



The technical association
of the European lubricants
industry



The technical committee
of petroleum additive
manufacturers in Europe

ATIEL/ATC
Generic Exposure
Scenarios

Document 10: Checking environmental conditions of use and scaling

**This document is intended to support Step 5
of the GES Process flowchart (Document 1).**

**Version 1.0
7 January 2013**

Checking environmental conditions of use and scaling as part of Step 5 of the flow chart

Purpose

There is a requirement to check elements of the RM supplier's ES with the GES values. This document is intended to support two diamonds in Step 5 of the flow chart with the questions "Does the RM ES specify equally/less stringent conditions of use than the allocated GES(s)?" and "Can scaling be applied to demonstrate that the allocated GES(s) are applicable?". Therefore all other considerations and decisions taken by the user have not been repeated or specified.

In the file "Environmental GES checks and explanation of fields", an overview is given of four parameters, three release fractions and an Msafe value, which have numerical values and may need to be checked, meaning a comparison of their values in the supplier raw material exposure scenario for use in lubricants versus the GES values.

The purpose of this note is to set out the consequences of different findings during the checking process, especially to show when scaling¹ can be applied so that the GES can be attached to the SDS without further action, or when scaling is not sufficient and using the GES constitutes a DU CSA approach. This note covers industrial uses only because there is a difference between industrial and wide dispersive uses in that there are typically no technical measures by which consumers and professionals can control emissions (see Cefic guidance on SpERCs).

The process

In Step 5 of the flow chart, the diamond "Does RM ES specify equally or less stringent conditions of use than the allocated GES(s)?" requires a check of these conditions and in quantitative terms the values of key parameters which are the emission days; release fractions to air, waste water, and soil, as well as Msafe.

The entries in the spreadsheet are as follows:

| Parameter | Further action | |
|---------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------|
| | Not required | Required |
| Emission days (days/year) [FD4] | supplier value \geq GES value supplier value < GES value if other conditions met | supplier value < GES value if other conditions not met |

¹ Scaling (ECHA DU Guidance) allows the "flexibility in checking if your own or your customers' uses are covered by an exposure scenario if you have another combination of operational conditions and risk management measures which allow you to achieve the same level of safety".

| Parameter | Further action | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| | Not required | Required |
| Release fraction to air from process (after typical onsite RMMs) [ATE11] | supplier value \geq GES value | supplier value $<$ GES value |
| Release fraction to wastewater from process (after typical onsite RMMs and before sewage treatment plant): | supplier value \geq GES value ² | supplier value $<$ GES value |
| Release fraction to soil from process (after typical onsite RMMs): | supplier value \geq GES value | None |
| Maximum allowable site quantity (MSafe) based on OCs and RMMs as above (kg/day) as product: | supplier value $>$ GES value supplier value $<$ GES value if other conditions are met ³ | supplier value $<$ GES value if other conditions are not met |
| <p>Note: In the GES the release fraction to wastewater and the Msafe value at product level depend on the treat rate of the RDS in the product. The GES has assumed certain default values for treat rate, and thus release fractions and Msafe values. Instructions for adjusting the values for these parameters on the basis of different treat rates are given in the file Environmental GES Values Table, tab Treat Rate. When comparing the supplier values with the GES values, it may be necessary to adjust first these values.</p> <p>For ATIEL-ATC uses Msafe value were initially calculated at the RDS level and converted to Msafe values at product level, using the default treat rate, for use in the GESs. Thus the GES Msafe values at product level are converted back to Msafe values at RDS level. The Msafe value at RDS level needs to be used for checking of the incoming supplier information, hence further in this document when referring to Msafe values, this means the Msafe value at RDS level.</p> | | |

Findings and consequences

The following situations have been developed to assist the formulator with deciding what action to take depending on the findings when comparing the conditions of use and in particular the numerical values in the relevant ES of the RM against the GES values for four parameters. Not all possible situations have been covered, but only the most common ones encountered after inspection of a number of ext-SDS.

² Care must be taken to ensure that the correct types of values are compared. The release fractions in the GES is after treatment whereas some RM suppliers provide a release fraction before abatement and a fraction of removal through abatement, which need to be combined so as to compare like with like.

³ This implies that scaling may be sufficient to demonstrate that the RM ES is consistent with the GES.

