main User Group: SU 21, SU 22	Consistent with the scope, encodes the main user groups	
Sector of use	Sector of Use: SU19	Consistent with the scope, encodes the main sector of use	
ERC	Environmental Release Class: ERC 8a, ERC 8c, ERC 8d, ERC 8f	Consistent with the with spERC codes and content	
Process Category	Process Categories: PROC8b, PROC 10, PROC11, PROC 13, PROC 19	PROC 8b (Transfer […] from/to large vessels/containers at dedicated facilities) is understood as applying to synthesis and formulation; such processes may occur at construction sites by professional users. All other spERCs are fully consistent with the title section and scope	
Product Category	Product categories: PC 1, PC9a, PC9b, PC10	The listed PCs describe construction chemicals. It is not clear, if polishes and waxes (PC 31) are explicitly not listed. PC10 (Building and construction preparations not covered elsewhere) is not included in the current ECHA guidance anymore.	Check if PC 31 is relevant. Remove PC10 or include full name of category.
Narrative description	Habits and practices of decorative painting and construction chemicals are very similar. Construction chemicals cover the use applied to buildings, their trim and fittings and construction purposes by both professionals and the general public. According to information from the producing industry, the chemicals are used in the following key applications: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Roller application or brushing Spraying (non industrial) Dipping and pouring of articles The difference between the percentages of construction chemicals used in professional and 'do-it yourself' (DIY) applications varies across the EU	The first sentence seems not correct, as an activity (decorative painting) is compared to a group of chemical products (construction chemicals); furthermore, decorative paints are regarded as part of the group of construction chemicals and hence a confusing distinction is established. Also the second sentence is not correct (grammer – "are used in applications related to …" or "The use of construction chemicals covers applications to …"). The list of key applications repeats the content of the use descriptors; however, this section is intended to provide a flow-text (CEFIC guidance on content: description of process(es); inclusion of whether or not cleaning and maintenance are covered; treatment of wastewater / waste).	Revises the narrative description and include information on the items recommended for inclusion in the CEFIC guidance. Explain relevance of information on split of product uses ore remove sentence to justification / background information.

Section	Content in EFCC 8f.1.a.v1	Assessment	Possible improvement
	comparable with decorative paintings. The split between these two types of uses ranges from around 30% in Greece to around 70% in Sweden.	It is unclear for what the information on the (variations of the) split between professional and DIY-uses is necessary.	
Scaling	Not applicable for wide dispersive uses.	OK	
Appendix	Specified determinants: Type of process: Application of solvent-borne or water-borne products Indoor/outdoor use: outdoor Equipment cleaning: Equipment cleaned with water, washing disposed of with wastewater Process efficiency: Process with efficient use of raw materials	The type of process is consistent. The determinant "equipment cleaning" clarifies that this activity is covered by the spERC. This is not mentioned earlier in the spERC. The determinant process efficiency is not consistent with the title and scope: a) professional and consumer uses are not regarded a "process"; this is obvious from the value description, which refers to closed batch system and emission reduction to wastewater b) whether or not consumer and professional users use raw materials efficiently depends on their individual behaviour.	Remove determinant "process efficiency

The description of the spERC's coverage is broad and therefore fairly general; however, sufficiently detailed for the spERC users to get an understanding of the scope. In the sections describing the scope, it is not explicitly mentioned that a) the use of chemicals results in inclusion of substances in a matrix (ERC definition) and whether or not cleaning and maintenance processes are covered. Furthermore, some minor aspects regarding the use descriptors could be clarified. The narrative description does not correspond to the content recommended by the CEFIC guidance but rather repeats information of the previous sections of the factsheet. In the factsheet's appendix the process efficiency is specified as "efficient use of raw materials", with a typical exemplary measure of a "closed process". This is regarded as confusing and not appropriate for a professional and DIY use.

7.2.3 Operational conditions and risk management measures determining release

Criteria 4, 6, 7 and 13: The following table includes information on the operational conditions (OC) and risk management measures (RMMs) in the AISE spERC. The assessment criteria (c.f. Section 5.4) related to this information in the fact sheet are: consistency (criterion 4), separation of information on the OCs and RMMs from background information justifying release factor (criterion 6), no use of undefined terms (criterion 7). All information should be plausible and transparently documented (13).

Table 42 Proposals for changing the spERC factsheets (source: 2010-spERCs study

Section	Content in EFCC 8f.1.a.v1	Assessment	Possible improvement
Operational conditions	Phrases: Outdoor use, Professional and Consumer Product leading to embedding substances into a matrix Free text background: Upon curing, substances are included into matrix without intended release to the environment.	The section does not further specify the operational conditions, apart from the information, that substances are embedded in a matrix. Useful information could include whether or not the processes are open or semi-open, which instruments are used (e.g. specification of industrial spraying) etc.	Consider inclusion of bullet-list with relevant OCs that can be translated to use instructions for communication

Table 43: RMM description; EFCC 8f.1a.v1 spERC "Use in professional and DIY construction chemicals"

Section	Emission pathway	Type of RMM	Typical Efficiency	Assessment	Possible improvement
Obligatory on-site RMMs	--	Professional and consumer product use with limited or no technical control of emission	0	It is unclear what the term "limited technical control" of emissions means. As an efficiency of "zero" is provided, is seems sufficient to state that no RMMs are required (and are hence not considered in the release factors).	Delete "limited or".

The information on operational conditions specifies the determinants for environmental release (embedding, no intentional release) but does not concretize the conditions how the construction chemicals are used in a sense that could guide the derivation of use instructions or minimum/maximum conditions of use (e.g. temperature ranges, sunlight, air exchange etc.). The information on RMMs does not lead to mistakes in the use of the spERC but could cause misunderstandings.

7.2.4 Release factors

Criteria 8, 9, 12 and 13: Regarding the release factors, the following criteria are used in the assessment: spERCs exist for water, air, soil and waste, where relevant; factors are differentiated according to substance properties, if relevant (8); assumptions and methods are described and justified; relation of release factors to operational conditions is described (9). Release factors to waste are provided, if relevant (12). All information should be plausible and transparently documented (13).

Table 44: Release factors and justification; EFCC 8f.1a.v1 spERC "Use in professional and DIY construction chemicals"

Release to	Value	ERC default	Justification	Assessment	Possible improvement
Air	0	0.15	OECD Emission Scenario Document, Series No. 22 Coating Industry (Paints, Lacquers and Varnishes), July 2009. Regarding environmental emissions, the wide dispersive use of adhesives and sealants is very similar to the wide dispersive use of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the spERC Factsheet for the wide dispersive use of adhesives and sealants.	Value same as OECD ESD; however, no justification regarding losses of non-volatiles to air (e.g. spray application leads to aerosol formation, where solids are contained which may either remain in the air or (more likely) deposit (e.g. to soil).	
Water	0.01	0.01	OECD Emission Scenario Document, Series No. 22 Coating Industry (Paints, Lacquers and Varnishes), July 2009. Regarding environmental emissions, the wide dispersive use of adhesives and sealants is very similar to the wide dispersive use of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the spERC Factsheet for the wide dispersive use of adhesives and sealants.	OECD ESD; application of paints and coatings specifies losses to waters for consumers as 0.015 and for professional users 0%. No other coating application can be related to constructions chemicals.	Correct RF for water or provide justification for deviation from OECD ESD
Soil	0	0.005	OECD Emission Scenario Document, Series No. 22 Coating Industry (Paints, Lacquers and Varnishes), July 2009. Regarding environmental emissions, the wide dispersive use of adhesives and sealants is very similar to the wide dispersive use of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the spERC Factsheet for the wide dispersive use of adhesives and sealants.	Consistent with OECD ESD; however for wdu including outdoor spraying and use by consumers, justification for lack of soil emissions is regarded necessary.	Include justification of missing RF to soil or specify respective operational conditions for outdoor use.
Waste	0	--	OECD Emission Scenario Document, Series No. 22 Coating Industry (Paints, Lacquers and Varnishes), July 2009. Regarding environmental emissions, the wide dispersive use of adhesives and sealants is very similar to the wide dispersive use of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the spERC Factsheet for the wide dispersive use of adhesives and sealants.	The OECD ESD specifies 25% to waste for consumers and 1-3% for professional users (remnants in cans)	Correct RF to waste or provide justification for derivation from OECD ESD or revise operational conditions respectively.

All release factors of the spERC are lower than those in the ERC. The release factors could not be identified in the OECD ESD in the section "decorative paintings", which is the only paint application mentioned that is close to the mentioned "wide dispersive use of paints, lacquers and varnishes". The release factors in the OECD ESD exceed the release factors in the spERC for water and waste. A justification for the release factor to air, soil and waste of "zero" would be useful, in addition to the reference to the OECD ESD, where for spray applications (e.g. furniture), release factors exceeding "zero" exist, also for the non-volatile fraction of paints.

The use of (decorative) paints and coatings is only one part of the application of construction chemicals. A justification and explanation why the use of the ESD values are appropriate for all other potential uses is not provided, apart from the statement that "the use of adhesives and sealants" (more PCs are covered by the spERC) is very similar to that of paintings. Even if that were sufficient justification, the use of "other mixtures not mentioned before (PC10)" is also covered.

The currently provided values don't seem to be correct and, due to the broad scope, at least the spray application appears to cause higher emissions than provided in the spERC. The justification is not sufficiently detailed to follow how the values are derived.

In the following table, further information contained in the fact sheet is presented and discussed. The criterion 11 "information on optional RMMs is provided" is applied to the last row.

Table 45: Other conditions; EFCC 8f.1a.v1 spERC "Use in professional and DIY construction chemicals"

Section	Content in EFCC 8f.1.a.v1	Assessment	Possible improvement
Substance use rate	Fraction of EU tonnage used in region: to be assessed by registrant Fraction of regional tonnage used locally: 0.002	OK	The default value of the guidance document could be provided also for the regional use amount.
Days emitting	365	It is unlikely for consumers that they use DIY-products every day. However this is the most conservative assumption and therefore correct. It is also not relevant for environmental assessments.	
Optional risk management measures for iteration	Professional and Consumer product use with limited or no technical control of emission	No examples are provided what "limited technical control" could be, e.g. for the professional use of construction chemicals.	Options to minimise environmental exposure could be described, such as covering the ground during use, disposal of cleaning water etc.

