

**i2a Guidance AFTER REACH registration= DU tool Guidance**

**How to check environmental compliance with the Exposure Scenario/s in the extended Safety Data Sheet?**

**May 2011, Version 2**

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## 1. Background:

REACH has brought the industry a lot of changes with regards to the communication and exchange of data and one of the new tools on how to communicate safety information is called Extended Safety Data Sheet (eSDS). The new feature of the eSDS is that manufacturers and importers need to attach the relevant Exposure Scenarios (ES) to their safety data sheets. The ES have been developed during the process of chemical safety assessment and consequently elaboration of the Chemical Safety Report in which, for substances identified as hazardous, the ES for all identified uses are included in the final REACH registration dossier. The manufacturer or importer therefore needs to firstly know their DU, as he has to choose which ES will be attached to the eSDS when sending the eSDS to each and every DU.

NOTE ☺ → The ES are a constituent part of eSDS and can't be forwarded only "by request".

### 1.1 On how to check Compliance:

[EUROMETAUX](#) and [ARCHE](#) have developed a DU scaling tool for compliance checking with the environmental ES of metals. The DU scaling tool is based on the spreadsheet version of [EUSES](#)<sup>1</sup>. Under REACH, the Downstream User (DU) is obliged to check compliance with the ES provided via the eSDS. For this Guidance we will take the example of checking the compliance with the ES N. 3: "Use of diantimony trioxide in flame retarded plastic and rubber industry". For all other ES of [ATO](#), [Sb metal](#) and [SHHA](#) the same guidance will apply.

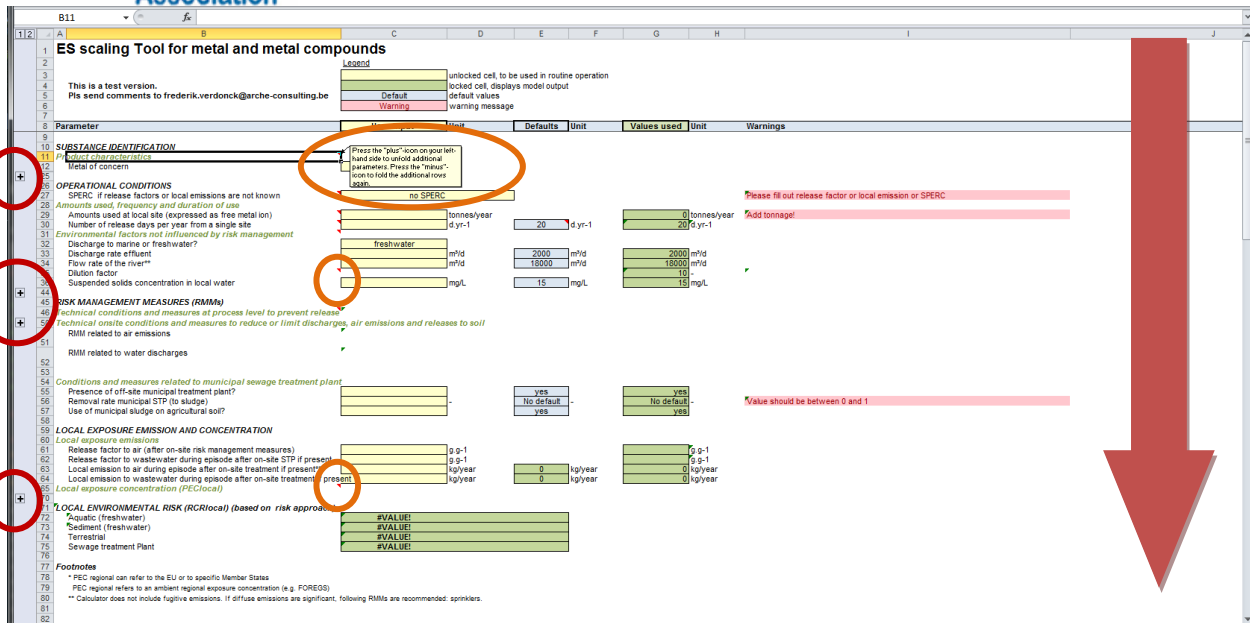
### 1.2 Structure of the Guidance:

Note that the DU-tool is on one Excel sheet which you will have to scroll down in order to get the full overview of all the data. There are a few special features introduced in order to facilitate the use of the DU- tool:

- a) **HIDDEN ROWS** = on the left side of the screen you will see the + sign, representing the rows which are hidden and input is only needed for the rows 39, 41 and 43, taking into account that you agree with the other defaults.
- b) **EXPLANATORY "COMMENTS"**= some cells have a red triangle on their right edge, representing the explanatory comments which help you to understand which information needs to be filled in per cell.

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<sup>1</sup> EUSES stands for The European Union System for the Evaluation of Substances.



Parameter	Defaults	Unit	Values used	Unit	Warnings
<b>Legend</b>					
unlocked cell, to be used in routine operation					
locked cell, displays model output					
default values	Default				
warning message	Warning				
<b>ES scaling Tool for metal and metal compounds</b>					
<b>OPERATIONAL CONDITIONS</b>					
SPERC, if release factors or local emissions are not known	no SPERC				Please fill out release factor or local emission or SPERC
Amounts used, frequency and duration of use	tonnes/year		0	tonnes/year	Add tonnage!
Number of release days per year from a single site	d.yr-1	20	20	d.yr-1	
Discharge to marine or freshwater?	freshwater				
Discharge rate effluent	m³/d	2000	2000	m³/d	
Flow rate of the river**	m³/d	10000	10000	m³/d	
Dilution factor		10	10		
Suspended solids concentration in local water	mg/L	15	15	mg/L	
<b>RISK MANAGEMENT MEASURES (RMMs)</b>					
Technical conditions and measures at process level to prevent releases					
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil					
RMM related to air emissions					
RMM related to water discharges					
Conditions and measures related to municipal sewage treatment plant					
Presence of off-site municipal treatment plant?		yes	yes		
Removal rate municipal STP (to sludge)		No default	No default		*Value should be between 0 and 1
Use of municipal sludge on agricultural soil?		yes	yes		
<b>LOCAL EXPOSURE EMISSION AND CONCENTRATION</b>					
Release factor to air (after on-site risk management measures)	g g-1		0	g g-1	
Release factor to wastewater during episode after on-site STP if present	g g-1		0	g g-1	
Local emission to air during episode after on-site treatment if present	kg/year	0	0	kg/year	
Local emission to wastewater during episode after on-site treatment	kg/year	0	0	kg/year	
Local exposure concentration (PEC(local))					
<b>LOCAL ENVIRONMENTAL RISK (RCR(local)) (based on risk approach)</b>					
Aquatic (freshwater)	#VALUE!				
Sediment (freshwater)	#VALUE!				
Terrestrial	#VALUE!				
Sewage treatment Plant	#VALUE!				
<b>Footnotes</b>					
* PEC regional can refer to the EU or to specific Member States					
** Calculator does not include fugitive emissions. If diffuse emissions are significant, following RMMs are recommended: sprinklers.					

