Downstream Users of Chemicals Co-ordination group

ES content essentials: review of progress, needs for further work

Ophélie Roblot (Fecc/DUCC)
ENES 3
21 November 2012

1

Downstream Users of Chemicals Co-ordination group

DUCC = platform for associations whose member companies use chemicals to formulate mixtures as finished products for end users (consumers and professional users)

DUCC focuses on DU needs, rights, duties and specificities under REACH and CLP

2

Downstream Users of Chemicals Co-ordination group

Presentation outline

- Progress and challenges
- Further work
- Thoughts for Health exposure content

3

Downstream Users of Chemicals Co-ordination group

Progress and challenges

- Provide a clear description of processes/activities covered in a single ES: Intuitive ES titles (standardised at DU sector level) + additional information on scope and boundaries of ES (if needed).

SECTION 1	EXPOSURE SCENARIO TITLE
Title	Formulation & (re)packing of substances and mixtures - Industrial
Use Descriptor	**Sector of Use**: SU 3 **Process Categories**: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 14, PROC 15 **Environmental Release Categories**: ERC 2, ESVOC SpERC 2.2.v1
Scope of process	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

4

Downstream Users of Chemicals Co-ordination group

1. Title	
Free short title	Use as a fuel in professional settings
Systematic title based on use descriptor	ERC 8b and 8e; PROC 1, 2, 3, 8a, 8b, 16, and 19; SU 22
Processes, tasks activities covered	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.
Exposure assessment methodology	Tool used: ECETOC TRA workers (v2.0) modified [1]

5

Downstream Users of Chemicals Co-ordination group

1.2.1. Contributing scenario (1) controlling environmental exposure for the Industrial use of X in the formulation of preparations by mixing thoroughly, dry or in a solvent, the starting materials with potentially pressing, pelletising, sintering, possibly followed by packing .

Further specification:

In the described process, the X is:

- Removed from the packaging and stored in silos after delivery.
- Extracted from the silo, dosed and fed with the other reagents to the mixing tank. Mixing occurs batch-wise or continuously, according the process receipt. The mixing occurs in a closed tank/chamber.
- The preparation (dry or wet (solvent/paste) matrix) is further used as such or packed for further treatment/use.

⇒ Clear title
⇒ List of relevant use descriptor(s) included (sometimes more than 1 or 2 ERCs), SpERCs
⇒ Detailed scope
⇒ Additional information on the process
⇒ CS for worker part and for environmental part may be differentiated

Downstream Users of Chemicals Co-ordination group

Progress and challenges

- Include information on the daily tonnage (and annual tonnage) – applicable to uses at industrial sites.

⇒ Information on daily tonnage often included

⇒ Presented in different ways:

Amounts used
Daily and annual amount per site:
maximum 5000 T/y;
Frequency and duration of use
Continuous production is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.
Amounts used
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's expo-sure
Max 5000T/y = 14T/d = 5T/shift depending on the application.

7

Downstream Users of Chemicals Co-ordination group

⇒ Information on MSafe = DU need to interpret the information

⇒ Information should be easily identifiable, sometimes lots of figures => DU should find his way!!

Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day
Estimated substance removal from wastewater via domestic sewage treatment is: 94.6 %
The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 130000 kg / day
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.6 %

8

Downstream Users of Chemicals Co-ordination group

Progress and challenges

- Describe the conditions of use at a site driving the release:
  - conditions driving the initial release from processes

  and if needed:
  - conditions driving the subsequent release to the environment (onsite RMM and their required effectiveness)

  Please note: Release rates (kg/d) to air and water alone are not sufficient.

⇒ Clear titles to differentiate :

⇒Conditions to prevent the release from the process

⇒Conditions to prevent the release to the environment

Technical conditions and measures at process level (source) to prevent release
• Process enclosures and closed circuits where relevant and possible.
• Dust capturing and removal techniques are applied on local exhaust ventilation on furnaces and othe work areas with potential dust generation.
• Containment of liquid volumes in sumps to collect/prevent accidental spillage

Downstream Users of Chemicals Co-ordination group

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
• On-site waste water treatment techniques can be applied to prevent releases to water (if applicable) e.g.: chemical precipitation, sedimentation and filtration (efficiency 90-99.98%).
• Air emissions are controlled by use of bag-house filters and/or other air emission abatement devices e.g. fabric (or bag) filters (up to 99% efficiency), wet scrubbers (50-99% efficiency). This may create a general negative pressure in the building.

⇒ Clear information on the release by components (air, soil etc.)

⇒ RMM with examples of possible technics = easier and more flexible for DU

⇒ Challenge to understand the logic of ES

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: 0 %
No secondary wastewater treatment required.
Risk from environmental exposure is driven by freshwater sediment.
Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 %
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: 0 %

Downstream Users of Chemicals Co-ordination group

Organizational measures to prevent/limit release from site

Specific organisational measures or measures needed to support the functioning of particular technical measures. Those measures need to be reported in particular for demonstrating strictly controlled conditions.