The information on substance use rate and days emitting could be improved, however as the information is only indicative this is not a priority.

7.2.5 Overall conclusion on EFCC spERC 8f.1.a.v1

The factsheet for spERC 8f.1.a.v1 covers four different sub-spERCs and has a quite broad scope. Due to the inclusion of many different processes, among other spray applications or dipping of articles the descriptions of the scope and operational conditions is not very specific. That contrasts with the low release factors derived because from "imagining consumer uses" higher emissions to all compartments would be assumed. Furthermore, based on the spERC documentation, the source of the factors cannot be traced back and insufficient justification is provided for using the release factors from the use of decorative paints for several other types of construction chemicals.

The narrative description is not filled as intended and hence does not facilitate the understanding of the spERC's coverage.

The spERC does not include any information on RMMs, which is due to the types of users; however, general advice on emission minimisation would be useful, in particular for professional users.

Table 46 summarizes the assessment results. As criterion 13 applies to several aspects of the fact sheet it is not included separately but is integrated in the other criteria.

Table 46: Assessment overview – spERC EFCC 8f.1.a.v1

#	Criterion	Assessment
1	CEFIC factsheet format	Yes
2	Unique code	Yes
3	Old and new version on the web	n.a.
4	spERC is consistent; no unnecessary doublings	Partly
5	Coverage is clear and unambiguous; inclusion of auxiliary/cleaning processes clear; potential exclusion of processes	Partly
6	Information on coverage clearly separated from background data	Yes
7	Undefined terms not used	Few
8	Release factors to water, air and soil exist	Yes
9	Assumptions and methods for deriving release factors are sufficiently documented	No
9.1	Relation between RF and OC is clear	Partly
9.2	Information sources are provided or referenced and related to spERC conditions	Partly
9.3	Differentiation according to substance properties	Yes
10	RF and RMM efficiency are described separately; clear which RMMs are obligatory	Yes
11	Efficiencies of optional RMMs are provided	No
12	RF to waste is provided	Yes

7.3 Assessment of the spERC FEICA 5.1.a.v2 – Industrial Use of Substances other than Solvents in Paper, Board and related Products / Woodworking and joinery / Footwear and Leather, Textile, Others

Criterion 1: Accordance with the factsheet format

The factsheet is structured according to the CEFIC format.

Criterion 3: Provision of old and new spERC versions on the website

Only the most recent version 2 of FEICA's factsheets is available on the internet.

7.3.1 Information to identify the (relevance of the) spERC

Criterion 2: the spERC has a unique code.

Table 47: Title section; FEICA 5.1a.v2 spERC "Industrial use of non-solvents in various sectors"

Section	Content in FEICA 5.1.a.v2	Assessment
Title of spERC	Industrial Use of Substances in Adhesives	The title gives a first impression on the spERC's scope
SpERC code	FEICA spERC 5.1a.v2 - Industrial Use of Substances other than Solvents in Paper, Board and related Products / Woodworking and joinery / Footwear and Leather, Textile, Others Adhesives	The wording of the spERC code is confusing; due to the information in other sections and the title, it is assumed that only uses in adhesives are covered. The following wording would be clearer: "Industrial use of substances in adhesives (excluding solvents) in various applications". Further specification of the sectors could be achieved via the use descriptors and the scope description.

The title is sufficiently clear to identify if the spERC could be relevant and to get a first understanding of its coverage.

A unique, systematic code exists. However, the wording of the spERC code is confusing and does not highlight the use in adhesives. It is comparatively long.

7.3.2 Information describing the spERC's scope

Criterion 5: the spERC's coverage is unambiguous and understandable to all relevant actors; main and auxiliary processes are identified, not covered processes are explicitly excluded.

Criterion 6: Information describing the spERCs coverage is clearly separated from justifications and background data.

Table 48: Descriptive sections; FEICA 5.1a.v2 spERC "Industrial use of non-solvents in various sectors"

Section	Content in FEICA 5.1.a.v2	Assessment	Possible improvement
Scope	Covers the application of adhesives for a wide range of purposes by industrial uses. Covers different adhesives application techniques for indoor use. Substance Domain: FEICA spERC 5.1a.v2, FEICA spERC 5.1b.v2, FEICA spERC 5.1c.v2 All substances which do not evaporate to a significant extent upon curing of the adhesives.	The scope description is very broad because several sub-spERCs (relating to many different sectors) are covered. The section specifies that only indoor uses are covered by the spERC. This is inconsistent to the spERC determinants, where also outdoor uses are mentioned as covered. Information on whether or not cleaning and maintenance processes are covered is missing. The substance domain for the sub-spERC assessed here contains the undefined expression "evaporation to a significant extent upon curing".	Consider separating factsheet for ERC 4 and ERC 5 or according to main use sectors to better clarify the scope. Clarify if cleaning and maintenance is covered. Clarify if outdoor uses are covered (either inclusion here or deletion in determinants). Define "evaporation to a significant extent", explain what stages of the adhesive use form the "curing phase" and if substances which significantly evaporate before curing (e.g. during spray applications) are covered or not.
User Group	Main User Group: SU 3	OK	
Sector of use	Sector of Use: SU 19	The sector of use "building and construction" is not consistent with the scope description of most of the spERCs	List SUs for all sectors mentioned in the scope of all sub-spERCs
Environmental Release Category	Environmental Release Class: ERC 4, ERC 5	OK	
Process Category	Process Categories: PROC 2, PROC 3, PROC 4, PROC 5, PROC 7, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 11, PROC 12, PROC 13, PROC 14	The PROCs 2-5 are inconsistent with the scope (manufacture and formulation). PROC 11 (non-industrial spraying) indicates a professional (or consumer) use of adhesives, which is not consistent with the scope description. PROC 12 (use of blowing agents) is not a use of an adhesives and hence inconsistent.	Delete PROCs 2, 3, 4, 5, 11, 12
Product category	Product categories: PC 1, PC 9a, PC 9b, PC10	PC 9a and 9b are not consistent with the spERC title and scope descriptions, which limit the substance use to adhesives PC 10 is not part of the current use descriptor guidance, considering the title and scope, the use in adhesives (PC1) should be sufficient (no "other") needed.	Delete all PCs except PC1
Narrative description	Three times: "Industrial applications of Paper, Board and related Products / Woodworking and joinery / Footwear and Leather, Textile and	The narrative description consists of 3 repetitions of the same text block (slightly different in the last paragraph). It is unclear why the text blocks are repeated, in particular as there are 5 sub-spERCs but	Revise the narrative description in order to provide the spERC users of an easily understandable general process description.

Section	Content in FEICA 5.1.a.v2	Assessment	Possible improvement
	others adhesives Adhesives used in the above mentioned products; others include products like electricity, electronics, optics, hygienics, food, toys medical technics, sportswear etc. are normally rolled, sprayed or directly used from the cartridge due to the application purposes." One time: Industrial applications of Transportation (Automotive/aircraft/rail vehicles) / industrial Building Construction/Adhesives Adhesives used in the above mentioned products; are normally brushed, rolled, sprayed or directly used from the cartridge due to the application purposes.	only 3 repetitions and one slightly changed text. The content of the text block explains the term "other" in the list of applications but is not comprehensive, hence no narrowing of scope occurs. It also gives examples of application techniques, which repeat parts of the listed PROCs. The original intention of the narrative description to provide a short flow text to facilitate the understanding of which processes are covered by the spERC is not fulfilled. No details are given on the processing techniques, relevant exposure determinants or waste management.	For reasons of conciseness and clarity, it may be considered to separate the factsheet either according to ERCs or to sectors of use (c.f. above).
Scaling	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.	The scaling refers to operational conditions; however the respective descriptions (c.f. below) don't allow comparison of the conditions and deciding on whether or not they apply to "all sites". It is not specified which parameters could be scaled under which condition and whether or not the standard equation is applicable.	Revise the scaling section in relation to the description of the operational conditions. Either provide more specific information on scalable parameters and scaling equations or include only general reference to CEFIC guidance.
Appendix	Specified determinants: Type of Process: Dry process (no water used in process) Indoor/outdoor use: Covers Indoor and Outdoor Use Equipment cleaning: Equipment cleaned with organic solvent, washings are collected and disposed of as solvent waste. Process efficiency: Process with efficient use of raw materials.	The appendix contains information which is not included in the factsheet but important for the scope description and the operational conditions such as dry process, indoor and outdoor[45] use, inclusion of equipment cleaning with organic solvents and waste disposal information as well as process efficiency; however the later contains the undefined term "efficient use of raw materials"	Include information from determinants in factsheet. Define "efficient use". Clarify whether or not outdoor used is covered (either deletion here or inclusion in scope).

The description of the spERC's coverage is not consistent. Some use descriptors apply to PROCs which don't occur in other sections (synthesis and formulation, professional spraying). The enumeration of sectors and examples of processes in the spERC code and the scope description don't

[45] In the section „scope", only indoor uses are mentioned

improve the understanding of the coverage. The narrative is repetitive without providing a picture of how the processes are carried out and what is relevant regarding environmental emissions. More clarity could be achieved by separating the factsheet either according to spERCs specifying ERC 4 and ERC 5 or according to the use sectors (this would also lead to a reduction of the number of possible application techniques per spERC).

In the "dummy CSR" developed and provided by ECHA (c.f. Section 0), it is specified in the section on technical and organisational measures that typical measures to reduce water emissions may include closed batch processing. This is confusing as many of the processes and uses specified in the scope cannot be conducted in this manner. It also slightly contradicts the specification that the process is dry (no waste water expected at all).

7.3.3 Operational conditions and risk management measures determining release

Criteria 4, 6, 7 and 13: The following table includes information on the operational conditions (OC) and risk management measures (RMMs) in the AISE spERC. The assessment criteria (c.f. Section 5.4) related to this information in the fact sheet are: consistency (criterion 4), separation of information on the OCs and RMMs from background information justifying release factor (criterion 6), no use of undefined terms (criterion 7). All information should be plausible and transparently documented (13).