Figure 1: Structure of the DU-tool. Defaults hidden under + sign and highlighted in red circles and comments highlighted in orange circles

## 2. Step by step guidance

### 2.1 Step 1 → In which case you need to use this tool?

The DU works inside the boundaries set by the ES if:

- a) **The proposed risk management measures as described in ES section 2.2 are met:**

The Operational Conditions (OCs) and Risk Management Measures (RMMs) given in the section 2.2 of the ES should be compared with the actual OCs and RMMs from your site. It is important to realize that the OCs/RMMs may not always be completely identical with the OCs/RMMs specified in the ES provided via the eSDS, and may actually deviate from them. This does not necessarily mean that your use is non-compliant. When one or more of the actual OC and RMM differ from those of the ES it may not be immediately apparent whether the use is still in compliance with the ES you are checking. If you use more than one antimony compound at your site, or your uses are covered by more than one ES, it can also be difficult to determine if your use is compliant with the ES. When it is not obvious if you are covered please **proceed to step 2.**

- b) The downstream user **can demonstrate on his own with measured data that his operational conditions and implemented risk management measures are adequate.** This has to be done by showing that they limit the environmental exposure to a level below the respective PNEC as given in section 8.1.2 of the core Safety Data Sheet:

The ES report emissions to air and water in kg/day that result in acceptable risk. If site data is available to demonstrate that the actual emissions are lower than these then the use is compliant with the ES. If you use more than one antimony compound at your site, or your uses are covered by more than one ES, then the total emissions to air and water in kg/day should be calculated.

Alternatively, the Section 8.1.2 of the core Safety Data Sheet also reports Predicted No Effect Concentrations (PNEC) that can be compared to environmental monitoring data. If monitoring data from the local environment demonstrates that concentrations are below the PNEC then the use is compliant with the ES. If these data are not available please **proceed to step 2** as it means that you need to check whether you are compliant or not.

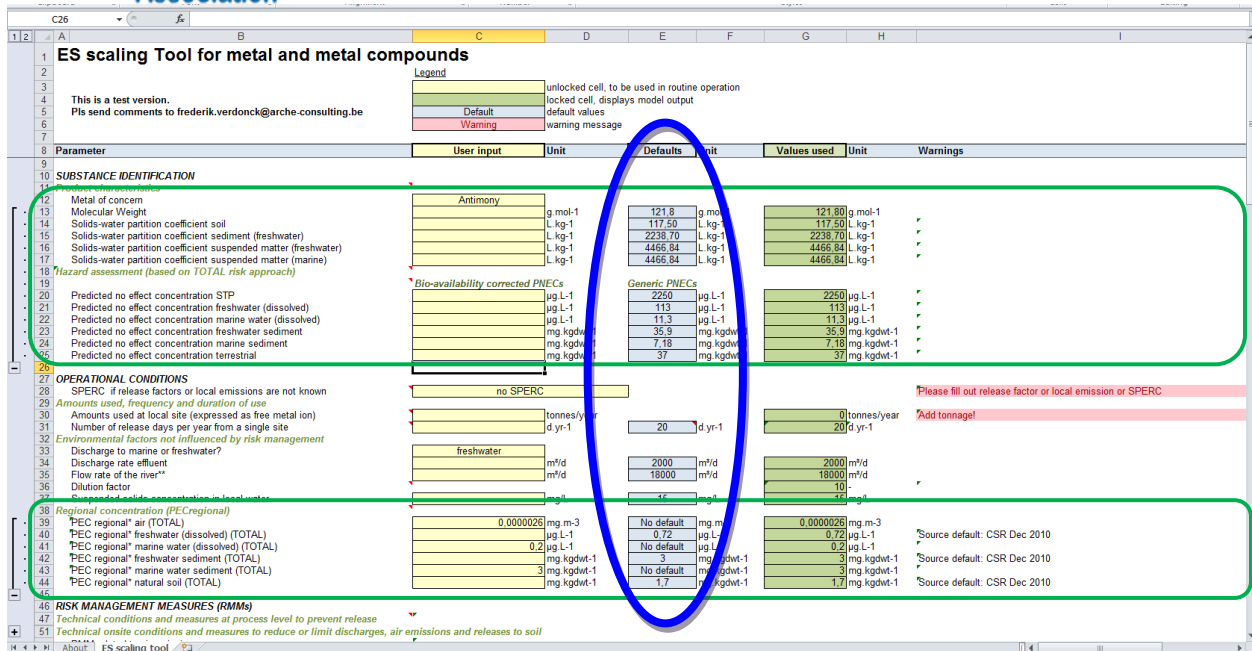
## 2.2 Step 2 → Filling in the data

### Step 2.1 → Checking the “default” values and filling in the missing data

Open the DU tool and go directly to the second sheet, namely the “ES scaling tool” and check:

- a) If in the **row 12** “Metal of concern” Antimony is chosen. When this is not the case please pick “Antimony” from the drop down menu.
- b) If correct default values are inserted in **rows 13-25 and in rows 39, 41 and 43**.

The default values covering for example *the molecular weight of Sb, solids-water partition coefficients, predicted no effects concentrations* normally hidden under the + sign should be the following: please check the green squares → The values contained in the green boxes should always be the same as specified in this below print screen!



