

9.4. Exposure scenario 4: Widespread use by professional workers

Outdoor use - spray application of liquid Cu fertilizers

Product category used: PC 12: Fertilizers

Sector of use: SU 1: Agriculture, forestry, fishery

Environment contributing scenario(s):		
CS 1	Outdoor use - spray application of liquid Cu fertilizers; soil surface spreading, sprinkler, pivot, foliar spray, slurry	ERC 8e Fertilizers Europe SPERC 8e.4.v3

9.4.1. Env CS 1: Outdoor use - spray application of liquid Cu fertilizers (Fertilizers Europe SPERC 8e.4.v3; ERC 8e)

9.4.1.1. Conditions of use

Product (article) characteristics
<ul style="list-style-type: none"> Fertilizers applied in liquid form intended for outdoor use (in a.o. agriculture, forestry, horticulture, gardens, golf courses) by consumers and professionals. Farmers are considered professional users.
Amount used, frequency and duration of use (or from service life)
<ul style="list-style-type: none"> Daily local widespread use amount: not relevant Substance use amount expressed as yearly fertilizer application rate (kg/ha/year): 0.10 kg Cu/ha/year Only to be used if copper deficiency is detected. A generic total Cu concentration in soil (14 mg Cu/kg dw soil) is selected as a conservative (maximal) background concentration for exposure and risk assessment in Cu deficient soils.
<ul style="list-style-type: none"> Number of emission days per year: 1-5 applications per year; depending on crop type and agricultural soil characteristics
Conditions and measures related to biological sewage treatment plant
<ul style="list-style-type: none"> Biological STP: None [Effectiveness Water: 0%]
Conditions and measures related to external treatment of waste (including article waste)
Particular considerations on the waste treatment operations: Other <ul style="list-style-type: none"> Dispose of waste product or used containers according to local regulations Service life is not applicable to fertilizers
Other conditions affecting environmental exposure
<ul style="list-style-type: none"> Outdoor use [OOC01] Controlled application to agricultural soil [OOC25]

9.4.1.2. Releases

The local releases to the environment are reported in the following table.

Table 9.4.1 Local releases to the environment

Release	Release estimation method	Explanations
Water	Estimated release factor	Release factor before on site RMM: 1.57% Release factor after on site RMM: 1.57% Local release rate: not applicable
Air	Estimated release factor	Release factor before on site RMM: 0% Release factor after on site RMM: 0%
Agricultural soil	Estimated release factor	Release factor after on site RMM: 100% (direct application)

Release	Release estimation method	Explanations
		to agricultural soil, intentional release)

9.4.1.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterization ratios (RCR) are reported in the following table. The exposure estimates have been obtained with the Fertilizer Environmental Exposure (FEE) Tool v1.2 unless stated otherwise. A lower generic total Cu concentration in soil (14 mg Cu/kg dw soil) is selected as a conservative (maximal) background concentration for exposure and risk assessment in Cu deficient soils compared to the regional Cu background concentration in soil used for risk assessments of Cu compounds for other than fertilizer uses (24.4 mg Cu/kg dw soil).

Table 9.4.2. Exposure concentrations and risks for the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	Local PEC: 5.4 µg/L	0.70
Sediment (freshwater)	Local PEC: 84.2 mg/kg	0.97
Sewage treatment plant	Not relevant (no STP)	
Marine water	Not relevant (no emissions to marine water)	
Sediment (marine water)	Not relevant (no emissions to marine water)	
Agricultural soil	Local PEC: 14.3 mg/kg dw	0.22

Assessment of exposure of man via the environment is not included, since this is for most metal compounds based upon monitoring data rather than modelled data.

9.4.1.4. Guidance to downstream users

If a downstream user (DU) has OCs or RMMs outside the OC/RMM specifications in the generic ES, then the DU can evaluate whether he works inside the boundaries set by the ES through scaling:

- Scaling method, exposure estimation tool used: Fertilizer Environmental Exposure (FEE) Tool v1.2 <http://www.reachfertilizers.com/>
- Scalable parameters:
 - Total annual fertilizer use rate,
 - Number of applications,
 - Time between applications,
 - Crop type,
 - Crop growth stage,
 - European crop yield scenario,
 - Crop substance concentration,
 - Crop yield,
 - Risk management measures (drift and runoff reduction, soil incorporation).

All other parameters have to be taken directly from the exposure scenario provided.

- Boundaries of scaling: refer to boundaries as set in Fertilizer Environmental Exposure (FEE) Tool v1.2 <http://www.reachfertilizers.com/>
- For Scaling instructions please go to the following website: <http://www.reachfertilizers.com/>