

# EXPOSURE SCENARIOS

## INTRODUCTION

To be used as appropriate as an appendix to safety data sheets for fertilizer substances (products) requiring exposure scenarios specifically for final use as a fertilizer (important – see notes below)

- 1) PROFESSIONAL USE: FARMER
- 2) PROFESSIONAL USE: Preparation of formulations of fertilizers, small blenders
- 3) PROFESSIONAL USE: DISTRIBUTOR
- 4) INDUSTRIAL USE: BLENDER

## DEFINITIONS USED

### Key Descriptors

SU3	Industrial uses e.g. blending operations at factory level,
SU22	Professional uses e.g. by farmers, green houses, co-operatives, distributors

### Supplementary Descriptors

SU10	Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15	Use as laboratory reagent
PROC19	Hand-mixing with intimate contact and only PPE available
ERC2	Formulation of preparations

ERC8b	Wide dispersive indoor use of reactive substances in open systems
ERC8e	Wide dispersive outdoor use of reactive substances in open systems

### **NOTICE TO THE READER**

The generic exposure scenarios are prepared and provided in good faith as guidance only.

It is highly recommended that before using these exposure scenarios the guidance and information documents given as “Key references” should be consulted. It is the obligation of the individual company to comply with the REACH and CLP regulations.

To the best of our knowledge, the information provided is accurate as at the date of its issue. The information it contains is being given for safety guidance purposes only. Final determination of the suitability and use of this material is the sole responsibility of the user. No liability on behalf of Fertilizer Europe is assumed

### **NOTES**

1. Exposure scenarios describe how a substance is manufactured or used and how to control exposures of humans and the environment. It includes both the operational conditions and risk management measures implemented by the manufacturer, the importer or the downstream user. These later are the main recipients of exposure scenario and must check the compliance of their requirements with the described conditions of use.
2. The generic exposure scenarios are based on the “Fertilizers Europe” documents:
  - a. Use and Handling fertilizers at a farm / Handling at a storage plant, Fertilizers Europe (EFMA) TF Exposure scenario / 21.06.2010
  - b. Substance Fertilizer uses proposal rev8 210610, Fertilizers Europe (EFMA) pour FARM.xls
3. The format is based on the current CEFIC and ECHA guidance and recommendations concerning the creation of Exposure scenarios.
4. The exposure scenarios are primarily intended for employees and professional workers receiving and handling fertilizer substances (products) that are classified as health hazardous by the EU CLP Chemicals regulation or contain ingredients that are CLP classified as health hazardous. The exposure scenarios do not include an environmental assessment. This has not been performed and as such the generic exposure scenarios require to be supplemented with an environmental contributing scenario if the fertilizer is classified as “dangerous for the environment”.
  - a. For those fertilizer substances classified with one or more health hazards (e.g. eye irritant, skin irritant), the generic exposure scenarios can be used as written or as a basis for the creation of a specific exposure scenario for a

particular fertilizer product. If necessary more specific Risk Management Measures can be included as appropriate.

- b. For those fertilizers classified with an environmental hazard (e.g. harmful/dangerous to the aquatic environment), additional information must be provided for the environmental contributing scenario to show conditions of safe use. This information should be available from the ingredient in the product causing the environmental classification. For example, trace nutrients arising from the addition of copper or zinc salts may cause a fertilizer to be given an environmental classification as “hazardous to the aquatic environment”, either an acute or chronic aquatic hazard.
  - c. The generic exposure scenarios can also be used for Fertilizer mixtures (previously preparations). Even though there is no requirement arising from Articles 14 or 37 of REACH for a Chemical Safety Report (CSR) (and therefore a corresponding exposure scenario for a mixture), these may be generated according to Article 31(2) of REACH (essentially solely for the purpose of the SDS).
  - d. The exposure scenarios primarily cover the use of fertilizers and do not cover the use of additional ingredients in blending operations such as pesticides. In such cases a separate safety assessment should be performed to assess if the exposure scenarios described here are applicable or not.
5. It is envisaged that the generic exposure scenarios may be used at least in the following ways:
- a. Individually, as an appendix to a safety data sheet for a EU CLP classified fertilizer substance (product).
  - b. Attached to a safety data sheet for a fertilizer mixture for which the current RMMs or classification based has changed, based on new hazard information, causing the mixture to be classified with a health hazard. (Note, alternatively the individual ES for the risk determining ingredients can be attached to the mixture SDS if these are available).
  - c. The information can be combined into one or more exposure scenario created by the manufacture and/or DU of the fertilizer.
  - d. Incorporated into the safety data sheet itself (in accordance with the REACH Regulation, [EC] no 1907 2006).