Parameter	User input	Unit	Defaults	Unit	Values used	Unit	Warnings
<b>LEGEND</b>							
This is a test version. Please send comments to frederik.verdonck@arche-consulting.be							
<b>Legend</b>							
unlocked cell, to be used in routine operation							
locked cell, displays model output							
Default default values							
Warning warning message							
<b>Substance Identification</b>							
<b>Antimony</b>							
Metal of concern	Antimony						
Molecular Weight		g mol-1	121.8	g mol-1	121.80	g mol-1	
Solids-water partition coefficient soil		L kg-1	117.50	L kg-1	117.50	L kg-1	
Solids-water partition coefficient sediment (freshwater)		L kg-1	2238.70	L kg-1	2238.70	L kg-1	
Solids-water partition coefficient suspended matter (freshwater)		L kg-1	4466.84	L kg-1	4466.84	L kg-1	
Solids-water partition coefficient suspended matter (marine)		L kg-1	4466.84	L kg-1	4466.84	L kg-1	
<b>Hazard assessment (based on TOTAL risk approach)</b>							
<b>Bio-availability corrected PNECs</b>							
Predicted no effect concentration STP		µg L-1	2250	µg L-1	2250	µg L-1	
Predicted no effect concentration freshwater (dissolved)		µg L-1	113	µg L-1	113	µg L-1	
Predicted no effect concentration marine water (dissolved)		µg L-1	11.3	µg L-1	11.3	µg L-1	
Predicted no effect concentration freshwater sediment		mg kgdw-1	35.9	mg kgdw-1	35.9	mg kgdw-1	
Predicted no effect concentration marine sediment		mg kgdw-1	7.18	mg kgdw-1	7.18	mg kgdw-1	
Predicted no effect concentration terrestrial		mg kgdw-1	37	mg kgdw-1	37	mg kgdw-1	
<b>Generic PNECs</b>							
Predicted no effect concentration STP		µg L-1	2250	µg L-1	2250	µg L-1	
Predicted no effect concentration freshwater (dissolved)		µg L-1	113	µg L-1	113	µg L-1	
Predicted no effect concentration marine water (dissolved)		µg L-1	11.3	µg L-1	11.3	µg L-1	
Predicted no effect concentration freshwater sediment		mg kgdw-1	35.9	mg kgdw-1	35.9	mg kgdw-1	
Predicted no effect concentration marine sediment		mg kgdw-1	7.18	mg kgdw-1	7.18	mg kgdw-1	
Predicted no effect concentration terrestrial		mg kgdw-1	37	mg kgdw-1	37	mg kgdw-1	
<b>Operational Conditions</b>							
SPERC if release factors or local emissions are not known	no SPERC						Please fill out release factor or local emission or SPERC
Amounts used, frequency and duration of use							
Amounts used at local site (expressed as free metal ion)		tonnes/year			0	tonnes/year	Add tonnage!
Number of release days per year from a single site		d yr-1	20	d yr-1	20	d yr-1	
<b>Environmental factors not influenced by risk management</b>							
Discharge to marine or freshwater?	freshwater						
Discharge rate effluent		m <sup>3</sup> /d	2000	m <sup>3</sup> /d	2000	m <sup>3</sup> /d	
Flow rate of the river*		m <sup>3</sup> /d	18000	m <sup>3</sup> /d	18000	m <sup>3</sup> /d	
Dilution factor			10		10		
Suspended solids concentration in freshwater		mg l-1	46	mg l-1	46	mg l-1	
<b>Regional concentration (PEC Regional)</b>							
PEC regional air (TOTAL)	0.0000026	mg m-3	No default	mg m-3	0.0000026	mg m-3	
PEC regional freshwater (dissolved) (TOTAL)		µg L-1	0.22	µg L-1	0.22	µg L-1	
PEC regional marine water (dissolved) (TOTAL)	0.2	µg L-1	No default	µg L-1	0.2	µg L-1	*Source default: CSR Dec 2010
PEC regional freshwater sediment (TOTAL)		mg kgdw-1	3	mg kgdw-1	3	mg kgdw-1	*Source default: CSR Dec 2010
PEC regional marine water sediment (TOTAL)		mg kgdw-1	No default	mg kgdw-1	1.7	mg kgdw-1	*Source default: CSR Dec 2010
PEC regional natural soil (TOTAL)		mg kgdw-1	1.7	mg kgdw-1	1.7	mg kgdw-1	*Source default: CSR Dec 2010
<b>RISK MANAGEMENT MEASURES (RMMs)</b>							
Technical conditions and measures at process level to prevent release							
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil							

Figure 2: Default Sb parameters which shall not be changed

NOTE 😊➔ During the REACH process a read-across has been confirmed proving that for environment antimony metal and antimony containing compounds will release antimony ions in the environment (Vangheluwe et al., 2001) therefore the same ecotoxicological chemical safety report data endpoints can be used for each of the i2a substances which have been REACH registered.

But the default values are not already provided in all cases, so you will first need to add some more data before you will be able to run the tool with data for a specific Exposure Scenario you are checking compliance with.

As you will notice some of the rows in the section on “Regional concentrations (PEC Regional)” are not filled in with default Sb values, therefore the following data need to be introduced into the tool:

- ⇒ Row 39 “PEC regional air (TOTAL)” needs to be filled in with the value: **0.0000026 mg.m-3** in the column C.
- ⇒ Row 41 “PEC regional marine water (dissolved) (TOTAL)” needs to be filled in with the value: **0.2 µg.L-1** in the column C.
- ⇒ Row 43 “PEC regional marine water sediment (TOTAL)” needs to be filled in with the value: **3 mg.kgdw-1** in the column C.

**ES scaling Tool for metal and metal compounds**

This is a test version.  
 Pls send comments to frederik.verdonck@arche-consulting.be

**Legend**

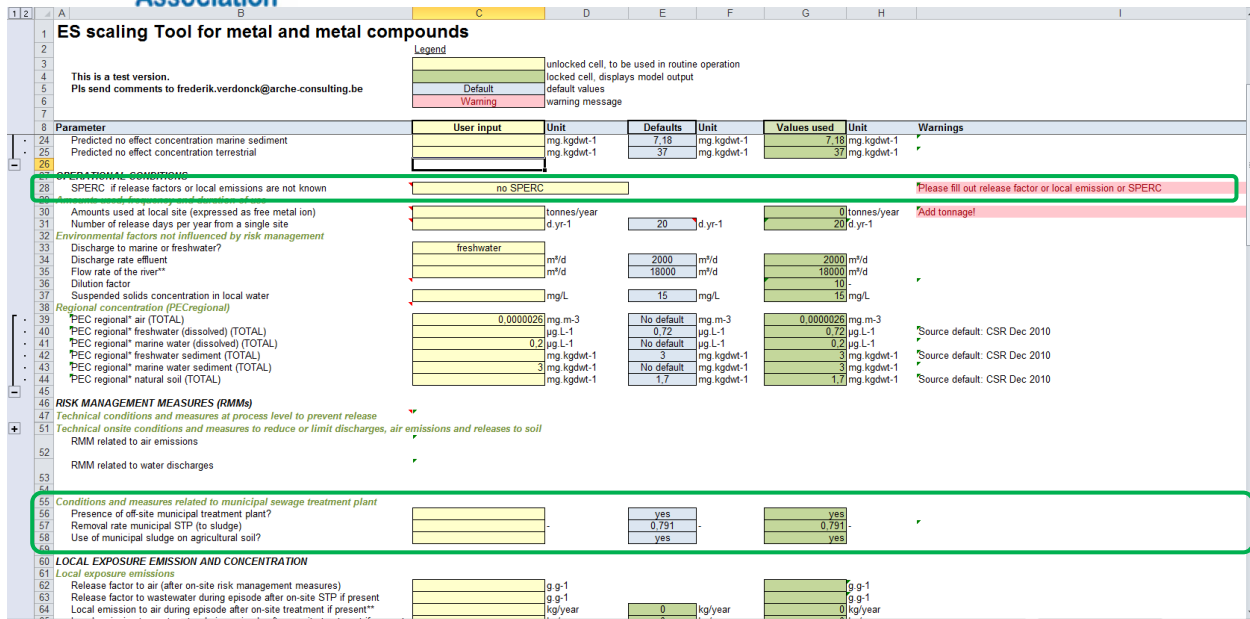
- unlocked cell, to be used in routine operation
- locked cell, displays model output
- Default default values
- Warning warning message