- In general emissions are controlled and prevented by implementing an integrated management system e.g. ISO 9000, ISO 1400X series, or alike, and, when applicable, by being IPPC-compliant.
  - Such management system should include general industrial hygiene practice e.g.:
    - information and training of workers,
    - regular cleaning of equipment and floors,
    - procedures for process control and maintenance,...
- Treatment and monitoring of releases to outside air, and exhaust gas streams (process & hygiene), according to national regulation.
- SEVESO 2 compliance, if applicable

⇒ Information on the release may be technical and more general
⇒ Reference to relevant legislations

11

Downstream Users of Chemicals Co-ordination group

Progress and challenges

- Provide information on the assumed capacity of municipal sewage system – applicable to uses at industrial sites.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d); specify degradation effectiveness; sludge treatment technique (disposal or recovery); measures to limit air emissions from sewage treatment (if applicable); please note: *the default size of the municipal STP (2000 m3/d) will be rarely changeable for downstream uses.*

- In cases where applicable: default size, unless specified otherwise.

Assumed domestic sewage treatment plant flow (m^3/d)	2000

⇒ Information often included
⇒ Standard value

12

Downstream Users of Chemicals Co-ordination group

Progress and challenges

- Provide information on the assumed local dilution capacity – applicable to uses at industrial sites.

Flow rate of receiving surface water:

default for generic scenario: 18,000 m3/d, unless specified otherwise

⇒ Information often included
⇒ Standard value

13

Downstream Users of Chemicals Co-ordination group

Progress and challenges

- If relevant: Provide information necessary to understand the underlying assessment parameters (to enable complementary "assessment" ("verification") work at DU level e.g. scaling, whilst ensuring consistency with the CSR in the registration dossier).

Duration, frequency and amount
Annual site tonnage (tonnes/year): 70 tons/yr
Continuous release.
Emission Days (days/year): 10 days/yr
Fraction of EU tonnage used in region: 0.1
Fraction of Regional tonnage used Locally: 1
Maximum daily site tonnage (kg/d): 7000 kg / day
Regional use tonnage (tonnes/year): 70 tons/yr
Environmental factors not influenced by risk management
Local freshwater dilution factor [EF1] 10
Local marine water dilution factor: [EF2] 100
Other given operational conditions affecting environmental exposure
Release fraction to air from process: 0.01
Release fraction to soil from process (regional only): 0.0001
Release fraction to wastewater from process: 0.0002

14

⇒ Organise the information not to be confusing

Downstream Users of Chemicals Co-ordination group

⇒ Information on scaling is in some ES provided, but still rarely

⇒ Reference to existing documents is helpful

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

⇒ Reference to the scaling tool which is used

If a DU has OC/RMMs outside the OC/RMM specifications in the ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling in EUSES.

The main driving parameters are:

- Local amount used (tonnage)
- Release factor prior to on-site treatment
- On-site wastewater treatment presence and efficiency
- Dilution factor

For example, suppose there is no on-site treatment plant, than the dilution needs to be at least a factor of 25 larger than the default value of 10 in order to demonstrate safe use.

Downstream Users of Chemicals Co-ordination group

Further work

- ES generaly contains good information for the environment, but quality may vary.
- Progress made with regard to:
  - Short titles, process, UD.
  - Information on tonnages, sometimes need to interpret information (Msafe).
  - When included, clear distinctions between release from the process and release to the environment. Describe RMM/OC to prevent the release would be easier for DU. Give examples of possible technics to be used.
  - Information on municipal STP is often included.
  - Dilution capacity information is quite often included.
- Only very few ES for the environment includes instruction for scaling.
- RCRs also quite rarely included in section 3.

16

Further work

- The order of the information often does not reflect the recommendations from the ENES 2:
- **First** give information on "amounts used" and RMM/OC.

⇒ Easy for DU to compare with their own amount used and conclude whether their use is safe or not.

⇒ Easy to compare with their own RMM/OC

Based on this the DU can already conclude.

- **Second** If DU don't comply with this information, DU have to read the rest of the ES which provides more background information on the assessment and on eventual scaling options.
- If it is difficult to change the order: highlight 'amounts used' and RMM/OC.

17

Thoughts for health exposure content

- Section 1: Clear description: titles, relevant UDs, processes

- Section 2: RMM should be described PROC by PROC = direct link to avoid confusion. Clear information on OC (if OCs differ, they should be described PROC by PROC).

Laboratory activities PROC15
Handle in a fume cupboard or under extract ventilation.
Bulk transfers (open systems) PROC8b
Provide extract ventilation to points where emissions occur.
Bulk transfers (closed systems) PROC8b
Ensure material transfers are under containment or extract ventilation.

18

Downstream Users of Chemicals Co-ordination group

Thoughts for health exposure content

- Section 3: Tabel with calculated RCR values per PROC and information on method/tool used for the assessment

PROC	Method used for inhalation exposure assessment	Inhalation exposure estimate mg/m3 (RCR)	Method used for dermal exposure assessment	Dermal exposure estimate mg/kg/day (RCR)
PROC1	ECTOC TRA	0.038 (0.002)	ECTOC TRA	0.034 (0.009)
PROC2	ECTOC TRA	0.375 (0.023)	ECTOC TRA	0.137 (0.034)
PROC3	ECTOC TRA	1.125 (0.070)	ECTOC TRA	0.034 (0.009)
PROC4	ECTOC TRA	1.876 (0.117)	ECTOC TRA	0.686 (0.170)

- Section 4: Additional information on scaling

19

Downstream Users of Chemicals Co-ordination group

Thank you!

Ophélie Roblot
oro@fecc.org

20