## 1. PROFESSIONAL USE: FARMER

Original Reference	Description	Use Descriptors
EFMA Fe1.1	Fe 1.1 a) Surface spreading or incorporation of solid fertilizers at open field. Fertilization of amenity (parks, public lawns, sport fields, golf courses) Fe 1.1 b) Forest fertilization	SU22, PROC8a, PROC9
EFMA Fe2.5	Fe 2.5 a) Loading and unloading of solid bulk fertilizer Fe 2.5 b) Loading and unloading of solid fertilizer in Big bags	SU22; PROC 8b; PROC8a; SU22, PROC8b, PROC9,
EFMA Fe2.7	Cleaning and maintenance of equipment (lower scale) Management of empty big bags and residual material	SU22, PROC19, ERC8b or ERC8e
EFMA Fe3.5	Cleaning and maintenance of equipment (larger scale)	SU22, PROC19, ERC8b or ERC8e

1 Exposure scenario PROFESSIONAL USE: FARMER (Professional use as fertilizers)	
Use Scenarios	Surface spreading or incorporation of solid fertilizers at open field. Fertilization of amenity (parks, public lawns, sport fields, golf courses) Forest fertilization Loading and unloading of solid bulk fertilizer Loading and unloading of solid fertilizer in Big bags Cleaning and maintenance of equipment (lower scale) Management of empty big bags and residual material Cleaning and maintenance of equipment (larger scale)
Use descriptors related to the life cycle stage	SU22 PC12  PROC 8a/8b/9/19 ERC 8b/8e
Name of contributing environmental scenario (1) and corresponding ERC	1. Wide dispersive indoor use of reactive substances in open systems (ERC8b) 2. Wide dispersive outdoor use of reactive substances in open systems (ERC8e)
List of names of contributing worker scenarios (2) and corresponding PROC	1. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 2. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 3. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 4. Hand-mixing with intimate contact and only PPE available (PROC19)

<b>2.1 Contributing scenario (1) controlling environmental exposure</b>	
Wide dispersive indoor use of reactive substances in open systems (ERC8b) and wide dispersive outdoor use of reactive substances in open systems (ERC8e). An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
<b>2.2 Contributing scenario (2) controlling worker exposure for professional use as fertilizers</b>	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. PROC 8a/8b/9/19	
<b>Product characteristic</b>	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid: level of dustiness), package design affecting exposure	Solid, low dustiness
<b>Amounts used</b>	
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's exposure	Not applicable
<b>Frequency and duration of use/exposure</b>	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure	Covers daily exposures up to 8 hours (unless stated differently). Covers frequency up to: daily, weekly, monthly, yearly use.
<b>Human factors not influenced by risk management</b>	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
<b>Other given operational conditions affecting workers exposure</b>	
Other given operational conditions: e.g. technology or process techniques determining the initial release of substance from process into workers environment; room volume, whether the work is carried out outdoors/indoors, process conditions related to temperature and pressure.	Indoors or outdoors
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Process design aiming to prevent releases and hence exposure of workers; this in particular includes conditions ensuring rigorous containment; performance of containment to be specified (e.g. by quantification of residual losses or exposure)	Not applicable
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	Containment as appropriate. Good standard of general/natural ventilation.
<b>Organizational measures to prevent /limit releases, dispersion and exposure</b>	
Specific organizational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision).	Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. Training staff on good practice
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective	See section 8 of the SDS for personal protection measures specifically related to the fertilizer in use.