Parameter	User input	Unit	Defaults	Unit	Values used	Unit	Warnings
<b>SUBSTANCE IDENTIFICATION</b>							
<i>Product characteristics</i>							
<i>Metal of concern</i>							
Molecular Weight	Antimony	g mol-1	121.8	g mol-1	121.80	g mol-1	
Solids-water partition coefficient soil		L kg-1	117.50	L kg-1	117.50	L kg-1	
Solids-water partition coefficient sediment (freshwater)		L kg-1	2238.70	L kg-1	2238.70	L kg-1	
Solids-water partition coefficient suspended matter (freshwater)		L kg-1	4466.84	L kg-1	4466.84	L kg-1	
Solids-water partition coefficient suspended matter (marine)		L kg-1	4466.84	L kg-1	4466.84	L kg-1	
<i>Hazard assessment (based on TOTAL risk approach)</i>							
<i>Bio-availability corrected PNECs</i>							
Predicted no effect concentration STP		µg L-1	2250	µg L-1	2250	µg L-1	
Predicted no effect concentration freshwater (dissolved)		µg L-1	113	µg L-1	113	µg L-1	
Predicted no effect concentration marine water (dissolved)		µg L-1	11.3	µg L-1	11.3	µg L-1	
Predicted no effect concentration freshwater sediment		mg kgdw-1	35.9	mg kgdw-1	35.9	mg kgdw-1	
Predicted no effect concentration marine sediment		mg kgdw-1	7.18	mg kgdw-1	7.18	mg kgdw-1	
Predicted no effect concentration terrestrial		mg kgdw-1	37	mg kgdw-1	37	mg kgdw-1	
<i>Generic PNECs</i>							
		µg L-1		µg L-1		µg L-1	
		µg L-1		µg L-1		µg L-1	
		µg L-1		µg L-1		µg L-1	
		mg kgdw-1		mg kgdw-1		mg kgdw-1	
		mg kgdw-1		mg kgdw-1		mg kgdw-1	
		mg kgdw-1		mg kgdw-1		mg kgdw-1	
<b>OPERATIONAL CONDITIONS</b>							
SPERC if release factors or local emissions are not known	no SPERC						Please fill out release factor or local emission or SPERC
<i>Amounts used, frequency and duration of use</i>							
Amounts used at local site (expressed as free metal ion)		tonnes/year			0	tonnes/year	Add tonnage!
Number of release days per year from a single site		d yr-1	20	d yr-1	20	d yr-1	
<i>Environmental factors not influenced by risk management</i>							
Discharge to marine or freshwater?							
Discharge rate effluent		m³/d	2000	m³/d	2000	m³/d	
Flow rate of the river*		m³/d	18000	m³/d	18000	m³/d	
Dilution factor			10		10		
Suspended solids concentration in local water		mg/L	10	mg/L	10	mg/L	
<i>Regional concentration (PEC regional)</i>							
*PEC regional* air (TOTAL)	0.0000026	mg m-3	No default	mg m-3	0.0000026	mg m-3	
*PEC regional* freshwater (dissolved) (TOTAL)	0.12	µg L-1	No default	µg L-1	0.12	µg L-1	*Source default: CSR Dec 2010
*PEC regional* marine water (dissolved) (TOTAL)	0.2	µg L-1	No default	µg L-1	0.2	µg L-1	
*PEC regional* freshwater sediment (TOTAL)		mg kgdw-1	3	mg kgdw-1	3	mg kgdw-1	*Source default: CSR Dec 2010
*PEC regional* marine water sediment (TOTAL)		mg kgdw-1	No default	mg kgdw-1		mg kgdw-1	
*PEC regional* natural soil (TOTAL)		mg kgdw-1	1.7	mg kgdw-1	1.7	mg kgdw-1	*Source default: CSR Dec 2010
<b>RISK MANAGEMENT MEASURES (RMMs)</b>							
<i>Technical conditions and measures at process level to prevent release</i>							
<i>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</i>							

Figure 3: Default Sb parameters which need to be added

Besides the default values, additional two types of information should not be changed unless you have clear indication that these defaults don't apply for your site.

- The row 28 on SPERC should for the Antimony case be **always left blank**, as for Antimony Exposure Scenarios creation no SPERC were used.
- The rows on conditions and measures released to municipal sewage treatment plant should be **left as such, unless** on your site the related conditions of use are different.



Parameter	User input	Unit	Defaults	Unit	Values used	Unit	Warnings
Predicted no effect concentration marine sediment		mg kgdwt-1	7.18	mg kgdwt-1	7.18	mg kgdwt-1	
Predicted no effect concentration terrestrial		mg kgdwt-1	37	mg kgdwt-1	37	mg kgdwt-1	
<b>OPERATIONAL CONDITIONS</b>							
SPERC: if release factors or local emissions are not known	no SPERC						Please fill out release factor or local emission or SPERC
Amounts used at local site (expressed as free metal ion)		tonnes/year			0	tonnes/year	Add tonnage!
Number of release days per year from a single site		d yr-1	20	d yr-1	20	d yr-1	
<b>Environmental factors not influenced by risk management</b>							
Discharge to marine or freshwater?	freshwater						
Discharge rate effluent		m <sup>3</sup> /d	2000	m <sup>3</sup> /d	2000	m <sup>3</sup> /d	
Flow rate of the river**		m <sup>3</sup> /d	18000	m <sup>3</sup> /d	18000	m <sup>3</sup> /d	
Dilution factor			18		18		
Suspended solids concentration in local water		mg/L	15	mg/L	15	mg/L	
<b>Regional concentration (PEC regional)</b>							
PEC regional* air (TOTAL)	0.0000026	mg m-3	No default	mg m-3	0.0000026	mg m-3	
PEC regional* freshwater (dissolved) (TOTAL)		µg L-1	0.72	µg L-1	0.72	µg L-1	
PEC regional* marine water (dissolved) (TOTAL)	0.2	µg L-1	No default	µg L-1	0.2	µg L-1	*Source default: CSR Dec 2010
PEC regional* freshwater sediment (TOTAL)		mg kgdwt-1	3	mg kgdwt-1	3	mg kgdwt-1	*Source default: CSR Dec 2010
PEC regional* marine water sediment (TOTAL)	3	mg kgdwt-1	No default	mg kgdwt-1	3	mg kgdwt-1	
PEC regional* natural soil (TOTAL)		mg kgdwt-1	1.7	mg kgdwt-1	1.7	mg kgdwt-1	*Source default: CSR Dec 2010
<b>RISK MANAGEMENT MEASURES (RMMs)</b>							
Technical conditions and measures at process level to prevent release							
Technical site conditions and measures to reduce or limit discharges, air emissions and releases to soil							
RMM related to air emissions							
RMM related to water discharges							
<b>Conditions and measures related to municipal sewage treatment plant</b>							
Presence of off-site municipal treatment plant?			yes		yes		
Removal rate municipal STP (to sludge)			0.791		0.791		
Use of municipal sludge on agricultural soil?			yes		yes		
<b>LOCAL EXPOSURE EMISSION AND CONCENTRATION</b>							
<b>Local exposure emissions</b>							
Release factor to air (after on-site risk management measures)		g g-1				g g-1	
Release factor to wastewater during episode after on-site STP if present		g g-1				g g-1	
Local emission to air during episode after on-site treatment if present**		kg/year	0		0	kg/year	

Figure 4: Default values which can be changed in certain conditions

NOTE ☺➔ As you can see a lot of parameters are already included into the tool and you don't need to further modify them. The tool is easy to use once you see the difference between the default values and the values which you have to further model. Check the legend on the top and you will see how values are frozen or are changing in column C, E or G.