Table 49: OC descriptions; FEICA 5.1a.v2 spERC "Industrial use of non-solvents in various sectors"

Section	Content in FEICA 5.1.a.v2	Assessment	Possible improvement
Operational conditions	Indoor use, product applied to a substrate to form a solid matrix Negligible wastewater emissions as process operates without water contact Upon curing, substances are included into matrix without intended release to the environment.	The operational conditions are not consistent with the CHESAR determinants (outdoor use; c.f. above). The term "negligible wastewater emissions" is not defined. The lack of water contact is mentioned for the first time; however it is unclear if this actually covers all processes in all sectors (e.g. textile, paper).	Clarify if outdoor uses are covered (consistency with CHESAR determinants). Define "negligible wastewater emissions. Make lack of water contact a precondition for applicability of the spERC.

In the "dummy CSR" the information that the use involves the inclusion of the substance into a matrix is not explicitly mentioned in the CSR whereas this is implied by the wording of the operational conditions.

Table 50: RMM descriptions; FEICA 5.1a.v2 spERC "Industrial use of non-solvents in various sectors"

Section	Emission pathway	Type of RMM	Typical Efficiency	Assessment	Possible improvement
Obligatory on-site RMMs	Air	No on-site RMM considered as there is a very small release to air	0	As spray applications are covered, where aerosol formation occurs it is questionable if no RMMs are necessary for air and water (e.g. wet scrubber) emissions. The OCED ESD, which is used to justify release factors to air includes information on RMMs applied in the processes. Hence, air emissions are not believed to be small.	Evaluate if also for spray applications RMMs are not relevant / considered.
Obligatory on-site RMMs	Water	No on-site RMM considered as there is no wastewater production during the processes	0	The information on water RMMs is consistent with the information in the CHESAR determinants and the operational conditions. The OCED ESD, which is used to justify release factors to water includes information on RMMs applied in the processes (wet spray booths).	Clarify that "dry processes" includes the type of RMMs applied / exclude wet scrubbers and similar RMMs using water for emission collection.

The information provided as operational conditions and RMMs is clear and enables spERC users to check, which conditions are covered. If it was stated more clearly that the only dry processes are covered, the undefined term "negligible wastewater emission" could be avoided. The process spraying puts into question if actually no RMMs are necessary for the air and water pathway (e.g. use of wet scrubbers).

7.3.4 Release factors

Criteria 8, 9, 12 and 13: Regarding the release factors, the following criteria are used in the assessment: spERCs exist for water, air, soil and waste, where relevant; factors are differentiated according to substance properties, if relevant (8); assumptions and methods are described and justified; relation of release factors to operational conditions is described (9). Release factors to waste are provided, if relevant (12). All information should be plausible and transparently documented (13).

Table 51: Release factors and justification; FEICA 5.1a.v2 spERC "Industrial use of non-solvents in various sectors"

Release to	Value	ERC default	Justification	Assessment	Possible improvement
Air	0.017	0.5	Regarding environmental emissions, the industrial use of adhesives and sealants is very similar to related industrial uses of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the spERC Factsheet for the industrial uses of adhesives and sealants. This holds true for FEICA 4.2a.v2, FEICA 4.2b.v2, FEICA 5.1a.v2, FEICA 5.1b.v2.	The release factor of 0.01 cannot be found in the OECD ESD; it is lower than any of the factors specified for the use of coatings in industrial uses not concerning the manufacture and repair of vehicles.	Include information how the factor was actually derived with clear and unambiguous reference to the OECD ESD.
Water	0	0.5	Regarding environmental emissions, the industrial use of adhesives and sealants is very similar to related industrial uses of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the spERC Factsheet for the industrial uses of adhesives and sealants. This holds true for FEICA 4.2a.v2, FEICA 4.2b.v2, FEICA 5.1a.v2, FEICA 5.1b.v2.	The OECD ESD specifies that no water emissions occur for the listed processes. The ESD however specifies that cleaning takes place with solvents, which are then disposed of as waste. For the use of spray booths with wet backing, a release factor of 7.2% is specified for water.	Include statement on cleaning to align justification with OECD ESD; check relevance of water emissions for wet spray booths.
Soil	0	0.01	Regarding environmental emissions, the industrial use of adhesives and sealants is very similar to related industrial uses of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the spERC Factsheet for the industrial uses of adhesives and sealants. This holds true for FEICA 4.2a.v2, FEICA 4.2b.v2, FEICA 5.1a.v2, FEICA 5.1b.v2.		If outdoor uses are covered as indicated by the CHESAR determinants, a justification regarding direct releases to soil should be included.
Waste	0	--	Regarding environmental emissions, the industrial use of adhesives and sealants is very similar to related industrial uses of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the spERC Factsheet for the industrial uses of adhesives and sealants. This holds true for FEICA 4.2a.v2, FEICA 4.2b.v2, FEICA 5.1a.v2, FEICA 5.1b.v2.	The release factors to waste for the relevant processes range from 1.5 to 51.8. Hence, the factor of "zero" specified by FEICA cannot be followed.	Include justification for factor "zero" and/or align with information in OECD ESD.

The release factors have been significantly lowered compared to those proposed in the ERCs. The factors are derived from the OECD ESD on paints but cannot be traced to the original source (different worst case factors in the spERC than in the ESD). Furthermore, the ESD release factor to water applies under the assumption that cleaning is conducted with solvents which are disposed of as waste and that water from RMMs in wet spray booths are not discharged. This is not clearly described in the spERC. Finally, no justification or explanation is provided why it is regarded as appropriate to extrapolate the release factors (of the few covered processes of paint application) to those listed in the spERCs scope,

which concern partly different industrial sectors. No relation between the operational conditions and RMMs assumed in the ESD is made to the conditions of use in the spERC, either.

It is not discussed, how the release factor to waste is understood and the "zero emission" cannot be justified with view to the factors provided in the OECD ESD.

Consequently, the derived release factors are either not well documented or not credible.

In the following table, further information contained in the fact sheet is presented and discussed. The criterion 11 "information on optional RMMs is provided" is applied to the last row.

Table 52: Other information; FEICA 5.1a.v2 spERC "Industrial use of non-solvents in various sectors"

Section	Content in FEICA 5.1.a.v2	Assessment	Possible improvement
Substance use rate	100	Justification is missing.	Add information source
Days emitting	220	Justification is missing	Add information source
Optional risk management measures for iteration	Air emissions are not applicable as there is a very small release to air.	Justification is missing; due to coverage of spray coating and the mentioning of RMMs in the OECD ESD, air emissions are not believed to be small. RMMs to water are quoted in the OECD ESD (wet spray booths).	Optional measures could be listed.

The information on substance use rate and days emitting could be improved, however as the information is only indicative this is not a priority.

7.3.5 Overall conclusion on FEICA spERC 5.1.a.v2

The FEICA spERC is inconsistent in its description of the scope and coverage and its code is difficult to understand. The release factors are derived from an OECD ESD of another sector and applicable to other product categories than those covered by the spERC, without providing justification why this is appropriate and without relating the operational conditions and RMMs described in the OECD ESD to the spERC.

The spERC covers a wide range of processes and sectors. This variety makes it difficult to follow whether or not the (rather low) release factors are applicable to all possible uses. Doubts on the validity of the factors are further increased by the fact that the reference to the OECD ESD cannot be followed; the values neither reflect the worst case of all mentioned processes nor the average of all cases, except for the factor to soil, which is always specified as “zero”.

No guidance is provided to the spERC users on which risk management measures could be assumed for iteration purposes and with which efficiency.

Table 53 summarizes the assessment results. As criterion 13 applies to several aspects of the fact sheet it is not included separately but is integrated in the other criteria.

Table 53: Assessment overview – spERC FEICA 5.1.a.v2

#	Criterion	Assessment
1	CEFIC factsheet format	Yes
2	Unique code	Partly
3	Old and new version on the web	No
4	spERC is consistent; no unnecessary doublings	No
5	Coverage is clear and unambiguous; inclusion of auxiliary/cleaning processes clear; potential exclusion of processes	No
6	Information on coverage clearly separated from background data	Yes
7	Undefined terms not used	Few
8	Release factors to water, air and soil exist	Yes
9	Assumptions and methods for deriving release factors are sufficiently documented	No
9.1	Relation between RF and OC is clear	No
9.2	Information sources are provided or referenced and related to spERC conditions	Partly
9.3	Differentiation according to substance properties	No
10	RF and RMM efficiency are described separately; clear which RMMs are obligatory	Yes
11	Efficiencies of optional RMMs are provided	n.a.
12	RF to waste is provided	Yes

8 RELATION BETWEEN SPERC FACTSHEETS AND CHESAR FILES

The content of the CSRs generated using a spERC (without iteration) was assessed based on a "dummy CSR" which was kindly provided to the project team by ECHA[46].

In this CSR ECHA used the three spERCs analysed in detail in the current project and for which CHESAR files are available[47]. Three respective exposure scenarios have been created to exemplify what would be automatically reported in the different sections of the CSR for each of these spERCs using CHESAR. The parts of the CSR relevant to the environment were provided to the project team.

From the comparison of the fact sheets and the "dummy CSR" it can be concluded that:

- The information from the narrative description in the factsheet is used to describe the "technical process covered by the spERC" in the CSR,
- The title of the spERC as included in the factsheet does not normally appear in the CSR other than as reference to the "release factor estimation method" in the table listing release factors and their justification (CSR section "releases)
- The description of the operational conditions in the CSR is equal to that provided in the appendices of the spERC factsheets. This information is not always identical as in the respective factsheet section. Differences may regard information that is missing, additional or inconsistent / different to that in the fact sheet (c.f. also the detailed analyses of the respective factsheets, sections on the scope of spERCs).
- The information on release factors and their justification is included 1:1 from the factsheet into the spERC files, as well as substance use rates and emission days.
- If no obligatory RMMs are defined, no respective information (no RMM considered / necessary) is contained in the CSR

As all assessed spERCs for which CHESAR files are available do not include obligatory RMMs, it is not clear in which way these would be presented in the CSR.