equipment can be used before replacement (if relevant)	
<b>3 Exposure information and reference to its source</b>	
<b>Information for contributing scenario 1</b>	
An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
<b>Information for contributing scenario 2</b>	
A qualitative approach was used to conclude safe use for workers. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.	
<b>4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>	
No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.	
<b>5 Additional good practice advice beyond the REACH CSA</b>	
Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets. Such as: Minimize number of staff exposed. Regular cleaning of equipment and work area. Good standard of personal hygiene.	

## 2. PROFESSIONAL USE: Preparation of formulations of fertilizers, small blenders

Original Reference	Description	Use Descriptors
EFMA Fe2.1	Blending of fertilizer and other compounds such as compost, substrates and pesticides	SU22, PROC5, PROC15, ERC2
EFMA Fe 2.2	Packaging of fertilizer (Lower scale)	SU22, PROC5, ERC2
EFMA Fe2.3	Dilution or suspension of soluble liquid or solid fertilizer or suspension fertilizer	SU22, PROC5, ERC2 PROC3, ERC2
EFMA Fe2.5	Fe 2.5 a) Loading and unloading of solid bulk fertilizer Fe 2.5 b) Loading and unloading of solid fertilizer in Big bags	SU22; PROC 8b; PROC8a; ERC2 SU22, PROC8b, PROC9, ERC2
EFMA Fe2.7	Cleaning and maintenance of equipment (lower scale)	SU22, PROC19, ERC8b or ERC8e

2 Exposure scenario PROFESSIONAL USE: Preparation of formulations of fertilizers, small blenders	
Use Scenarios	Blending of fertilizer and other compounds such as compost, substrates and pesticides Packaging of fertilizer (Lower scale) Dilution or suspension of soluble liquid or solid fertilizer or suspension fertilizer Loading and unloading of solid bulk fertilizer Loading and unloading of solid fertilizer in Big bags Cleaning and maintenance of equipment (lower scale)
Use descriptors related to the life cycle stage	SU22 PC12 PROC5/8a/8b/9/15/19 ERC2/8b/8e
Name of contributing environmental scenario (1) and corresponding ERC	Formulation of preparations (ERC2/8b/8e)
List of names of contributing worker scenarios (2) and corresponding PROC	<ol style="list-style-type: none"> <li>Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)</li> <li>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)</li> <li>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)</li> <li>Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)</li> <li>Use as laboratory reagent (PROC15)</li> </ol>
<b>1.1 Contributing scenario (1) controlling environmental exposure</b>	

Formulation of preparations (ERC2/8b/8e) for fertilizer use. An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
<b>2.2 Contributing scenario (2) controlling worker exposure for industrial use for formulation of preparations.</b>	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. PROC5/8a/8b/9/15/19	
<b>Product characteristic</b>	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid: level of dustiness), package design affecting exposure	Solid, low dustiness, liquid, suspension.
<b>Amounts used</b>	
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's exposure	Not applicable
<b>Frequency and duration of use/exposure</b>	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure	Covers daily exposures up to 8 hours (unless stated differently). Covers frequency up to: daily, weekly, monthly, yearly use.
<b>Human factors not influenced by risk management</b>	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable.
<b>Other given operational conditions affecting workers exposure</b>	
Other given operational conditions: e.g. technology or process techniques determining the initial release of substance from process into workers environment; room volume, whether the work is carried out outdoors/indoors, process conditions related to temperature and pressure.	Indoors & outdoors.
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Process design aiming to prevent releases and hence exposure of workers; this in particular includes conditions ensuring rigorous containment; performance of containment to be specified (e.g. by quantification of residual losses or exposure)	Not applicable
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	Containment as appropriate Good standard of general ventilation Good standard of house-keeping
<b>Organizational measures to prevent /limit releases, dispersion and exposure</b>	
Specific organizational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision). Those measures need to be reported in particular for demonstrating strictly controlled conditions (to justify exposure based waiving).	Management/supervision to check that RMMs are being used correctly. Training staff on good practice.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective	<b>For solids</b> , if dust concentration is high and/or ventilation is inadequate, use suitable dust mask or respirator with an appropriate filter (EN 143, 149, filters P2, P3). Consider use of local ventilation measures (LEV) <b>For liquids</b> , use approved eye safety protection e.g. eye