Now you have reached the point where all default Antimony data, normally contained in the environmental parts of the Chemical Safety Report, were correctly filled in and you can start with filling in the data specific endpoints from the relevant Generic Exposure Scenario.

## Step 2.2 ➔ Filling in the specific Exposure Scenario data

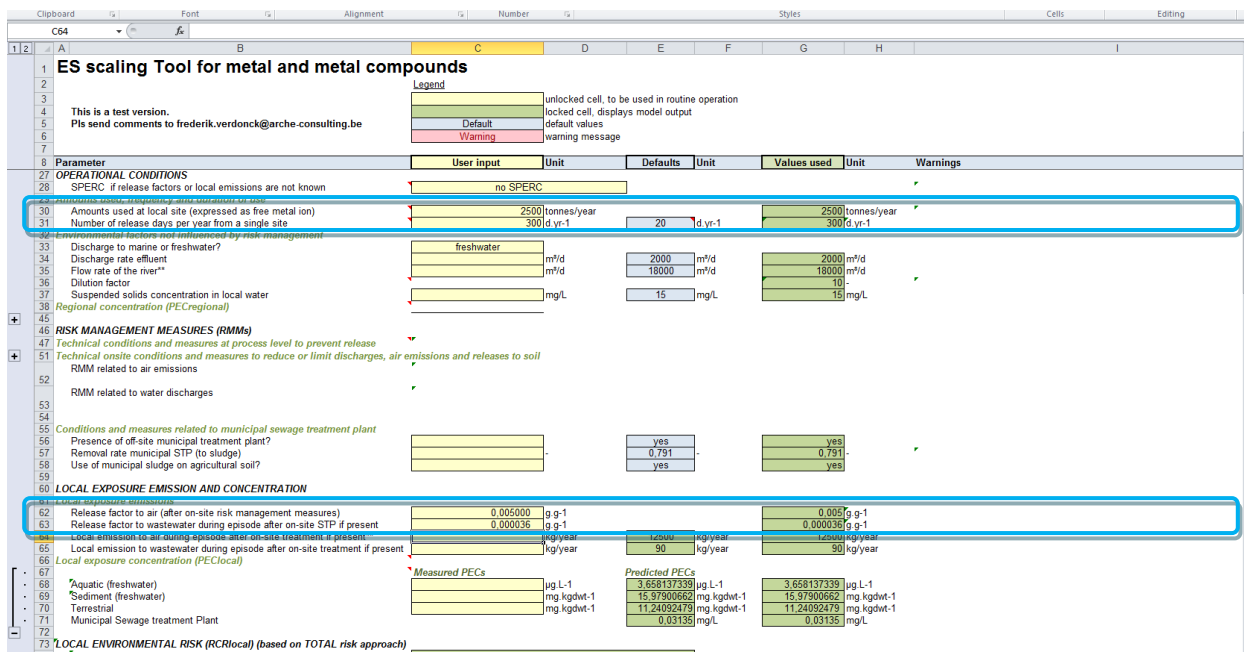
The blue boxes in the below picture represent the values which should be always changed according to the ES you are checking. As our example is based on the ES N.3: "Use of diantimony trioxide in flame retarded plastic and rubber industry" we will take the following numbers into account:

1. Fill in the value that you find under the section 2.2 Control of environmental exposure/ Tonnage used, so in the case of the ES we are checking this is: **2500 tonnes/year** (row 30).
2. Fill in the number of emission days you find under section 2.2 Control of environmental exposure/ Frequency and duration of use. So in the case of the ES we are checking this is: **300 days/year** (row 31).
3. Extract the value you find in section 2.2 Control of environmental exposure/ Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil, so in the case of ES we are checking this is: 0.5% and 0.0036%. The DU tool requires that you enter

these as fractions, not percentages. Therefore, divide these numbers by 100 before entering them into the DU tool. In this example you therefore **need to enter 0.005** (row 62) and **0.000036** (row 63).

This is shown on the picture below where the values you have to enter are put inside of the blue box.

**NOTE ☺ → Depending for which Exposure Scenario you are checking for compliance you always need to change the values in the blue boxes with the values provided in the relevant ES!**



Parameter	User input	Unit	Defaults	Unit	Values used	Unit	Warnings
<b>OPERATIONAL CONDITIONS</b>							
SPERC if release factors or local emissions are not known	no SPERC						
Amounts used at local site (expressed as free metal ion)	2500	tonnes/year			2500	tonnes/year	
Number of release days per year from a single site	300	d.yr-1	20	d.yr-1	300	d.yr-1	
<b>Environmental factors not influenced by risk management</b>							
Discharge to marine or freshwater?	freshwater						
Discharge rate effluent		m <sup>3</sup> /d	2000	m <sup>3</sup> /d	2000	m <sup>3</sup> /d	
Flow rate of the river**		m <sup>3</sup> /d	18000	m <sup>3</sup> /d	18000	m <sup>3</sup> /d	
Dilution factor			10		10		
Suspended solids concentration in local water		mg/L	15	mg/L	15	mg/L	
Regional concentration (PEC <sub>regional</sub> )							
<b>RISK MANAGEMENT MEASURES (RMMs)</b>							
Technical onsite conditions and measures at process level to prevent releases							
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil							
RMM related to air emissions							
RMM related to water discharges							
Conditions and measures related to municipal sewage treatment plant							
Presence of off-site municipal treatment plant?			yes		yes		
Removal rate municipal STP (to sludge)			0.791		0.791		
Use of municipal sludge on agricultural soil?			yes		yes		
<b>LOCAL EXPOSURE EMISSION AND CONCENTRATION</b>							
Release factor to air (after on-site risk management measures)	0.005000	g.g-1			0.005	g.g-1	
Release factor to wastewater during episode after on-site STP if present	0.000036	g.g-1			0.000036	g.g-1	
Local emission to air during episode after on-site treatment if present		kg/year	12500	kg/year	12500	kg/year	
Local emission to wastewater during episode after on-site treatment if present		kg/year	90	kg/year	90	kg/year	
Local exposure concentration (PEC <sub>local</sub> )							
<b>Measured PECs</b>							
Aquatic (freshwater)		µg L-1			3.658137339	µg L-1	
Sediment (freshwater)		mg kgdwt-1			15.97900862	mg kgdwt-1	
Terrestrial		mg kgdwt-1			11.24092479	mg kgdwt-1	
Municipal Sewage treatment Plant		mg/L			0.03135	mg/L	
<b>Predicted PECs</b>							
Aquatic (freshwater)		µg L-1			3.658137339	µg L-1	
Sediment (freshwater)		mg kgdwt-1			15.97900862	mg kgdwt-1	
Terrestrial		mg kgdwt-1			11.24092479	mg kgdwt-1	
Municipal Sewage treatment Plant		mg/L			0.03135	mg/L	
<b>LOCAL ENVIRONMENTAL RISK (RCR<sub>local</sub>) (based on TOTAL risk approach)</b>							

**Figure 5: Parameters which need to be changed per ES you are checking**

At this step you reached the point where you have scaled the DU-tool with the specific:

- Generic hazard assessment Antimony values and other generic values (for example molecular weight etc.).
- Generic emissions data from Generic Exposure Scenario provided via the eSDS.

