

SPERCs Quality Criteria

SPERCs describe the conditions of use and related release factors for a specific use. They do not depict emission situations at concrete sites but address generic emission situations such as related to relevant practices in industry and in particular in the downstream industries. They attempt to be applicable to compute typical emission situations during the use of a substance or mixture for environmental exposure analysis. To that end, SPERCs strike a balance between the degree of detail needed for describing a given use situation and the generic character of a safety assessment under REACH. To that end a SPERC represents the level of conservatism in the derivation of the release factors matching the scope of its coverage.

Hence, SPERCs that describe a broad range of uses must depict a larger variance of release rates, which results in less realism for each single use covered but a higher conservatism overall. On the other hand, a SPERC that describes a narrow application scope, can be more realistic towards the specific use and the release factors; the derivation of emission relevant factors therefore deserves less conservatism

Purpose

According to the 2019-2020 ENES working programme, a review of SPERCs is expected to be conducted by both industry (internal review) and by authorities (external review). To ease this review, the industry SPERC TF has developed a set of quality criteria. The purpose of the quality criteria is **to support and document a quality assessment** of the SPERC background document and, where relevant, the corresponding fact sheets by considering following topics:

- Is the scope of the SPERC clear in terms process-types and/or product-types covered?
- Are the main Conditions of Use (CoU), including Operative Conditions (OC) and risk Management Measures (RMMs) driving the environmental release clearly identified, understandable and verifiable?
- Are the factors resulting from the key drivers for environmental emissions (water, soil, air) adequately quantified, and is it sufficiently explained how the release fractions were estimated?

The quality criteria are to be seen as a mean to assess quality, not as an objective on its own.

Who are the end-users of this template?

The quality criteria, in first instance, are to be used by the SPERC developers to check the completeness and quality of their own SPERCs as a self-assessment tool. External reviewers (industry, consultants or Member States) are encouraged to use the quality criteria to provide a focussed feedback to the SPERC developers on their SPERCs.

How to use the quality criteria template?

The quality assessor is asked to answer all relevant quality criteria questions by means of a score 1 (good) to 3 (insufficient) or indicate “not applicable” (4). A justification of the selected score shall be reported in the field ‘explanation of evaluation’. Especially where the scoring is “insufficient” the assessor should provide a thorough explanation in order to enable a focussed review of potential gaps. In addition, the quality assessor is asked to provide an overall score to the SPERC. When conducting the quality assessment, information present in both the factsheets and the background documents should be considered.

Scoring - Legend:

1 - Good	No need for further improvement
2 - Acceptable	OK, but room for improvement or aspects to be verified
3 - Insufficient	Improvement is required.
4 – Not applicable	Criteria not applicable to the specific SPERC under review

Glossary:

- CoU: Condition of Use
- Key condition of use drivers: CoU that are not key drivers for release can be considered to be removed from the SPERC.
- OC: Operational Condition
- RF: Release Fraction
- RMM: Risk Management Measure
- SPERC: Specific Environmental Release Category

ASSESSOR IDENTIFICATION	
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Documents evaluated	ENVIRONMENTAL EMISSIONS OF METALS IN INDUSTRIAL SURFACE TREATMENT v.2; A.I.S.E. ERC 5
Date of the evaluation	June 15, 2020

1 – TITLE

1.1 Is the SPERCs title simple, concise, unambiguous, understandable?

The title of the SPERC is important to facilitate the selection of the most appropriate SPERC to be used to estimate environmental emissions when running a chemicals safety assessment.

EVALUATION	GOOD
Explanation of evaluation	New title clarifies that SPERC deals with coatings using metals (related to STM BREF) rather than coating of metals (related to STS BREF).
Remarks on improvements	
Feedback from A.I.S.E.	The title was adjusted due to remarks on the scope of the SPERCs and now covers also plastic surfaces.

2 –SCOPE

2.1 Is the scope of the SPERC clear, verifiable and consistent with underlying ERCs?

Is the scope of the SPERC (in factsheet and background document) clear and verifiable for a user in terms of i) process-types, ii) product-types, and iii) substance properties covered?

Are the boundaries of the scope sufficiently clear and explicit, indicating what is not covered, for example where misunderstanding may arise, or where the SPERC developer has chosen not to cover a particular use situation because it is exceptional for the sector. For example, where SpERCs relate to the scale of operation or the volatility of substances, quantitative benchmarks should be provided.

(*) The use-map developer needs to build use names and names for the contributing activities that i) correctly match the scope of the applicable SPERC and ii) are easily verifiable for the companies receiving exposure scenarios.