equipment can be used before replacement (if relevant)	protection, gloves and body protection. See section 8 of the SDS for personal protection measures specifically related to the substances/mixtures in use
<b>3 Exposure information and reference to its source</b>	
<b>Information for contributing scenario 1</b>	
An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
<b>Information for contributing scenario 2</b>	
A qualitative approach was used to conclude safe use for workers. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.	
<b>4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>	
No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.	
<b>5 Additional good practice advice beyond the REACH CSA</b>	
Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets. Such as: Containment as appropriate Minimize number of staff exposed Good standard of general ventilation Avoidance of contact with contaminated tools and objects Regular cleaning of equipment and work area Good standard of personal hygiene	

### 3 PROFESSIONAL USE: DISTRIBUTOR

Original Reference	Description	Use Descriptors
EFMA Fe 2.2	Packaging of fertilizer (lower scale) Packaging of fertilizer (larger scale)	SU22, PROC9, ERC2 SU22, PROC9, ERC2
EFMA Fe2.5	Fe 2.5 a) Loading and unloading of solid bulk fertilizer Fe 2.5 b) Loading and unloading of solid fertilizer in Big bags	SU22; PROC 8b; PROC8a; ERC2 SU22, PROC8b, PROC9, ERC2
EFMA Fe2.7	Cleaning and maintenance of equipment (lower scale)	SU22, PROC19, ERC8b or ERC8e
EFMA Fe3.5	Cleaning and maintenance of equipment (larger scale)	SU22, PROC3, PROC19, ERC8b or ERC8e

3 Exposure scenario PROFESSIONAL USE: DISTRIBUTOR (Professional distribution fertilizers)	
Use Scenarios	Packaging of fertilizer (Lower scale) and Packaging of fertilizer (Larger scale) Loading and unloading of solid bulk fertilizer Loading and unloading of solid fertilizer in Big bags Cleaning and maintenance of equipment (lower scale) Cleaning and maintenance of equipment (larger scale)
Use descriptors related to the life cycle stage	SU 22 PC12 PROC8a/8b/8e/9 ERC2/ERC8b/ERC8e
Name of contributing environmental scenario (1) and corresponding ERC	Formulation of preparations (ERC2)
List of names of contributing worker scenarios (2) and corresponding PROC	1. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 2. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 3. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 4. Use as laboratory reagent (PROC15)
1.2 Contributing scenario (1) controlling environmental exposure	
Formulation of preparations (ERC2) for fertilizer use. An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
2.2 Contributing scenario (2) controlling worker exposure for industrial use for formulation of preparations.	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. PROC5/8a/8b/9/15	
Product characteristic	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid: level of dustiness),	Solid, low dustiness