### 2.3 Step 3 → Further refinements with your site specific data

The following parameters from the Exposure Scenario section 2.2 can be further scaled depending on the data from the site you are checking compliance with:

- TONNAGE = Amounts used at local site (expressed as free metal ion) (row 30) →** Enter the tonnage of the antimony substance that you use in this ES into the DU tool. Note, as the assessment is based on the antimony ion you will need to adjust the tonnage based on the

molecular weight such that the value you enter is in tonnes Sb/year, not tonnes Sb compound/year. If you use more than one antimony compound at your site then the total tonnage of Sb should be used.

**NOTE ☺ →** If checking compliance with ATO or SHHA ES, don't forget to first recalculate ATO or SHHA tonnage to the Sb tonnage based on the molecular weight.

- 2. NUMBER OF RELEASE DAYS PER YEAR FROM A SINGLE SITE (row 31) →** If the number of emission days on your site is lower or higher you can also input the correct representative value for your site into the relevant box.

**NOTE ☺ →** You can't have more than 365 operating days.

- 3. LOCAL EMISSION TO AIR DURING EPISODE AFTER ON-SITE TREATMENT IF PRESENT (row 64) →** For the Sb, SHHA and ATO ES we have used default environmental release categories (ERC) to air and assumed that onsite RMM are present with an efficiency that is reported in the ES. If RMM are not in place, or if the RMM that are present do not have this efficiency, then you must enter a value here.

If you have data on local emissions to air you can include the relevant values for your site. For example for the ES N. 3 the risk characterization ratio (RCR) will be equal to or lower than the one provided in section 3 of the ES if you emit less than 41.7 kg Sb/day to air.

Alternatively, if you do not have any data for your site, calculate the value by identifying the relevant ERC from Section 2 of the ES, selecting the largest release fraction from below and using the following formula.

$$\text{Yearly tonnage (Kg Sb)} * \text{ERC} * ((100 - \text{efficiency of onsite RMM}) / 100)$$

Environmental release category (ERC)	Release fraction to air
1	0.05
2	0.025
3	0.3
5	0.5
6a	0.05

**Figure 6: Associated release fraction to air per relevant ERC**

Parameter	User input	Unit	Defaults	Unit	Values used	Unit	Warnings
<b>OPERATIONAL CONDITIONS</b>							
27 SPERC: If release factors or local emissions are not known	no SPERC						
29 Amounts used, frequency and duration of use							
30 Amounts used at local site (expressed as free metal ion)	2500	tonnes/year			2500	tonnes/year	
31 Number of release days per year from a single site	300	d yr-1	20	d yr-1	300	d yr-1	
<b>Environmental factors not influenced by risk management</b>							
32 Discharge to marine or freshwater?	freshwater						
34 Discharge rate effluent		m <sup>3</sup> /d	2000	m <sup>3</sup> /d	2000	m <sup>3</sup> /d	
35 Flow rate of the river**		m <sup>3</sup> /d	18000	m <sup>3</sup> /d	18000	m <sup>3</sup> /d	
36 Dilution factor					10		
37 Suspended solids concentration in local water		mg/L	15	mg/L	15	mg/L	
<b>RISK MANAGEMENT MEASURES (RMMs)</b>							
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>							
<b>RMM related to air emissions</b>							
<b>RMM related to water discharges</b>							
<b>Conditions and measures related to municipal sewage treatment plant</b>							
56 Presence of off-site municipal treatment plant?			yes		yes		
57 Removal rate municipal STP (to sludge)			0.791		0.791		
58 Use of municipal sludge on agricultural soil?			yes		yes		
<b>LOCAL EXPOSURE EMISSION AND CONCENTRATION</b>							
<b>Local exposure emissions</b>							
62 Release factor to air (after on-site risk management measures)	0.005000	g g-1			0.005	g g-1	
<b>Local exposure emissions to water during episode after on-site treatment if present</b>							
64 Local emission to air during episode after on-site treatment if present**		kg/year	12500	kg/year	12500	kg/year	
65 Local emission to wastewater during episode after on-site treatment if present		kg/year	90	kg/year	90	kg/year	
<b>Measured PECs</b>							
67 Aquatic (freshwater)		µg L-1			3.658137339	µg L-1	
68 Sediment (freshwater)		mg kgdwt-1			15.97900662	mg kgdwt-1	
69 Terrestrial		mg kgdwt-1			11.24092479	mg kgdwt-1	
70 Municipal Sewage treatment Plant		mg/L			0.03135	mg/L	

Figure 7: Parameters which you can scale depending on your available data

4. **LOCAL EMISSIONS TO WASTEWATER DURING EPISODE AFTER ON-SITE TREATMENT IF PRESENT (row 65)** →

For the majority of Sb, ATO and SHHA ES the maximum release to water that results in an acceptable risk has been calculated. This is indicated by the phrase **“maximum release to give RCR<1 based on tonnage”** in ES Section 2.2, “Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil”. As this value is not based on ERC or measured data for a particular ES, but is instead a calculated value, you must enter a value here if this phrase is used in the ES. If this phrase is not used in the ES then a default ERC has been used in the assessment and you do not have to enter a value in this cell, but it may be necessary to in order to refine your risk estimates.

If you have data on local emissions to water you can include the relevant values for your site. For example from the ES N. 3 the risk characterization ratio (RCR) will be equal to or lower than the one provided in section 3 if you emit less than 0.3kg Sb/day to off-site waste water treatment (WWT) works.

Alternatively, if you do not have any data for your site calculate the value by selecting the ERC below and using the following formula.

$$\text{Yearly tonnage (Kg Sb)} * \text{ERC}$$

Environmental release category (ERC)	Release fraction to water
1	0.06
2	0.02
3	0.002
5	0.5

6a	0.02
----	------

Figure 8: Associated release fraction to water per relevant ERC

5. **DISCHARGE TO MARINE OR FRESHWATER (row 33)**→ If your plant is situated next to the sea and you are emitting directly into the seawater than you have to change the information in order that you scale the data with the correct input parameters.
6. **DISCHARGE RATE EFFLUENT (row 34)**→ If you have data on site specific effluent flow rates than these values can also be scaled in the tool.
7. **FLOW RATE OF THE RIVER (row 35)**→ If you have data on site specific river flow rates than these values can also be scaled in the tool.
8. **SUSPENDED SOLIDS CONCENTRATION IN LOCAL WATER (row 37)**→ If you have data on concentration of suspended solids in the water you are emitting into than you can also provide this data into the tool.
9. **PRESENCE OF OFF SITE MUNICIPAL TREATMENT PLANT (row 56)**→ The default assumption is that waste water is discharged to a municipal sewage treatment plant. If this is not the case then set this option to no.
10. **USE OF MUNICIPAL SLUDGE ON AGRICULTURAL SOIL (row 58)**→ The default assumption is that waste sludge is spread to agricultural land. If this is not the case then set this option to no.