In conclusion, the quality of CSRs is neither better nor worse than the quality of the spERC and its fact sheet. However, as the factsheets include information on operational conditions in the appendix (CHESAR determinants) and in the respective fact sheet section, inconsistencies in content, which could lead to a wrong use of a spERC may not become evident by assessing a CSR alone. A further checking regarding the inclusion of RMM information into the CSR from spERCs which define some as obligatory / included in the release factor is necessary to evaluate this aspect.

[46] The results from the assessment are included in the detailed assessment of spERCs in Chapter 6.1, 7.2 and 7.3

[47] FEICA 5.1a.v2: Industrial Use of Substances other than Solvents in Paper, Board and related Products / Woodworking and joinery / Footwear and Leather, Textile, Others Adhesives; EFCC 8f.1a.v1: Wide dispersive use of non-volatile substances in construction chemicals, outdoor; AISE 4.1.v2: Industrial use of Water Borne processing Aids

9 SUMMARY OF THE ANALYSIS AND CONCLUSIONS

9.1 Summary of findings according to the quality criteria

9.1.1 Criterion 1: factsheet structure

All assessed factsheets are aligned with the format proposed in the CEFIC guidance, except those published by ESIG.

However, the understanding of how the sections of the factsheet should be filled differs from the CEFIC guidance; in particular the "Narrative description" does not always contain a flow text facilitating the understanding of the covered processes. Instead, other information is included, such as the wording of PROCs (doubling the section use descriptors), information on the background data of the spERC (should be part of the justification) or general sector information, which are not useful to improve the understanding of the spERC.

As all factsheets developed by one sector association look alike (this has been roughly assessed in the overall screening documented in Section 5.2), it can be assumed that not only the assessed but also the other (revised or new) factsheets are in conformity with the CEFIC structure.

9.1.2 Criterion 2: unique spERC code

All assessed spERCs[48] have a unique code which is structured according to the CEFIC recommendation. Only in one case the version number of the spERC was not changed after the revision.

9.1.3 Criterion 3: availability of all spERC versions on the web

In order for the authorities and downstream users to follow the assessments of earlier registrations, where earlier versions of the spERCs were used, it is important that also the older versions are still made available.

Most sector associations which have revised their factsheets and spERCs only publish the newest version on the web. The older versions are not available, except by Eurometaux.

9.1.4 Criterion 4: Overall consistency and doublings

The overall consistency of spERC factsheets has much improved in all assessed factsheets due to the implementation of the recommendations of the CEFIC guidance. The information is more clearly separated and doubling of information is reduced. The description of the same aspect with different wording does occur only in few cases.

A certain degree of doubling information is useful, if it facilitates the identification of processes from different perspectives (e.g. use descriptor codes and explanation of processes in the narrative description).

[48] It can be assumed that also those spERCs which were not assessed have a unique code.

Some fact sheets cover two ERCs (ERC 4 and ERC 5; e.g. ACEA and EFCC). This leads to unclear statements on conditions of use and risk management measures and it may be considered to cover only one ERC with a spERC.

9.1.5 Criterion 5: Understandability of coverage

In the evaluation of the factsheet it was assumed that the title section should give a first impression of the relevance of the spERC, whereas the section specifying the use description (use descriptors, narrative description) should be clear enough to allow:

- registrants to select the spERC for their assessment,
- downstream users to decide whether or not they are in principle covered by the spERC and
- authorities to get a picture of which processes are covered.

For many of the spERCs this is implemented with only minor aspects that should be clarified. However, in most factsheets no clarification is provided on the coverage of cleaning and maintenance processes in the spERC.

The option to specify a substance domain (relevant for registrants) is chosen by some associations, such as ACEA (water solubility) or Eurometaux / ECMA (list of metals and metal compounds).

9.1.6 Criterion 6: Separation of spERC information and justification / background data

Three types of information can be distinguished in the factsheets:

- spERC data (default values, descriptions of operational conditions and risk management measures),
- justifications (information sources where values are taken from, argumentation based on physical-chemical properties) and
- background data (information basis for deriving default values, e.g. surveys in the sectors)

Justifications are mostly provided separately but directly next to spERC information, e.g. via differentiation of columns or rows in tables (visual differentiation) or different headings.

Background information, if provided (not relevant for some spERCs), is usually integrated into other information and can be found mostly in the sections “scope” and “narrative description”. Although it is not likely that spERC users are confused by this, for reasons of clarity at least all background information should be compiled in one place, preferably an Annex (c.f. Section 9.1.9). ACEA is the only associations providing a separate excel-file with information on the derivation of release factors (however, with insufficient background information on the source of data).

9.1.7 Criterion 7: Use of undefined terms

There are some undefined terms used, which either refer to substance properties (e.g. “volatile substances”) or originate from the use of the standard phrase catalogue (e.g. “process with efficient use of raw materials”). These terms are partly extracted from the European Phrase

Catalogue. These terms need to be explained / clarified in the spERCs to provide a clear understanding of its coverage.

9.1.8 Criterion 8: Existence of release factors

All spERC factsheets contain release factors to air and water. For the soil compartment many factsheets do not specify a release factor; Eurometaux even specifies that it is not applicable. This is true for local assessments but spERCs are used for both local and regional assessments[49].

9.1.9 Criterion 9: Description and justification of assumptions and methods

In the assessed spERC factsheets three methods of deriving and justifying default values for release factors are used:

- extraction of release factors from literature, mainly the OECD ESDs;
- qualitative argumentation based on process conditions and/or physico-chemical properties (release factor = “zero”);
- derivation of release factor from data collected in the sector on substance use and emissions.

In general, assumptions are usually made regarding the possibility to transfer release factors from one sector, process or mixture to another. Furthermore, assumptions are made, when qualitative argumentations are provided for release factors. These assumptions are partly explicit, sometimes they are factual statements. The basis that justifies these types of assumptions is usually not given.

Reasons for assumptions (sector knowledge) are provided mostly for values such as M_{spERC} or the number of emission days.

As stated in Section 9.1.6, justifications are usually provided directly next to the spERC values they should explain. A separate document or annex to the spERC containing detailed background information or further explanation of the justification is normally not provided.

9.1.10 Extraction of release factors from literature

As in the first study, the information in literature provided with the release factors are not discussed in relation to the operational conditions and implemented risk management measures described in the spERC. It is not clear if the spERC developers (e.g. ESIG) have assessed if the conditions are comparable and hence, no justification is provided on WHY the release factors in literature can be used for the spERC.

In addition, some associations used ESDs from other sectors (e.g. FEICA, EFCC). In this case a thorough comparison and discussion of the conditions of use, including RMMs, in the ESD and the spERC is even more important to justify the applicability of the release factors. However, apart from general statements such as “the conditions of use are similar”, no respective discussion is contained in the factsheets.

[49] C.f. ECHA guidance on information requirements and exposure assessment, part R16.

Finally, the values quoted in the spERCs could not be identified in all cases in the original sources. In all cases, only the literature reference is provided but not the exact section or table in these documents. Therefore, the entire information sources were screened but it remained unclear which value was chosen and why.

The extraction of release factors to waste was not always implemented, even when factor derivation to water, air and soil was performed.

In conclusion the use of literature to derive default values of spERCs still lacks a sound justification which includes a discussion of corresponding operational conditions and risk management measures. Providing more specific references (page numbers) to the original documents would facilitate the verification of values.

9.1.10.1 Qualitative argumentation based on process conditions and/or physical-chemical properties (release factor = "zero")

In particular the release factors to soil, but also those to air, water and waste are frequently assigned the value of zero (e.g. AISE). This is frequently justified by qualitative arguments, which sometimes include undefined terms (e.g. negligible volatilization). Usually it is not possible to relate the argumentation to the operational conditions, as these are frequently not specific enough and/or do not refer to those conditions, which would determine the respective release factors (e.g. specifying "closed process" as operational condition could be (part of) a justification of "zero" release to soil). Other examples of insufficient justification are:

- the evaporation of substances is stated to be negligible, but no vapour pressure limits are mentioned in the scope and no maximum operating temperatures are provided;
- substances are stated to be non-volatile if dissolved in water without further specification;
- evaporation is stated to be negligible although spraying (aerosol formation) is explicitly covered in the scope;
- water emissions are stated to be zero without any justification.

In conclusion the use of qualitative argumentation to justify release factors is frequently logical at first sight but lacks in-depth background information to verify if emissions can actually be excluded. This finding was already made in the 2010-spERCs study.

9.1.10.2 Derivation of release factor from data collected in the sector on substance use and emissions

Some associations derive release factors from information collected in the sector; normally the use amounts are compared with the average emitted amount and a release factors is derived. Whereas ACEA provides an excel-file with details on the calculation and used input values, Eurometaux / ECMA does not explain how the actual calculation method works.

The associations fail to provide basic background information on how the data was collected, such as

- how many and which types of companies provided data (only ACEA);
- if and if yes, which method was prescribed to the companies to compile information (e.g. integration of stored amounts, consideration of the same substance in different mixtures used, measured data, averaging periods etc.);
- size of companies reporting information etc.

The ACEA factsheet lacks justification why data from the vehicle manufacturing process (spraying) can be transferred to the many other sectors applying the process which are stated as covered.

In conclusion the last step of the derivation of the release factors is well documented, when a database from surveys in the sector is used. The description of how the data was collected and how it was processed to become input values to the equation to derive release factors does not exist[50]. Also a justification why a transfer of values to other sectors is possible (if relevant) is not available.

9.1.11 Criterion 10: Separate description of release factors and efficiency of RMMs

The obligatory risk management measures are described separately from the operational conditions in all cases due to the new structure of the fact sheet. Some spERCs do not contain RMMs (e.g. for wide dispersive uses). An efficiency of the RMMs is provided in some, but not all cases. No differentiation is made in the efficiency values regarding different types of substances or their properties.