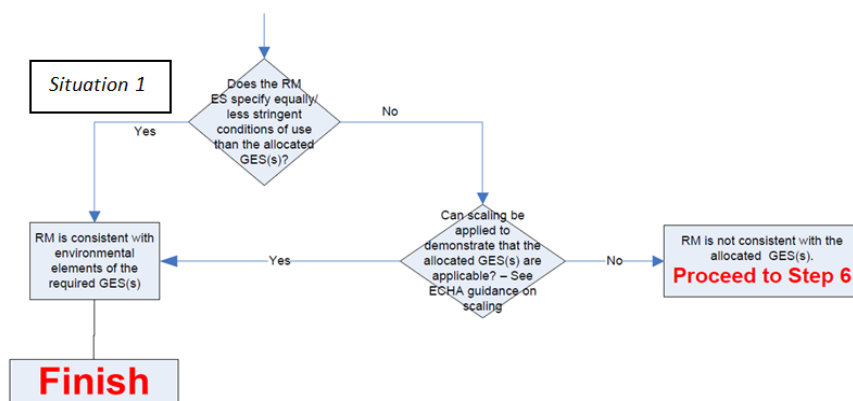
Situation A “Emission days”

| | |
|------------------------------------------------------|----------------------------------------------------------|
| supplier value \geq GES value | supplier value $<$ GES value if other conditions not met |
| supplier value $<$ GES value if other conditions met | |

The number of emissions days affects the exposure levels in a linear way. Typical equations for scaling are given in ECHA Guidance document Part G especially examples relating to the environment⁴ and in Cefic guidance.⁵

Situation 1 “All parameter values pass the check”

In this situation all release fractions quantified on the RM ES are greater or equal than the GES value. Then, if the supplier Msafe value is greater than the GES value, the GES can be attached without further consideration.

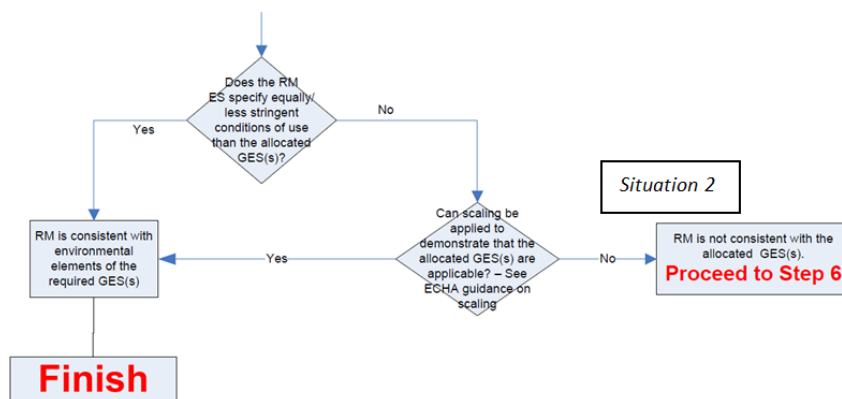


⁴ ECHA (2008) Guidance on information requirements and chemical assessment. Part G: Extending the SDS, page 28

⁵ Cefic (2010) REACH Practical Guide on Exposure Assessment and Communication in the supply chains. Part IV: Supplement Exposure Estimation.

Situation 2 “RFs: supplier value < GES value, thus fails”

In this situation there is at least one release fraction for which the supplier value is smaller than the GES value. Typically for lubricant additives the releases to waste water drive the risk assessment and therefore if the RF air or RF soil are within reason similar they do not result in a fail; but if the release fraction to waste water is lower, then it does fail. By using the GES the amount released into the environment is higher than derived by the supplier.



The GES can be attached but because of the lack of consistency in the use conditions between the RM ES compared to the GES, this will constitute a DU CSA approach.

Situation 3 “RFs pass, Msafe fails”

In this situation all release fractions quantified on the RM ES are greater or equal than the GES value (thus pass) but for the Msafe the supplier value < GES value. In this case scaling⁶ may be a suitable option to ensure that the use of the substance and its conditions as specified in the RM ES are consistent with those in the GES.