By entering your site specific data into the tool it will show you if you are compliant with the ES or not. On the screen shot below we have included the site specific tonnage, the “Local emissions to air” and “Local emissions to wastewater.” but the other parameters we left as default ones from the first sheet input. As you can see, based on these data no risk was identified which means that you are still in line with the Exposure Scenario limits.

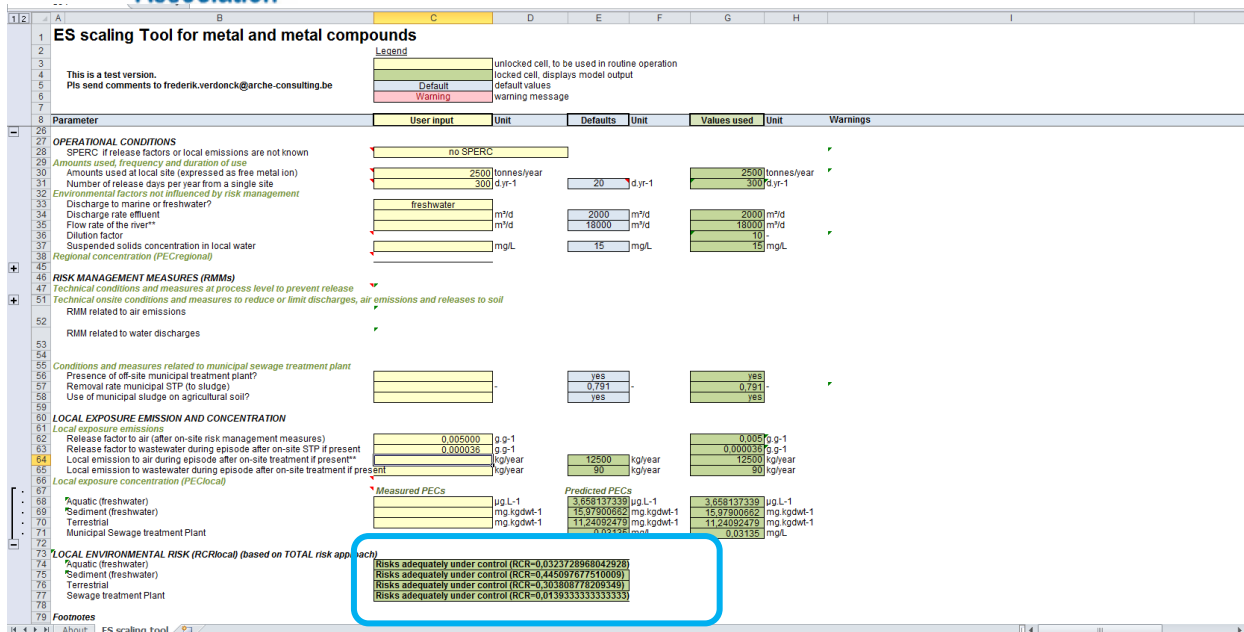


Figure 9: Result showing no risk for any compartment

In case that we increase the amount of released Sb into wastewater from 90 to 1000 kg/year we can see that the tool is showing us an unacceptable risk under the freshwater sediment compartment and in the terrestrial compartment.

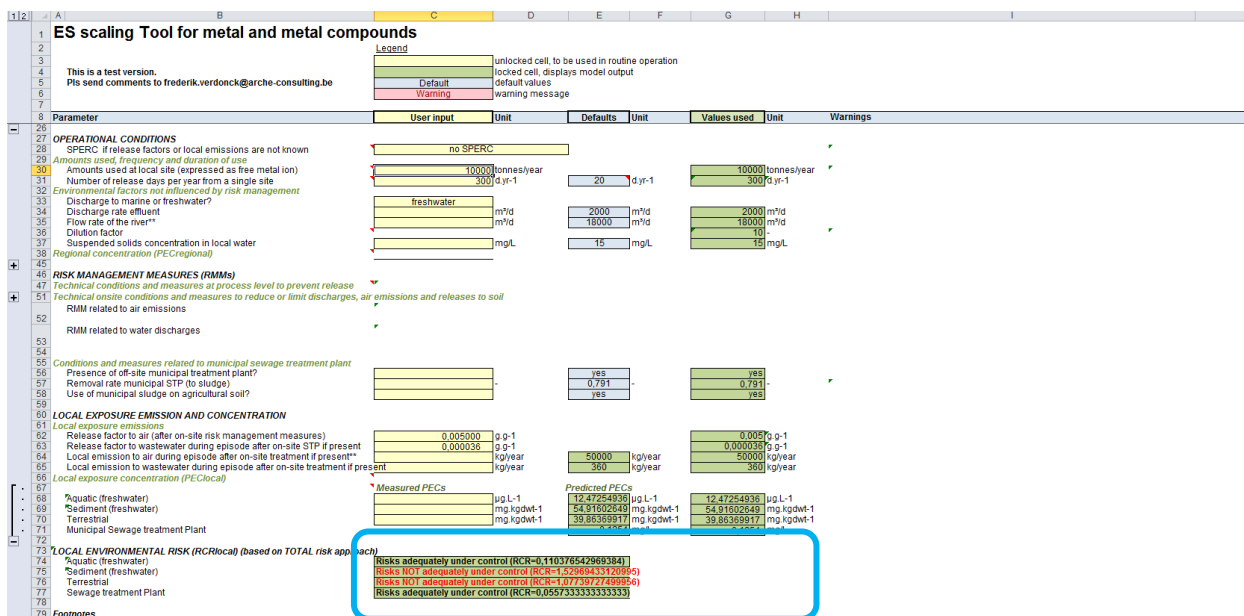


Figure 10: Result showing the risk for freshwater sediment compartment and soil

This means that if you want to use the substance under the same conditions as you specified (tonnage and number of emission days) you need to provide further monitoring data to demonstrate that the actual measured concentrations in freshwater sediments are below the relevant PNEC.

If you have data on local emissions to water or on local emissions to air you can include the relevant values for your site. We already provided the example for the ES N.3 above, namely the threshold values in which the risk characterization ratio (RCR) will be equal to or lower than the one provided in section 3 of each relevant ES if you emit less than xx kg Sb/day to off-site waste water treatment works or xx kg Sb/day to air. The overview of all threshold values for air and WWT is presented in the overview table below.

Exposure Scenario Number/Metal	ATO		Sb metal		SHHA	
	Air (kg Sb/day)	WWT (kg Sb/day)	Air (kg Sb/day)	WWT (kg Sb/day)	Air (kg Sb/day)	WWT (kg Sb/day)
ES N.1	23.4	0.3	2.74	0.3	17.1	0.3
ES N.2	4.17	0.3	23.4	0.3	13.3	0.3
ES N.3	41.7	0.3	33.3	0.3	/	/
ES N.4	4.67	0.3	0.167	0.3	/	/
ES N.5	1.25	0.3	0.0822	0.3	/	/
ES N.6	5	0.3	/	/	/	/
ES N.7	0.25	0.3	/	/	/	/

Figure 11: Overview of threshold values for air and water in which RCR will be equal to or lower than the one provided in section 3 of each ES

## 2.4 Step 4 → Further refinements with your measured data if needed

If the model is showing a risk for any of the compartments under the parameters you have specified in sheet 2 “ES scaling tool” you have to provide further input in the **rows 68-71**, which can be extended when pushing on the **+ sign** on the left side of the screen.