EVALUATION	GOOD
Explanation of evaluation	Process types and relevant substances are clearly addressed. Use of other compounds with higher hazards is excluded from scope. Reference to ERC 5 and irrelevance of ERC 4 is well explained. Reasoning for creation of two SPERCs is provided. Large scale operations are identified as worst case with regard to release volumes.
Remarks on improvements	
Feedback from A.I.S.E.	Due to the review of the background document we specified plastic surfaces to be included in the scope of these SPERCs. This is because autodeposition of metals to plastic surfaces follows the same emission pattern as metal hard surfaces.

2.2 Is the scope described as substance and/or process domain consistent with the OC/RMM identified as driving the release?

The Scope section is to understand the relationship between substance type, product and process, including RMMs/abatement techniques, on the one hand and the environmental release on the other hand. Does this relationship becomes adequately clear and transparent?

For example:

- If SPERC refers to products and processes where no water is involved, absence of water contact should be made explicit in the conditions of use, and it should be made clear whether this refers to the process as such or also to cleaning operations (equipment cleaning, floor cleaning). Hence, the process domain should hint towards the relevant sections in the process (i.e. conditions of use). The scope of the SPERC is driven in this case by the process domain and to a lesser extent by the substance domain;
- If a SPERC refers to volatile substances that are used as process aids leading mainly to emissions to air, the combination of substance and process domain will equally describe the scope of the SPERC. Certain substances (e.g. defined by a boiling point threshold) will be prone to air emissions as specified within the process domain (closed or open processes). Further conditions affecting the release into the environment is given in the CoU and is not part of the scope section.

EVALUATION	GOOD
Explanation of evaluation	Comprehensive description of processes, emission sources, process-integrated measures, environmental risk management measures. Clear distinction of transfer to coated substrates, waste sludge and waste water. Sufficiently broad reflection of transformation processes with regard to the use of hexavalent chromium. Hints towards substitution of hazardous heavy metals by less hazardous compounds where appropriate.
Remarks on improvements	For autocatalytic processes, there should always be a distinction between chromating and other sub-processes.
Feedback from A.I.S.E.	During the external review A.I.S.E. specified the substance domain further. In the EU, especially Cr(VI) processes are nowadays widely replaced by Cr(III). For the sake of a potential usage of SPERCs beyond the EU (e.g. OECD) A.I.S.E. decided to keep these processes in. A further distinction between hazardous and non-hazardous heavy metals (e.g. Zr) have been drawn. Discussions on specifically exclude other substances like nonylphenol ethoxylate (NPEO), ethylene diamine tetraacetic acid (EDTA), boron and perfluoro octanoic sulphonate compounds (PFOS) in process fluids have been made. It was concluded that the substance scope on hazardous metal emissions is sufficient and further exploration towards other pollutants would disturb the core message.

3 – OPERATIONAL CONDITIONS

3.1 Are the OCs clearly described and practically verifiable?

Together with the substance properties, the operational conditions determine the initial release of substances from the use-process. For example, elevated temperature (temperature benchmark needed) and abrasive processes usually increase the release of a substance to air, water contact during the process (water based process steps) or during cleaning (equipment or room cleaning) drives the presence of the substance in waste water. For the mentioned examples, it should be possible to communicate the operational conditions in a clear and verifiable way. However, it is not always possible in a generic SPERC (or in the resulting exposure scenario) to describe and communicate the (complex) operational conditions in the industrial processes of a sector driving the initial releases of the substance into exhaust air, waste water -or residue streams. In such cases, the SPERC best makes reference to a documented best/good practice or a Best Available Technique (BAT), provided such sector “standard” can be connected to (substance related) release factors. For example, generic phrases in SPERCs factsheet such as “high degree of automation” or “efficient use of raw materials” should be referenced (or exemplified) to what this means in practice in the background document.

EVALUATION	GOOD
Explanation of evaluation	Exhaustive reference to STM BREF and OECD guidelines.
Remarks on improvements	Selected examples for waste water emission limit values might help to understand that the domain is strictly regulated and that risk management measures are suitable to respect PNEC values.
Feedback from A.I.S.E.	A.I.S.E. decided not to include waste water limits as they are specific and may differ for local sites. However, it has been acknowledged that regional WW limits for heavy metals may drive emissions below such as derived by the emission factors in the SPERCs.

3.2 Do the OCs properly reflect the main drivers for release potential of substances into the environment?

Note - On this purpose, operational conditions mentioned shall be linked to the environmental releases covered by the SPERC. For example, if release to water is set to 0, CoU should reflect that cleaning operation needs to be performed without water and no water used in process or water is completely recycled and water containing residues (from cleaning the water-cycle) are disposed of as waste.