In case the supplier has not provided the Msafe, the use may be able to derive it by using other information often supplied such as RCR and Mused, with the latter sometimes called Muse, according to Eq. A:

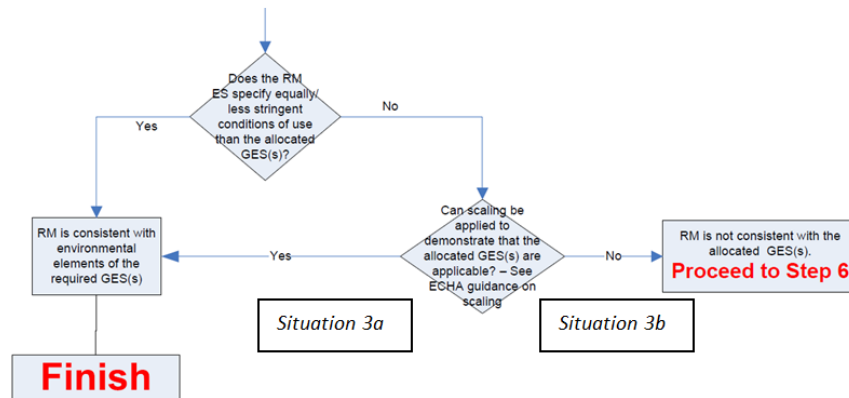
⁶ The ECHA DU practical guide 13 “How downstream users can handle exposure scenarios” states on page 21 Example E1 that the user should check with the supplier to provide him with suitable conditions of use to compensate for the higher quantity, which in this situation is achieved by increased effectiveness of the RMM as reflected in the lower release fraction in the GES.

$$M_{safeRM-supplier} = M_{usedRM-supplier} R_{CR} R_{RM-supplier} \quad (Eq. A)$$

For a scaling equation on the RCR see ECHA (2008)⁴ and Cefic (2010)⁵. The user can use this ratio as an approach to verify whether or not scaling is suitable.

In essence the user makes allowances for the difference in release fractions before a new comparison of the $M_{safe_{RM-supplier}}$ and the $M_{safe_{GES}}$ is carried out, essentially using the scaling equation referenced above. This means in practise the user adjusts the original $M_{safe_{RM}}$ or $M_{safe_{RM-original}}$ by working out the release fraction (after abatement) between the $RF_{supplier}$ and RF_{GES} as a ratio, to increase the original $M_{safe_{RM-original}}$ to yield $M_{safe_{RM-adjusted}}$ which in turn needs to be compared with the $M_{safe_{GES}}$.

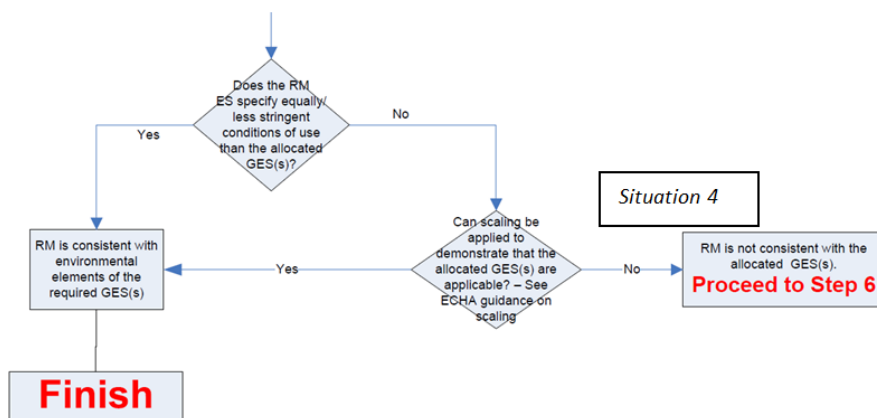
- a) If the $M_{safe_{RM-adjusted}} > M_{safe_{GES}}$ the GES is consistent with the supplier GES, and the GES is applicable and can be attached.
- b) If the $M_{safe_{RM-adjusted}} < M_{safe_{GES}}$ the GES is not consistent with the supplier GES. However the GES can still be applied and attached, but this will constitute a DU CSA approach.



Situation 4 “RFs: supplier value < GES value” and “Msafe: supplier value < GES value if other conditions are not met”⁷

In this situation there is at least one release fraction for which the supplier value is smaller than the GES value, and the Msafe supplier value is less than the Msafe in the GES.

However because of the lack of consistency between the RM ES values for release fractions, the GES can be attached but this will constitute a DU CSA approach.



⁷ This may include additional abatement.