Although a clear separation is now implemented, it is still not fully clear in some of the spERCs (e.g. ESIG, ACEA), whether the release factors provided in the factsheet integrate the efficiency of RMMs (overall release factor – $F_{Overall}$) or if the release factor only relates to the operational conditions and hence applies prior to the risk management measures ($F_{Release}$). There are some factsheets where this is explicitly mentioned (e.g. Eurometaux, where it is stated several times that the release factors integrated the efficiency of RMMs or AISE, where it is explained in brackets that the values apply prior to RMMs). The unclear situation regarding the release factors, although having improved compared to the 2010-spERC study is therefore still not satisfactorily. This may, among other, be due to the respective unclear wording in the CEFIC guidance (c.f. Section 4.4).

9.1.12 Criterion 11: Provision of RMMs as iteration option

The section on optional RMMs is filled in various ways by the sector associations. As this information is not essential for the spERC but just additional help to the spERC users, it is not relevant for the verification of the spERC, except efficiency values are provided which are obviously wrong. This could not be observed in the assessed factsheets.

9.1.13 Criterion 12: Existence of release factors to waste

The understanding of the release factor to waste seems to be different in the sectors.

The original proposal in the 2010-spERC study aimed to facilitate the assessment of a substances waste stage in the CSR through the use of spERCs: if a release factor is provided the

[50] The background information for the development of spERCs by ETRMA, which were not assessed in this study because no revision was performed between 2010 and 2013, is documented in a separate report, which includes the mentioned aspects. (The ETRMA justification of spERCs is published: http://www.etrma.org/uploads/Modules/Documentsmanager/chemrisk_10_08_04_sperc_factsheetversion-1.pdf).

total amount of waste from the different lifecycle stages can be more easily derived by the registrant. This is in line with the ECHA guidance on exposure assessment for the waste stage[51].

Some sector associations seem to have understood the value in this way, whereas others only accounted the waste from risk management measures here or stated that no waste occurs at all.

9.1.14 Criterion 13: Plausibility of spERC can be checked

Checking the plausibility of the spERC requires the comparison of the specified operation conditions of use and the obligatory risk management measures with the derived release factors. To understand how this information is interlinked, a clear description of how the exposure determinants (OCs and RMMs as well as substance properties) influence the emitted amount of the substance.

Ideally, the information provided in the spERCs factsheet and the background data and justification are linked in a respective way in the factsheets. This link is in most cases not sufficiently described by making references to information sources, stating arguments or presenting equations which are consistent in itself; in addition at least a detailed explanation of used assumptions and collected data, a discussion of similarity of processes and implemented conditions between information sources and spERC values is necessary.

Considering the need for transparent documentation on how the information on operational conditions and risk management measures related to the release factors it can be concluded that none of the assessed old or new factsheets allow a thorough plausibility check by the authorities. For those spERCs which are very conservative (release factor close to 1), this may be less important than for those, where release factors are significantly lower than the defaults in the ERCs.

9.2 Additional observations

In none of the assessed spERCs, a process is explicitly excluded.

The finding of the 2010-spERCs study that operational conditions are not provided with sufficient detail to identify, whether or not a process is actually covered or not can be repeated after review of the spERCs factsheets in 2013. In most cases information detailed at the level of ERCs (e.g. open/closed process or wet/dry process) and it is hence frequently not possible to establish if and why the release factors have been decreased in relation to these operational conditions. Consequently, the level of detail provided for operational conditions still needs refinement.

The relationship between the CHESAR determinants and the information provided in the appendix of the factsheets is not fully clear and could be confusing to the spERC users: only information on the operational conditions is listed. However, the information in the CHESAR determinants partly differs from the information in the factsheet. A comparison of the

[51] ECHA: Guidance on information requirements and chemical safety assessment - Chapter R.18: Exposure scenario building and environmental release estimation for the waste life stage; Version 2.1, October 2012

determinants in the appendices of the factsheets with the CHESAR output for the respective spERCs showed that much more of the factsheet information is imported into CHESAR.

The scaling advice is aligned in most factsheets to the CEFIC recommendations; hence the scalable parameters are listed and explained and scaling equations are provided. In one case, the possibility to scale the release factors is offered, which is regarded as possible in principle but would signify that the spERC cannot be used anymore because no mathematic relationships between the determinants influencing the exposure level and the release fractions is provided.

Table 54 provides an overview of the assessment results regarding the fulfilment of the quality criteria.

Table 54: Overview of how factsheets of a selected set of spERCs fulfil the quality criteria (July 2013)

#	Criterion	AISE (spERC 4.1.v1 use of water-	ESIG (spERC 4.6a.v2 industrial	Eurometaux (spERC 5.1.v2 metals in	ECMA (spERC 1.1a.v2	ACEA (spERC 4.1.c.v4	EFCC (spERC 8.d.1a.v2 outdoor	FEICA (spERC 5.1.a.v2 use of
1	CEFIC factsheet format	Yes	No	Yes	Yes	Yes	Yes	Yes
2	Unique code	Yes	No	Yes	Yes	Yes	Yes	Partly
3	Old and new version on the web	No	No	Yes	n.a.	n.a.	n.a.	No
4	spERC is consistent; no unnecessary doublings	Yes	No	Yes	Yes	No	Partly	No
5	Clear coverage	Yes	Partly	Yes	Yes	Yes	Partly	No
6	Data on coverage clearly separated from background	Yes	Yes	No	No	Not fully	Yes	Yes
7	No undefined terms used	No	Few	Few	Few	Few	Few	Few
8	Release factors to water, air and soil exist	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	Release factors justified and transparently documented	No	No	No	No	No	No	No
9.1	Relation between RF and OC is clear	Partly	No	No	No	Yes	Partly	No
9.2	Sources provided and related to spERC conditions	Yes	No	No	No	No	Partly	Partly

SpERCs assessment 2013

#	Criterion	AISE (spERC 4.1.v1 use of water-	ESIG (spERC 4.6a.v2 industrial	Eurometaux (spERC 5.1.v2 metals in	ECMA (spERC 1.1a.v2	ACEA (spERC 4.1.c.v4	EFCC (spERC 8.d.1a.v2 outdoor	FEICA (spERC 5.1.a.v2 use of
9.3	Differentiation according to substance properties	No	Yes	No	No	Yes	Yes	No
10	RF and RMM efficiency described separately	Yes	No	Yes	Yes	Partly	Yes	Yes
11	Efficiencies of optional RMMs are provided	Not applicable	Yes	Indirectly	n.a.	Yes	No	n.a.
12	RF to waste is provided	No	No	Yes	Yes	Yes	Yes	Yes

9.3 Conclusions

Although the revision of the spERCs and the CEFIC guidance led to much more clarity in the factsheet structure and the presentation of information, some crucial aspects have not yet been improved to a sufficient extent. This regards in particular the derivation and justification of release factors in relation to the operational conditions and obligatory risk management measures.

Where literature sources are quoted (mostly ESDs) a comparison and explanation of OCs and RMMs underlying the factors in the ESD with the conditions described in the spERC are missing. This is particularly relevant in cases, where ESDs of other sectors were used (EFCC, FEICA).

Where release factors are derived from statistical information obtained from sector surveys or literature, the documentation of data collection and calculation methods is not presented in detail and as separate document or appendix. This makes plausibility checking cumbersome (information is scattered in the spERC) or impossible (information is insufficient).

Where release factors are derived based on qualitative argumentations, assumptions are not sufficiently justified, underpinned by physical-chemical data and/or related to the operational conditions of use (which are too general to allow the respective conclusions).

Consequently, the analysed spERCs cannot be regarded as sufficiently documented to allow plausibility checking. Whether or not the release factors are still conservative or not cannot be judged, either.

In addition, the understandability and clarity of spERC factsheets could be improved with regard to the coverage; there are still some uncertainties and the general logics of the fact sheet[52]. A clarification of the role of the CHESAR determinants in the Appendix of the factsheets and an alignment of their content with the overall factsheet is also necessary.

10 RECOMMENDATIONS

A detailed analysis of the CEFIC guidance for spERCs development and use, an overview of the available spERCs (July 2013) and their structure as well as a detailed analysis of selected spERCs was conducted.

One of the study's work packages comprises a discussion of whether the use of (certain) spERCs could indicate that the emission estimation and exposure assessment performed by a registrant

[52] With each consequent section in the early factsheet sections, the coverage is further specified. The narrative description should summarise this (encoded) description of the spERC's coverage in easy words.

in a CSR may not be in conformity[53] with the REACH-requirements and should therefore be an indication that the CSR should be prioritised for compliance checking.

Section 10.1 contains overall recommendations.

Section 10.2 contains conclusions on how ECHA could target its dossier compliance checks with view to the use of spERCs in the environmental safety assessment.
After summarizing quality criteria for chemical safety assessment and reports in Section 10.2.1 in the Section 10.2.2 possible reasons of potential non-conformity of the environmental safety assessment due to the use of spERCs are described. The cases are derived from the spERC analysis performed during the project.
Shortcomings which could lead to CSRs not in conformity with REACH are discussed in Section 10.2.3.
In Section 10.2.4 the consequences of the shortcomings are briefly outlined with regard to non-conformity and supply chain communication
In Section 10.2.5 the spERCs at sector level (not individual spERCs / factsheets) are assigned to groups regarding common shortcomings.

It should be noted that this grouping is based on the screening assessment of all spERCs available in July 2013 and the detailed assessment of 6 exemplary spERCs as well as 1 spERC assessment dating back to the 2010-study[54]. As not all spERCs could be analysed in detail, it is possible that individual spERCs differ from the majority of spERCs within a sector and that they hence do not fit into the pattern of possible non-conformity derived in this study and the respective grouping of spERCs at sector level to the priorities for assessment.

Section 10.3 contains recommendations to UBA regarding further activities on spERCs.

Recommendations to CEFIC, the industry associations as well as registrants and downstream users are compiled in Section 10.4.

10.1 Overall recommendation

The targeted evaluation of the available spERCs and their quality for environmental safety assessment carried out in this project did not involve any consultation with the industry associations that developed the spERCs. Hence, the associations and the experts who developed the spERCs did not yet get an opportunity to comment or react to the results of the analysis, yet (September 2013).