EVALUATION	GOOD
Explanation of evaluation	All kinds of releases to water are covered (i.e. continuous and exchange of bathes with frequency of changes, regular releases as well as releases after unavoidable contamination by carry-over). Information is based on comprehensive experience from industrial sites with regard to lifetime of bathes and turn-over rates. Also, treatment of exchanged bath content reflects typical practice in industry (e.g. use of storage tanks with limited transfer to treatment plant in order to avoid intolerable concentration peaks).
Remarks on improvements	
Feedback from A.I.S.E.	The thorough description of discontinuous bath releases was a main objective of A.I.S.E. when drafting the paper. Operational praxis prevents high fluctuations in freight emissions over time, hence, peaks of emission are well levelled off. Conservatively derived MSPERCs are well suitable that reflect irregular release patterns that may occur on-site.

3.3 If a use rate has been provided: Is it transparent, how the use rate has been derived and how representative it is?

Note: a use rate is generally site specific and cannot be provided as definite by a SPERC. Therefore, in general, SPERCs may provide indicative use rates that are based on conservative assumptions (i.e. high end of daily use rates) from industry use data. These use-rates are meant to serve as a starting point or benchmark for the registrant’s assessment. It is for example important to explain, whether the indicative value is based on statistical figures on daily consumption of chemicals at single sites, or whether the indicative value is extrapolated from an annual market/sector tonnage, distributed over a number of users and/or a number of use-days. In this respect it may also play a role whether the activity is carried out as i) small scale operation and ii) large scale operation, and or under optimal or suboptimal conditions and thus whether several SPERCs may be needed (with a corresponding indicative use-rate), e.g. one with onsite emission controls and the other without onsite emission controls. For uses where process waters are retained and environmental releases potentially occur discontinuously, it need to be transparently explained to what use rate the SpERC emission factors are applicable. For example, the emission factors of such a SPERC can be a reflection of the continuous flow-through situation (with daily compensation of losses) and/or a situation where the whole bath is exchanged (and fractions of it are released on a day).

EVALUATION	GOOD
Explanation of evaluation	Indicative use rates are provided for all processes based on installation capacities at the high end and typical material consumption rates per m ² for achieving targeted properties of coated substrates.
Remarks on improvements	
Feedback from A.I.S.E.	

4 – RISK MANAGEMENT

4.1 Are the RMM described in a clear manner?

Are the RMM (in factsheet and background document) described in a clear manner (required effectiveness and technical possibilities to achieve it), so that a DU or an authority could practically verify whether such techniques or equivalents are in place?
In case RMMs are linked to good/best practices/techniques, have the corresponding references been provided (e.g. BAT, BREF documents)? Note, that a link to good/best practices may subsume an array of alternative techniques that lead to similar results of emission reduction.

EVALUATION	GOOD
Explanation of evaluation	Very clear explanation endorsed by STM BREF.
Remarks on improvements	Some emerging techniques may not be relevant for the purpose of this SPERC.
Feedback from A.I.S.E.	We skipped some parts of emerging techniques and transposed it to a footnote. By this it is less prominent.

4.2 Are RMMs adequate for the substance/product domain?

Is it plausible that the reported RMMs are effective to substances within the described domain and /or to the product types within the scope of the SPERC? Is this linkage adequately described in the background document? For example, mechanical oil/water separation may not effectively work where emulsions occur.

EVALUATION	GOOD
Explanation of evaluation	Potential constraints are addressed.
Remarks on improvements	A selected example might be helpful to demonstrate that typically applied RMMs with a minimum efficiency according SPERC conclusion are appropriate to comply with regulatory requirements and/or PNEC values.
Feedback from A.I.S.E.	The SPERCs are not a tool to serve legal compliances with local emission limits. The RMMs applied in operations do not follow a strict scheme that is to be implemented. This is because each process line and company may follow a different combination of RMMs to fulfil the local and/or regional legal requirements on heavy metals. The latter may be stricter than derived by the conservative release factors of the SPERC assessment, which purpose is to aid risk assessment on a lower tier level (broad applicability domain). Hence a practical example could be misleading and difficult to compare.

4.3 Are RMMs clearly linked to release sources?

Are the main sources/pathways of release from the process described in the background document, and is it clear to which of these the RMM refer? For complex air treatment systems (e.g. wet scrubbing), is it sufficiently clear, on which pathway and at which rate the substances removed from air leaves the site (for example via waste-water or waste)?
In case alternative RMMs can be applied to achieve similar end-of-pipe effectiveness, are concrete examples/options provided? Note, that good/best practices may subsume an array of alternative techniques that lead to similar results of emission reduction.

EVALUATION	GOOD
Explanation of evaluation	Levels of multiple RMMs or clearly assigned. Creation of sludge directly from the processes and indirectly from waste water treatment is well described.
Remarks on improvements	
Feedback from A.I.S.E.	