**NOTE:** A bio-availability correction model has not been developed for Antimony as the REACH registration dossiers for Sb metal, ATO and SHHA together with previous regulatory assessments have not identified an environmental concern that would require such a tool to be developed.

You may have some measured data in order to comply with other EHS regulations, for example BAT (Best Available Technique (BAT) Reference Document on Non-Ferrous Metal Processes), or ICCP (Integrated Pollution Prevention and Control). If that is the case, you are requested to include the relevant measured data as specified in the next print screen.

**ES scaling Tool for metal and metal compounds**

Legend  
 This is a test version.  
 Pls send comments to frederik.verdonck@arche-consulting.be

Parameter	User input	Unit	Defaults	Unit	Values used	Unit	Warnings
<b>OPERATIONAL CONDITIONS</b>							
27	SPERC if release factors or local emissions are not known	no SPERC					
29	Amounts used, frequency and duration of use						
30	Amounts used at local site (expressed as free metal ion)	2500		tonnes/year	2500	tonnes/year	
31	Number of release days per year from a single site	300		d.yr-1	300	d.yr-1	
32	Environmental factors not influenced by risk management						
33	Discharge to marine or freshwater?	freshwater					
34	Discharge rate effluent		2000	m <sup>3</sup> /d	2000	m <sup>3</sup> /d	
35	Flow rate of the river**		18000	m <sup>3</sup> /d	18000	m <sup>3</sup> /d	
36	Dilution factor				10		
37	Suspended solids concentration in local water		15	mg/L	15	mg/L	
38	Regional concentration (PEC <sub>regional</sub> )						
<b>RISK MANAGEMENT MEASURES (RMMs)</b>							
47	Technical conditions and measures at process level to prevent release						
51	Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil						
52	RMM related to air emissions						
52	RMM related to water discharges						
<b>Conditions and measures related to municipal sewage treatment plant</b>							
55	Presence of off-site municipal treatment plant?		yes		yes		
57	Removal rate municipal STP (to sludge)		0.791		0.791		
58	Use of municipal sludge on agricultural soil?		yes		yes		
<b>LOCAL EXPOSURE EMISSION AND CONCENTRATION</b>							
61	Local exposure emissions						
62	Release factor to air (after on-site risk management measures)	0.005000		g g-1	0.0050	g g-1	
63	Release factor to wastewater during episode after on-site STP if present	0.000036		g g-1	0.000036	g g-1	
64	Local emission to air during episode after on-site treatment if present**		12500	kg/year	12500	kg/year	
65	Local emission to wastewater during episode after on-site treatment if present		90	kg/year	90	kg/year	
<b>Local exposure concentration (PEC<sub>local</sub>)</b>							
8	Aquatic (freshwater)						
8	Aquatic (freshwater)	Measured PECs			Predicted PECs		
8	Sediment (freshwater)		15.97300822	mg kgdw-1	15.97300822	mg kgdw-1	
8	Terrestrial		1124092476	mg kgdw-1	1124092476	mg kgdw-1	
8	Municipal Sewage treatment Plant		0.03135	mg/L	0.03135	mg/L	
73	<b>LOCAL ENVIRONMENTAL RISK (RCR<sub>local</sub>) (based on TOTAL risk approach)</b>						
74	Aquatic (freshwater)	Risks adequately under control (RCR=0.0323728968042928)					
75	Aquatic (freshwater)	Risks adequately under control (RCR=0.4430976775100003)					
76	Terrestrial	Risks adequately under control (RCR=0.303808778209348)					
77	Sewage treatment Plant	Risks adequately under control (RCR=0.0139333333333333)					
78							
79	Footnote						

Figure 12: Sheet where Sb monitoring data can be included

If, after you have included the monitoring data, the tool does not show you any unacceptable risk, this indicates that the OC and RMM implemented on your site are sufficient for the use to be covered by the ES with regards to the environmental risks.

On the other hand if you don't have monitoring data or the monitoring data is not removing the risks shown by the tool, then you have to scale down other parameters where possible; for example the tonnage in order that with existing RMM and OC you are still in compliance with the environmental ES or collect additional monitoring data to demonstrate that risks are acceptable.

NOTE 😊 → We recommend that you document the scaling exercise and keep it archived in case of Inspection by your local authorities in order to be able to prove your scaling methodology as this refining technique is enabling you to modify the parameters of the Exposure Scenario originally provided by your supplier.

### 3. Conducting your scaling assessment

If you only use a single antimony compound on your site and the use falls under a single ES then select the appropriate ES and use your site specific data in the scaling tool to determine whether you are compliant, following the instructions given in section 2.

If you use more than one antimony compound on your site, or your uses are covered by more than one ES, then REACH requires that a combined assessment is conducted.

To conduct this combined assessment:

- Enter the default operational conditions from ES N.1 from either Sb, ATO or SHHA onto the first sheet "ES scaling tool".

- Sum the total tonnage of antimony compounds used on your site, adjusting for molecular weight, such that the total tonnage is expressed as tonnes Sb/year. Enter this onto “ES scaling tool” row 30.
- Follow step 3 to complete any other additional fields on “ES scaling tool” to make them site specific.
- Depending on the outcome, you may also need to follow step 4.

NOTE! ☺ Risk from combined uses at a site need to be checked for compliance.

## 4. Conclusions

### 4.1 *Place where you can download the DU scaling tool:*

The tool in its original format can be downloaded for free on the following Internet site: ARCHE Consulting: <http://www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool>.

Already refined DU scaling tool with basic Antimony parameters included can be downloaded on i2a members only page.

### 4.2 *References and links to additional literature:*

The following fact sheets provided by ECHA which summarize the various relevant exposure related topics in all 22 EU languages are recommended reading. Note that only the English versions of documents are official and be careful if you note some “translation” mistakes. We recommend the following links:

- a) Short Guidance on the Use descriptor System:

[http://guidance.echa.europa.eu/docs/fact\\_sheets/use\\_descriptor\\_system\\_en.pdf](http://guidance.echa.europa.eu/docs/fact_sheets/use_descriptor_system_en.pdf)

- b) Short Guidance on the Substance Identification and Naming of Substances :

[http://guidance.echa.europa.eu/docs/fact\\_sheets/substance\\_en.pdf](http://guidance.echa.europa.eu/docs/fact_sheets/substance_en.pdf)

- c) Short Guidance for the Downstream Users:

[http://guidance.echa.europa.eu/docs/fact\\_sheets/downstream\\_en.pdf](http://guidance.echa.europa.eu/docs/fact_sheets/downstream_en.pdf)

- d) Short Guidance on the Exposure Scenario Building:

[http://guidance.echa.europa.eu/docs/fact\\_sheets/inforeq\\_d\\_en.pdf](http://guidance.echa.europa.eu/docs/fact_sheets/inforeq_d_en.pdf)



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