The aim of the current work should be to improve the quality of CSRs. This can only be achieved in cooperation with industry, in the case of spERCs namely the industry associations providing them.

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[53] The terms “not in conformity” or non-conform are used to address any aspect of a CSR which is regarded as not sufficient to assess or demonstrate safe use. As compliance checks mainly cover the requirements on hazardous properties or are used for the lack of an exposure assessment, the term is used to differentiate also at the level of consequences covering the CSR in a compliance check. Finally, in relation to spERCs the term is preferred to the term “non-compliant” as they become part of a CSR when being used by the registrants only.

[54] Since the respective spERC was not revised, only the results of the 2010-study could be integrated in this report.

Consequently, we recommend that UBA publishes the project results and that UBA and ECHA discuss the findings with industry in order to identify ways to improve the quality of spERCs in a cooperative way. In this regard a common understanding should be formed as basis for further work of what information spERCs need to contain on releases and conditions of use, including their documentation and justification to enable registrants to demonstrate safe use of their substances in the CSR.

10.2 Recommendations to ECHA

10.2.1 Quality criteria for chemical safety assessment and chemical safety reports

In the chemical safety assessment the release factors to the different compartments of the environment are to be determined for each of the identified uses in order to enable PEC derivation and subsequent risk characterisation. The CSR is expected to contain as a minimum:

- a plausible and transparent documentation of the method/data source from which the release factors were obtained,
- if the release factors have been extrapolated from information for another substance that the properties of the substance under assessment match to that for which the release factors were originally derived,
- a description of the conditions of use for which the release factor is valid (exposure scenarios).

The aim of the CSR is to "demonstrate safe use" of a substance in a specific use. It is not clearly defined in the REACH text and the ECHA guidance documents on information requirements and chemical safety assessment how the term "demonstrate safe use" should be understood. Whereas the mathematical expression of risk (PEC/PNEC<1) is clear and easy to check, the extent to which the values, assumptions or information sources for the determinants of release should be provided by the registrant is not defined[55]. Therefore, it is subject to interpretation what type of information at which level of detail is actually required.

The consultants' understanding of "demonstration of safe use" is based on a pragmatic approach: all information that is necessary for an evaluator, who has no in-depth knowledge of the industry sectors to evaluate, to thoroughly check the justification of assumptions and the used emission factors should be contained in a CSR. This information could be qualitative considerations of the use conditions, the properties of the assessed substance, (modified) literature information or information from industry data. Any of this information must be presented in an understandable, transparent and traceable manner.

10.2.2 Reasons why the use of spERCs should be scrutinized

The registrant is fully responsible for the correctness of the chemical safety report. He is hence also fully responsible for the correctness of the justification of emission estimates supported by spERCs.

[55] The use of EUSES as environmental exposure modelling method is agreed among the stakeholders and it was developed by EU experts; hence this part of the determination of exposure levels is not subject to discussion.

As the spERCs are developed to support the registrant, it is assumed that users of spERCs for emission estimation rely on that the information provided by the industry associations is correct. It is also assumed that most registrants select(ed) and use(d) spERCs according to their initial interpretation of the scope and related descriptions of the coverage rather than inquiring from the developing industry association if their understanding of the scope and how the factors should be used is correct.

10.2.3 SpERC shortcomings which could lead to CSRs not in conformity with REACH

Several reasons can be discerned, forming the basis for a suspected non-conformity of CSRs with the REACH requirements. The following list is compiled assuming that registrants use the spERCs as they are provided (no change in values or justifications)[56].

1) SpERCs for which no factsheets exist

There are four spERCs[57] provided either in the first CEFIC overview table (2010) and/or the CEPE overview table (2013) for which no factsheets were published up to now.

The selection of spERCs without factsheets has the following consequences:

- registrants are not able to check the exact coverage of the spERC and under which conditions of use the release factors apply.
- no explicit justification of the values is provided.

Consequently, and although the estimation may even result in exposure levels below the hazard threshold in reality (no risk) if the modelling values are conservative, CSRs using such spERCs may be regarded as not in conformity due to the missing justification.

2) SpERCs which ambiguous coverage

Several of the spERCs assessed in the analysis were ambiguous regarding to which uses and conditions of use the release factors apply. Reasons are:

- inconsistencies in the factsheets between content in the sections “title”, “use descriptors”, “narrative description” and “conditions of use”,
- and/or the use of undefined terms (e.g. “high processing efficiency”),
- and/or a low level of detail in the factsheet sections defining the scope,
- and/or missing information on whether or not cleaning and maintenance processes are covered.

Possible consequences of an unclear coverage are:

- registrants use an emission model which does not correspond to their use (“selection of wrong spERC”) and hence
- there is no relation between the conditions of use in the spERC and the actual conditions of use under assessment.

[56] If the registrants have to iterate their assessment, they may start working more in detail with the spERC information and values. This is not considered here.

[57] SpERCs by ECCA, EMPAC, BFL/ZKF, TEGEWA

Consequently, and although the estimation may result in realistic exposure levels if the modelling values correspond to the actual emission for that use, the CSR may be regarded as not in conformity because the conditions of use do not reflect those of the identified use (and potentially wrong conditions of use may be communicated down the supply chain).

3) **SpERCs with release factors which are inconsistent and/or cannot be traced in literature**

Some release factors provided in the assessed spERCs were found to be inconsistent with the quoted literature sources. Reasons were that:

- values were used from a different type of process than in the spERC (without sufficient justification why this is appropriate) or
- the values could not be traced in the original source.

Possible consequences of inconsistent release factors are:

- If the release factors are factually wrong (assumed emissions could be lower or higher compared to an estimation with "correct" factors), the emission estimate is wrong. If the emitted amounts are underestimated, the use may not be safe.
- If the numeric values of the release factors cannot be traced in the original source the release factors to the different environmental compartments may or may not be correct, resulting in correct or incorrect emission estimates. In any case it is not possible to verify the plausibility of the CSR.

Consequently, in CSRs based on spERCs with release factors which are inconsistent or not traceable may be regarded as not in conformity with REACH.

4) **SpERCs where the size of initial release factors cannot be checked due to insufficient justification**

There are several reasons, why the justification of release factors could be regarded as insufficient. The main reasons found in the analysis are:

- qualitative argumentations for release factors of "zero" are incomplete, e.g. the argumentation is based only on the operational conditions but does not refer to substances properties or fails to explain if and how cleaning and maintenance processes could or could not contribute to emissions to the respective emission pathway; justification for "zero release" to waste is frequently not provided at all.
- values are quoted from literature sources but the respective conditions of use are not compared to those described in the spERC,
- expert judgement leading to the adaptation of release factors from literature is not made transparent,
- the justification from literature is inconsistent with the conditions of use and/or (integrated) RMMs provided in the factsheet.

Consequences of insufficiently justified release factors provided in the spERCs are:

- The correctness of the release factors cannot be checked; hence it remains unclear whether or not the emission estimation and exposure assessment is correct.

- The demonstration of safe use lacks a clear and comprehensive justification of assumptions, which put into question the entire CSR.

In conclusion, CSRs compiled using spERCs with insufficiently documented release factors, may be regarded as not in conformity with REACH, because demonstration of safe use is not ensured.

5) spERCs where release factors are wrongly applied, because it is not clear if they cover the efficiency of RMMs

Although this aspect has significantly improved in the new/revised factsheets compared to the versions published before 2010, there are still a few cases, where it is not fully clear if the release factors quoted in the factsheets include the application of the (obligatory) RMMs or not. In these cases there is a risk that registrants apply release factors which integrate the use of RMMs and assume that they are not.

The consequence of registrants using spERCs where inclusion of RMM efficiency is unclear could be:

- Registrants do not communicate the RMMs in the factsheet as obligatory (hence, emission control in reality may not correspond to the spERC).
- Registrants underestimate exposure levels in iterations when they "add" RMMs which are already obligatory when using the release factors.

In the former case, the registrant may communicate conditions of use which are not safe, which may cause effects in the environment and for which he could be made liable. In the latter case the CSR may be regarded as not in conformity with REACH.

6) Documentation of industry data supporting derivation of release factors (and RMM efficiency) in spERCs is not complete

Several spERCs and factsheets are based on measured data from industry surveys and/or risk assessment reports. In order to allow verification of the data and hence documenting that the derived release factors are correct, the documentation of how release factors (and RMM efficiencies) are derived should include:

1. Basic statistics on the number and type of installations of which data were used including time period and geographic location,
2. Description of the data collection approach: which information was asked from industry and which method / sources was prescribed to generate data in the installations (e.g. measurements of sum parameters at point of discharge, purchasing statistics for input amounts of substances, mass flow analyse of exemplary (lead) substances etc.),
3. Justification / documentation of correspondence between conditions of use described in the spERC and conditions of use in the installations from which data is used,
4. Provision of raw data and argumentation for exclusion of data (if relevant) from the data pool
5. Description of method for processing raw data into release factors,
6. Description and justification of extrapolations made, e.g. from measured data of one or few substances to substance groups. This could concern the derivation of initial release

factors as well as the determination of (substance specific) efficiencies of risk management measures,

7. Reasoning for any assumptions made.

For almost all spERCs based on industry data, the correspondence between operational conditions and RMMs (if integrated) in the data basis used and the developed spERCs are well described (bullet point 3) and the method of deriving the release factors is well described and can be followed (bullet point 5). The database is usually also well characterised (bullet point 1).

However, a clear description of how the raw data was obtained (bullet point 2) what data was actually used as well as transparent justification of potential assumptions made is mostly not provided or only to a low extent (bullet points 4, 6 and 7).

Consequences of using spERCs based on industry data, which are not sufficiently well documented could be:

- The provided information is not sufficient to fully demonstrate safe use, as the argumentation is incomplete.

As the respective industry associations invested substantial efforts in deriving spERCs based on industry data, it is presupposed that they did a thorough assessment of the data and derivation of release factors. Hence, the likelihood that the derived release factors are factually wrong is regarded as generally lower than for spERCs with release factors based on qualitative arguments and literature sources.

In conclusion, CSRs may nevertheless be regarded as partly not in conformity with REACH due to incomplete documentation.