5 – RELEASE FACTORS**5.1a MEASURED DATA - Are measured data representative and well documented?**

In case a set of measured data for the process/products covered in the SPERC, and taken under the conditions of use as described in the SPERC, is the number of data points, the number of companies and the substances analysed documented or referenced? Are measured data related to reasonable and documented use rates in order to derive representative release factors? Where available, provide a data analysis (e.g. distribution %ile) to identify representativeness of the data for the respective purpose (e.g. determination of release rate).

EVALUATION	GOOD
Explanation of evaluation	Own data collection for areas where no other data (e.g. from literature) is available.
Remarks on improvements	

5.1b MODELLED DATA - Is the documentation on the model and the modelling report available?

In case release factors are determined based on a model developed for the processes and products covered in the SPERC, is the documentation of the model and a modelling report available? Are modelled releases related to representative use rates in order to derive reasonable release factors?

EVALUATION	Not applicable
Explanation of evaluation	
Remarks on improvements	
Feedback from A.I.S.E.	

5.1c LITERATURE DATA - Is the literature source provided and assessed to be representative/robust?

In case the release factors are extracted from published literature referring to the process/products and conditions of use covered in the SPERC, is the literature referenced and is a short summary provided in the background document? Is the number of data points, the number of companies, the conditions of use and the substances analysed clearly documented in the publication? Are the conditions of use referred to in the publication consistent with the conditions identified in the SPERC.

EVALUATION	GOOD
Explanation of evaluation	For most processes, BREF and OECD data as well as additional industry publications provide sufficient insight. Literature data indicate that achieved substance concentrations after treatment can be expected to be substantially lower in practice compared to predicted concentrations according SPERC assessment.
Remarks on improvements	

5.1d READ-ACROSS DATA – Is the read-across sufficiently robust and well explained?

In case of read-across from any of the type of sources above (to other processes, other products, other conditions of use), is the read-across sufficiently explained, for example by comparing the processes, the release driving factors and the properties of the chemicals involved. For example, releases to water from any kind of formulation processes will have very similar drivers, independent of the concrete product category: It will depend on i) dustiness or viscosity of the chemicals to be mixed, ii) whether cleaning of machinery is carried out with water, iii) whether the equipment is run continuously or in batch-mode with intermediate cleaning and iv) which techniques are used to minimise the residues in the equipment before cleaning. Thus read-across from formulation of one product category to another one may be straight forward.

EVALUATION	Not applicable
Explanation of evaluation	Might be applicable for certain alternative metals (beyond scope) only where specific compounds have been reported.
Remarks on improvements	
Feedback from A.I.S.E.	

6 – CONSERVATISM**6.1 – Is the level of conservatism appropriate?**

Does the scope of the SPERC cover sufficiently all uses described by the CoU and RMMs? Is the level of conservatism, i.e. the conservative derivation of release factors, etc., sufficiently described in the background document? Is the level of conservatism balanced compared to the scope? (i.e. broader scope requires more conservatism and vice versa). Conservatism can result from different aspects, e.g. from the mathematical analysis of data (e.g. taking a 90%ile, summing up from individuals to a category, etc.), the read across from different processes and/or a worst case approach, where assumptions were taken from the process with the worst emission aspects.

EVALUATION	GOOD
Explanation of evaluation	Conservatism is ensured by addressing multiple aspects, each at an appropriate level: reference to large scale industrial installations, worst case indicative use rates for all operations, high frequencies of bath exchanges in combination with largest volume of bathes, assumed complete transfer of material to waste water stream, removal efficiency at the lower end compared to literature data and documented industrial practice.
Remarks on improvements	
Feedback from A.I.S.E.	With regard to our comment of 4.2. we emphasize the purpose of the SPERC building the frame of a lower tier exposure assessment scheme with a broad applicability domain that is ensured by adding up all single conservative assumptions of the described processes.

7 – SUMMARY and OVERALL JUDGEMENT**7.1 - Overall judgement of the reviewer**

Based on the documented information, are the release factors considered representative and reliable for the conditions of use described in the SPERC and the type of substances (by chemical-physical properties) contained in products/processes covered by the SPERC?

Overall score		GOOD			
Title	Scope	OCs	RMMs	RELEASE FACTORS	CONSERVATISM
GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
Overall evaluation	Document provides a reasonable survey of all relevant aspects of multiple processes for evaluation by stakeholders who are not technical specialists in this complex domain.				
Overall remarks on improvements					
Feedback from A.I.S.E.	A.I.S.E. welcome and acknowledges the external review after the internal finalization and implemented the feedback in the published version of the SPERC factsheets and background document. Aside specific concerns as outlined above A.I.S.E. was able to remove some editorial and logic breaks in the text.				