package design affecting exposure	
<b>Amounts used</b>	
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's exposure	Not applicable
<b>Frequency and duration of use/exposure</b>	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure	Covers daily exposures up to 8 hours (unless stated differently). Covers frequency up to: daily, weekly, monthly, yearly use.
<b>Human factors not influenced by risk management</b>	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
<b>Other given operational conditions affecting workers exposure</b>	
Other given operational conditions: e.g. technology or process techniques determining the initial release of substance from process into workers environment; room volume, whether the work is carried out outdoors/indoors, process conditions related to temperature and pressure.	Indoors
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Process design aiming to prevent releases and hence exposure of workers; this in particular includes conditions ensuring rigorous containment; performance of containment to be specified (e.g. by quantification of residual losses or exposure)	Not applicable
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	Containment as appropriate. Good standard of general ventilation.
<b>Organizational measures to prevent /limit releases, dispersion and exposure</b>	
Specific organizational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision). Those measures need to be reported in particular for demonstrating strictly controlled conditions (to justify exposure based waiving).	Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. Training staff on good practice.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant)	See section 8 of the SDS for personal protection measures specifically related to the substances/mixtures in use.
<b>3 Exposure information and reference to its source</b>	
<b>Information for contributing scenario 1</b>	
An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
<b>Information for contributing scenario 2</b>	
A qualitative approach was used to conclude safe use for workers. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.	
<b>4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>	

No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.

#### **5 Additional good practice advice beyond the REACH CSA**

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets. Such as:

- Containment as appropriate
- Minimize number of staff exposed
- Segregation of the emitting process
- Good standard of general ventilation
- Minimization of manual phases
- Avoidance of contact with contaminated tools and objects
- Regular cleaning of equipment and work area
- Good standard of personal hygiene

#### 4 INDUSTRIAL USE: BLENDER (large scale)

Original Reference	Description	Use Descriptors
EFMA Fe2.1	Blending of fertilizer and other compounds such as compost, substrates and pesticides	SU3, SU10, PROC5, PROC2, PROC3, ERC2
EFMA Fe 2.2	Packaging of fertilizer (Lower scale) Packaging of fertilizer (Larger scale)	SU3, SU10, PROC5, PROC2, PROC3, ERC2 SU 3, SU10, PROC9, ERC2
EFMA Fe2.3	Dilution or suspension of soluble liquid or solid fertilizer or suspension fertilizer	SU3, SU10, PROC5, ERC2 SU3, PROC3, ERC2
EFMA Fe2.5	Fe 2.5 a) Loading and unloading of solid bulk fertilizer Fe 2.5 b) Loading and unloading of solid fertilizer in Big bags	SU3; PROC 8b; PROC8a; ERC2 SU3, PROC8b, PROC9, ERC2
EFMA Fe2.7	Cleaning and maintenance of equipment (lower scale)	SU3, PROC19, ERC8b or ERC8e
EFMA Fe3.5	Cleaning and maintenance of equipment (larger scale)	SU3, PROC3, PROC19, ERC8b or ERC8e

4 Exposure scenario INDUSTRIAL USE: BLENDER (Industrial use for formulation of fertilizers e.g. preparations/blends)	
Use Scenarios	Blending of fertilizer and other compounds such as compost, substrates and pesticides Packaging of fertilizer (Lower scale) and Packaging of fertilizer (Larger scale) Dilution or suspension of soluble liquid or solid fertilizer or suspension fertilizer Loading and unloading of solid bulk fertilizer Loading and unloading of solid fertilizer in Big bags Cleaning and maintenance of equipment (lower scale) Cleaning and maintenance of equipment (larger scale)
Use descriptors related to the life cycle stage	SU 3/10 PC12 PROC5/8a/8b/9/15 ERC2
Name of contributing environmental scenario (1) and corresponding ERC	Formulation of preparations (ERC2)
List of names of contributing worker scenarios (2) and corresponding PROC	<ol style="list-style-type: none"> <li>Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)</li> <li>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)</li> <li>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)</li> </ol>