7) SpERCs with unclear (justification of the) RMM efficiency

According to the current approach of chemical safety assessment, the registrant should derive the RMM efficiency that is necessary to ensure safe use. He should also provide examples of RMMs that can provide the necessary efficiency for the substance under assessment.

In most assessed spERCs which include the use of RMM, this information is differentiated according to obligatory RMMs and additional RMMs.

Information on additional RMM is not a useful criterion to select CSRs for dossier evaluation, because the information on additional RMMs is normally not part of a standard assessment but is meant for supporting assessment iteration; i.e. if the registrant derives a RCR >1 he may “add” RMMs to derive safe conditions of use. Therefore, the information on additional RMMs is not discussed here.

In two of the assessed spERCs, efficiencies of obligatory RMM are provided[58]. Some spERCs do not include any information on obligatory (and additional) RMMs. A number of factsheets refer to information sources on RMMs (BREFs and industry information); however these references are not further detailed (e.g. page numbers, table numbers are missing) and can therefore

[58] According to the screening analysis, two associations provide information on RMM efficiencies which are differentiated according to substance properties: ACEA (solvents, acids, solids) and CEPE (solids, VOC).

hardly be traced. Therefore, the efficiencies and appropriateness of the RMM information provided in the factsheets could not be verified in the study.

Consequences of using spERCs with unclear assumptions on the RMM efficiencies could be that the documentation for demonstration of safe use is incomplete. The reason for that would be that the documentation is insufficiently well proving that the recommended RMM actually is as efficient as assumed.

In conclusion, CSRs may be regarded as partly not in conformity with REACH due to incomplete documentation.

However, as the quality of the RMM efficiency's justification and documentation usually corresponds to that of the release factors this criterion is not regarded as useful to differentiate spERCs with regard to the need for compliance checking (doubles groups 3-6).

8) Differentiation of spERC information according to substance properties

The emitted amount of substances depends not only on the operational conditions but (at least to some degree) also on their mobility, i.e. their inherent properties (aggregate state, water solubility, vapour pressure etc.). It is therefore regarded as useful but not essential that the spERCs contain a differentiation according to substances properties.

In some spERCs this differentiation is implemented at the level of the release factors (different factors for different property ranges). This may not be implemented or necessary in case the release factors are conservative, i.e. they cover substances with the highest mobility for each emission pathway. In this case the release factor has the value of "1" and the resulting emission estimate would not result in an underestimation of risk.
It may also not be necessary if the conditions of use are so strict (closed process) that the substance properties do not matter.

Some spERCs specify their applicability in relation to substance properties in the sections describing the scope (e.g. differentiation for volatile and non-volatile substances or listing of substance types covered). This makes it clear that the release factors are specific for a group of substances and do not apply for other groups.

In conclusion whether or not a differentiation of release factors according to substance properties is necessary in a spERC depends on the conservativeness of assumptions and the specificity of the scope. Such differentiations do clarify the applicability of a spERC. The lack of specifications based on substance properties does however not allow conclusions on whether or not the use of a spERC may result in non-conform CSRs. Therefore, the differentiation of spERC information according to substance properties is not used as a criterion for selecting CSRs for dossier evaluation.

10.2.4 Summary of spERC shortcomings and potential consequences for the conformity of CSRs

The use of spERCs which contain inappropriate release factors or which are not sufficiently well justified or documented may lead to non-conformity of CSRs. Non-conformity means any insufficient information to demonstrate safe use in the CSR; the term is used (instead of non-compliance) because the dossier compliance check mainly refers to the assessment of hazard information and "mistakes" in the CSR cannot trigger a formal decision but only a quality observation letter by ECHA.

Cases one to seven[59] listed above could be the cause of non-conform CSRs. However, the severity of possible non-conformity as well as the likelihood of a result with a factually wrong emission estimate differs for the eight cases.

According to the consultant's understanding, a strategy to identify registration dossiers with suspected non-conform environmental safety assessments due to the use of spERCs would prioritise the most obvious cases with the most severe cases of non-conformity. "Most severe" is understood as

- "possibly resulting in underestimations of exposure and consequential risks for the environment",
- "possibility of making wrong assumptions or using emission models not appropriate for the use" and
- "providing too little information to justify the size of release factors".

The following aspects were identified as relevant shortcoming indicating potential non-conformity:

- No factsheet exists
  because of a high likelihood of using wrong spERCs and the complete lack of documentation.
- SpERC coverage is unclear
  because of likelihood of selecting the wrong spERC and resulting use of wrong justification / documentation.
- Release factors cannot be traced
  because correctness of emission estimation is questionable and insufficiently documented.
- Justification of release factors is insufficient
  because although the estimation may be close to real condition, the documentation is not sufficient to actually demonstrate that the use is safe
- Integration of RMMs efficiency in release factors is unclear
  because registrants may base their emission estimation on wrong assumptions resulting in wrong exposure assessments. In addition, they may fail to communicate obligatory RMMs in the supply chain.
- Use of industry data in the justification is not fully documented
  because the documentation of safe use is not complete.

The following two cases are not regarded as useful criteria for selection of CSRs for evaluation due to the use of spERCs in the environmental assessment:

- Unclear (justification of) RMM efficiency
  because the quality of information on RMM-efficiencies usually corresponds to that of

[59] As indicated above, this cannot generally be assumed for case 8 because whether or not it is useful or necessary that the information is differentiated according to substance properties depends on several aspects.

the other spERC information (if RMM is integrated in the release factor, the indicator would be doubled; additional RMMs are not part of the standard assessment); as the consequences and the severity of potential mistakes could not be clarified in the study, the criterion should not be used at the moment[60].

- SpERCs do not differentiate between substance properties
  because spERCs without property-specific release factors have a limitation of the spERC's applicability in their title or scope sections.

10.2.5 Grouping of spERCs for selecting registration dossiers

The screening analysis of the spERCs showed that industry associations used the same systematic for all of its spERCs to derive operational conditions, release factors and potentially efficiencies of risk management measures as well as to justify and document these values. Although some uncertainties remain as regards the variability of spERCs within one industry sector, it is assumed that the conclusions from the detailed assessment and the screening analysis are sufficient to base a grouping of spERCs according to the quality criteria (c.f. Section 10.2.1) and the identified shortcomings (c.f. Section 10.2.3).

The following grouping should be regarded as indicative for selecting CSRs for dossier compliance checks by ECHA or for improvement of spERCs by industry. It is based on the overall screening of all[61] spERC factsheets available from the sectors and the detailed assessment of specific factsheets from the current study and the 2010-study[62] on spERCs. As not all factsheets could be assessed in detail, the grouping may not be correct for all factsheets within a sector.

SpERCs without factsheets

High priority for dossier evaluation by ECHA and / or improvement by industry should be given if spERCs are used / to spERCs for which no factsheets exist (case 1) because incorrect exposure assessments are very likely and documentation is completely missing. This applies to the following spERCs:

- ECCA,
- EMPAC,
- BFL/ZKF,
- TEGEWA

[60] One of the conclusions from a current UBA project on the evaluation of efficiencies of risk management measures in the exposure assessment under REACH (FKZ 3711 63 419) could relate to this aspect and provide a more detailed view on the information provided in the spERC factsheets related to the exemplary sectors.

[61] For ESIG only a random selection of factsheets was assessed due to the high number of available spERCs.

[62] The spERCs by CEPE and ETRMA were not re-assessed in this study, because they were not changed. The results from the assessment in 2010 are integrated in the grouping.

It may be considered to also always assess CSRs where ATIEL spERCs were used, because they are not meant to be used by registrants[63].

SpERCs with shortcomings related to release factors

There are several types of shortcomings related to the release factors which either address the correctness of the factors or the way they are documented. As the release factors are the essential element of emission estimation, ECHA may regard CSRs where respective spERCs are used as relevant for dossier evaluation. Industry associations responsible for these spERCs should consider improving the spERC quality.

SpERCs with ambiguous coverage were identified of the associations:

- CEPE
- ESIG
- FEICA

SpERCs where release factors could not be traced in literature were identified of the associations:

- EFCC
- ESIG
- FEICA

SpERCs where release factors are insufficiently justified or documented (qualitative information, extrapolations, argumentation for modified values from literature etc.) were identified of the following associations:

- AISE, Cosmetics for Europe and IFRA[64]
- CEPE[65]
- ECPA

[63] ATIEL developed spERCs which relate to the use of mixtures. They were used by the association to establish generic exposure scenarios for mixtures. These generic exposure scenarios are intended for use by formulators. It is possible that formulators provide the spERCs to the registrants in order for them to modify their assessment, in case the communicated conditions of use do not conform to the use of the substance in a mixture. The spERCs are however not intended for direct use by the registrants and therefore it cannot be expected that ATIEL fulfills all requirements that would be necessary to use the spERC in the context of a CSR.

[64] The spERCs and related factsheets by IFRA (fragrances associations) and Cosmetics for Europe are similar in structure and content to those of AISE. No detailed assessment was performed but based on the similarity it is proposed to group the spERCs of the fragrance and the cosmetics industry as the spERCs by AISE.

[65] The CEPE factsheets are not yet provided in revised form; therefore the assessment results from the 2010-study were used to include the sector spERCs into a priority group. According to the former analysis, the main shortcomings of the CEPE factsheets are an incomplete and inconsistent documentation of release factors and some unclear aspects regarding the scope of spERCs.

- EFCC
- Eurometaux

SpERCs where it is not clear if the efficiency of (obligatory) RMMs is integrated in the release factors specified in the fact sheet were identified of the following associations:

- ACEA
- ESIG

SpERCs based on industry data with incomplete documentation of the data basis and/or justification of the extrapolation of information were identified of the following associations

- ACEA
- ECMA
- Eurometaux
- ETRMA

10.2.6 Concluding remarks on non-available spERCs

The project focussed on analysing and evaluating the available spERCs for the emission estimation under REACH.

The project did not check for which uses spERCs are missing. It did also not evaluate if and to which extent the quality of chemical safety assessments based on spERCs differs from CSRs with individually conducted environmental assessments. Hence, it is unknown if the existence of spERCs generally increases the CSRs quality or not.

It is unfortunate that the work of associations having committed to support the REACH implementation is partly criticized whereas those associations having undertaken no efforts remain “unmentioned”.

It would be a generally interesting and useful study question, which could not be followed-up in this project, to identify the benefits of spERCs for registrants and compare assessment results from the use of spERCs with those where no spERCs were used.

10.3 Recommendations to UBA

The development and use of spERCs as tool for the environmental exposure assessment is the task and responsibility of industry. Checking registration dossiers for compliance and the dossier evaluation is performed by ECHA. The Member States may evaluate environmental exposure assessments during substance evaluation. Also for the justification of restrictions Member States rely on environmental exposure assessment in the registration dossiers.

In order to facilitate the implementation of the environmental exposure and risk assessment as well as to obtain information in safety data sheets which could be enforced by the responsible national authorities / inspections, the Member States should be involved in the discussion and contribute to the further work on spERCs.

It is recommended that UBA (as well as the responsible authorities in other Member States) consider implementing the following actions:

- Increase efforts to create a better understanding of the environmental risk assessment's relevance among all stakeholders. It should be clearly stated that wrong assessments (risks to the environment) and too generic estimation models without reasonable RMMs (frequently resulting in unrealistically low use amounts (M_{safe}) for downstream users) are not acceptable and could lead to further regulatory actions like the restriction of uses.
- Publish the results of this project and discuss them with the industry actors as well as the Member States and ECHA in order to increase awareness that the emission estimation based on spERCs is currently in many cases not sufficient to be in conformity with REACH.
- Support ECHA in any effort to define quality standards / criteria on how a registrant should "demonstrate safe use" and what this means in practice regarding the transparent documentation of spERCs.
- Initiate / involve in the discussion on how the exposure scenarios in safety data sheets are enforced; if downstream users can be motivated to request better or more understandable information, this may be another incentive for industry associations to further work on their spERCs.
- Initiate a discussion of how the release factor to waste should be understood; the current implementation in the spERC factsheets differs across sectors. Emissions e.g. from wastes generated by the on-site risk management measures could be a relevant emission pathway of which it is unclear if it is addressed in the factsheets.
- Scrutinize environmental risk assessments in the context of substance evaluations[66]. This could initiate discussions of shortcomings in the quality of the emission estimation models and their justification with the registrants / SIEFs of the substances.
- Contribute to the further development of spERCs / best-practice examples of CSRs / ESs for communication by offering feedback to any respective example being prepared and or by offering (further) feedback to the (quality) of new or revised spERCs.

10.4 Recommendations to industry

10.4.1 CEFIC

CEFIC developed a guidance document on how spERCs should be developed. The revised version published in 2013 provides clarification on several aspects which were commented in the 2010-study as unclear or missing. However, there is still room for improvement, in particular:

- Many spERCs lack a clear description of how the release factors and the operational conditions are actually linked. This may partly be due to the fact that the CEFIC

[66] If the information in the registrants' CSRs is evaluated in the context of a substance evaluation in order to identify if there is a community-wide concern, the evaluating Member State may, on a voluntary basis, do a more extensive or thorough checking and use the acquired information and experience to feed into discussions on the quality of chemical safety assessment.

guidance does not elaborate this issue in detail. A respective chapter should be included in the next revision of the guidance.

- The different approaches to derive release factors are illustrated in the current guidance with examples. This approach seems appropriate, although a general description of the respective methods would be useful, too. However, the examples provided in the annex are not of sufficient quality and are therefore no appropriate illustrations of how the spERC should be derived and documented. Furthermore, they are not all provided in the new CEFIC format.
  The examples should illustrate best practice and include more explanation on the quality and sources of base data and their justification in factsheets.
- Remaining doublings of information should be removed from the guidance and inconsistencies in wording should be removed.
- The understanding of the release factor to waste is obviously unclear. A discussion on what is possible and useful regarding this release factor should be started and coordinated by CEFIC, resulting in clarification in the guidance document.
- Explanation on methods to derive and check the substance specific efficiency of RMMs is missing. At least a link to the CEFIC RMM-library could be included. Respective guidance would be important to enable spERC developers and users to make better use of RMM information.
- The consequences of iterating a CSR by “adding” RMMs should be more explicit; i.e. that the added RMMs become obligatory and have to be communicated to DUs.
- There seem to be still different understandings in industry regarding the scaling of exposure assessments. In the context of spERCs, scaling of release factors and related conditions of use is regarded as not appropriate. This is because the values of the release factors and the conditions of use are closely related and form the core of a spERC. Hence, scaling parameters should exclude the OCs (except the use amount). This should be clearly stated in the CEFIC guidance.
- It seems that some of the information provided in spERCs was extracted from standard phrases; these phrases are partly undefined (e.g. process optimized for (highly) efficient use of resources) and could lead to misunderstanding on e.g. the coverage of the spERC. It should be recommended in the guidance to avoid undefined terms or to define them in the spERC factsheet. Furthermore, CEFIC should recommend that no undefined terms are used to develop new phrases and that the existing ones should be specified / revised.

10.4.2 Industry associations

Industry is responsible to demonstrate the safe use of their substances in the chemical safety report for substances registered in amounts above 10 t/a. Some industry associations decided to support the registrants in the assessment by developing spERCs. Based on the assessment of spERCs performed in this project, the following is recommended to the industry associations:

- Delete any spERCs from tables or overviews for which no factsheets are available as they are not in conformity with the documentation standards of safe use of REACH (CEPE[67])
- Improve the existing spERCs regarding the shortcomings outlined in this report as soon as possible.
- Meanwhile updating, clearly communicate to registrants how the on-going improvement will impact on their assessment. Recommend that spERCs be carefully used in emission estimation.
    1. Highlight that the level of documentation of release factors may need improvement as well as the description of operational conditions and RMMs.
    2. Ensure that the spERC information generated automatically with CHESAR in the CSR is consistent with the information reported in the spERC factsheet.
    3. Motivate registrants to re-check and possibly update their registrations dossiers, if they have used spERCs of which the release factors are found questionable in this report.
- Invest more efforts in the development of spERCs and respective CHESAR files; this includes data generation and documentation as well as (further) discussions with ECHA and the Member States on the quality of spERCs.
- Develop best practice examples.
- Provide old spERC versions on the internet.
- Encourage sector associations to develop spERCs if not yet done.

10.4.3 Registrants

Registrants are recommended to

- Carefully check if the scope of the spERCs they apply in their chemical safety assessment cover their use and inquire information from the industry associations in case this is not fully clear,
- Assess if the release factors and justification provided in the spERC factsheet are complete and sufficiently transparent
  If not, additional information should be provided, e.g. on the operational conditions, risk management measures and justification of release factors, if available. This information should be submitted to the industry associations responsible for the spERC so they can be taken into account in future revisions.
- Continue discussions with downstream users to ensure that information they provide are appropriate and, if not so, modify the spERCs accordingly and provide feedback to the respective spERC developers.

[67] The CEFIC spERCs overview table published in April 2010 is not available on the internet anymore.

10.4.4 Downstream users

Downstream users receiving information on the safe conditions of use with the safety data sheets of substances and mixtures they use, which may be extended by attached exposure scenarios, should continue thoroughly checking the implementation of the conditions of use, regardless of whether or not reference is made to a spERC. They could support industry associations developing spERCs by providing them with information on their conditions of use in particular if respective spERC based exposure scenarios do not reflect them well.

11 LITERATURE

CEFIC: Guidance Specific Environmental Release Categories (spERCs) Chemical Safety Assessments, Supply Chain Communication and Downstream User Compliance; July 2010, Revision 1. http://www.reach-hamburg.de/fileadmin/user_upload/Newsletter/SPERC_Guidance_100707_FINAL.pdf

CEFIC: Guidance Specific Environmental Release Categories (spERCs) Chemical Safety Assessments, Supply Chain Communication and Downstream User Compliance, October 2012, Revision 2. http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf

ECHA: Guidance on information requirements and chemical safety assessment - Chapter R.16: Environmental Exposure Estimation, version 2.1, Helsinki, October 2012. http://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf

ECHA: Guidance for downstream users; Draft Version 2.0, March 2013. http://echa.europa.eu/documents/10162/13634/du_en.pdf

European Commission; Joint Research Center: Technical Guidance Document on Risk Assessment in support of Commission Directive 93/67/EEC on Risk Assessment for new notified substances; Commission Regulation (EC) No 1488/94 on Risk Assessment for existing substances; Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market, part 2; 2003. http://ihcp.jrc.ec.europa.eu/our_activities/public-health/risk_assessment_of_Biocides/doc/tgd/tgdpart2_2ed.pdf

OECD: OECD SERIES ON EMISSION SCENARIO DOCUMENTS Number 22 - EMISSION SCENARIO DOCUMENTS ON COATING INDUSTRY (Paints, Laquers and Varnishes), ENV/JM/MONO(2009)24, 08 July 2009. http://search.oecd.org/officialdocuments/displaydocumentpdf/?cote=ENV/JM/MONO%282009%2924&doclanguage=en

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Umweltbundesamt: Standardisation of Release factors for the Exposure Assessment under REACH; 15. November 2010. http://reach-info.de/dokumente/exposure_assessment.pdf

Analysed spERCs

ACEA 4.1.c.v4 spERC “Industrial use of coatings (wet scrubber)”

AISE 4.1 “Industrial use of Water Borne processing Aids”; version 1 and 2

AISE 8a.1.a/b/c “Wide dispersive Use of Cleaning and Maintenance Products”; version 1 and 2

ECMA 1.1a “Manufacture of metal-containing catalysts”; version 2.0

EFCC 8d.1a “Wide dispersive Use of Substances in Professional and DIY Construction Chemicals; version 1

ESIG/ESVOC 4.6a “Lubricants (industrial): solvent-borne”; version 1 and 2

Eurometaux 5.1 “Industrial use of metals and metal compounds in metallic coating”; version 1 and 2

FEICA 5.1a “Industrial use of substances in adhesives“; version 2