	4. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 5. Use as laboratory reagent (PROC15)
<b>1.3 Contributing scenario (1) controlling environmental exposure</b>	
Formulation of preparations (ERC2) for fertilizer use. An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
<b>2.2 Contributing scenario (2) controlling worker exposure for industrial use for formulation of preparations.</b>	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. PROC5/8a/8b/9/15	
<b>Product characteristic</b>	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid: level of dustiness), package design affecting exposure	Solid, low dustiness
<b>Amounts used</b>	
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's exposure	Not applicable
<b>Frequency and duration of use/exposure</b>	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure	Covers daily exposures up to 8 hours (unless stated differently). Covers frequency up to: daily, weekly, monthly, yearly use.
<b>Human factors not influenced by risk management</b>	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
<b>Other given operational conditions affecting workers exposure</b>	
Other given operational conditions: e.g. technology or process techniques determining the initial release of substance from process into workers environment; room volume, whether the work is carried out outdoors/indoors, process conditions related to temperature and pressure.	Indoors
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Process design aiming to prevent releases and hence exposure of workers; this in particular includes conditions ensuring rigorous containment; performance of containment to be specified (e.g. by quantification of residual losses or exposure)	Not applicable
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	Containment as appropriate Good standard of general ventilation
<b>Organizational measures to prevent /limit releases, dispersion and exposure</b>	
Specific organizational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision). Those measures need to be reported in particular for demonstrating strictly controlled conditions (to justify exposure based waiving).	Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. Training staff on good practice.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	

<p>Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant)</p>	<p><b>For solids</b>, if dust concentration is high and/or ventilation is inadequate, use suitable dust mask or respirator with an appropriate filter (EN 143, 149, filters P2, P3). Consider use of local ventilation measures (LEV)</p> <p><b>For liquids</b>, use approved eye safety protection e.g. eye protection, gloves and body protection.</p> <p>See section 8 of the SDS for personal protection measures specifically related to the substances/mixtures in use</p>
<p><b>3 Exposure information and reference to its source</b></p>	
<p><b>Information for contributing scenario 1</b></p>	
<p>An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.</p>	
<p><b>Information for contributing scenario 2</b></p>	
<p>A qualitative approach was used to conclude safe use for workers. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.</p>	
<p><b>4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b></p>	
<p>No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.</p>	
<p><b>5 Additional good practice advice beyond the REACH CSA</b></p>	
<p>Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets. Such as:</p> <ul style="list-style-type: none"> <li>Containment as appropriate</li> <li>Minimize number of staff exposed</li> <li>Segregation of the emitting process</li> <li>Good standard of general ventilation</li> <li>Minimization of manual phases</li> <li>Avoidance of contact with contaminated tools and objects</li> <li>Regular cleaning of equipment and work area</li> <li>Good standard of personal hygiene</li> </ul>	

## **Key references**

*Guidance on the compilation of safety data sheets, European Chemical Agency 2011.*

*Guidance on information requirements and chemical safety assessment  
Chapter R.12: Use descriptor system, European Chemical Agency 2010.*

*Guidance on information requirements and chemical safety assessment  
Exposure Scenario Format in Part D: Exposure scenario building, European  
Chemical Agency 2010.*

*REACH Practical Guide on Exposure Assessment and Communication in the Supply  
Chains Part I: Introduction, Chemical Safety Assessment, Obligations of Downstream  
Users, Use of Existing Knowledge.*

*Messages to communicate in the supply chain on extended SDS for substances II  
CEFIC communication on extSDS\_130711.pdf*

## **Glossary**

CEFIC	European Chemical Industry Council
CLP	<b>C</b> lassification, <b>L</b> abelling and <b>P</b> ackaging of Substances and Mixtures
CSA	Chemical safety Assessment
CSR	Chemical Safety Report
DNEL	Derived No Effect Level
DU	Downstream User
ECHA	European Chemicals Agency
EFMA	European Fertilizer Manufacturers Association (now known as Fertilizers Europe)
ERC	Environmental release category
ES	Exposure Scenario
GES	Generic Exposure Scenario
LEV	Local Exhaust Ventilation
PROC	Process category
OC	Operational Conditions
REACH	Registration, Evaluation, Authorisation of CHemicals
SDS	Safety Data Sheet
SU	Sector of use category
RMM	Risk Management Measures