

FS Section	Content field
1. Title	1.1 Title of SPERC: Outdoor use - spray application of fertilizers in liquid form; soil surface spreading, sprinkler, pivot, foliar spray, slurry
	1.2 SPERC code: Fertilizers Europe SPERC 8e.4.v2
2. Scope	2.1 Substance/Product Domain
	Substance types / functions / properties included or excluded: Fertilizers applied in liquid form containing environmentally hazardous components (e.g. manganese, copper and zinc substances; both organic and inorganic substances are covered).
	Additional specification of product types covered: 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. The use of fertilizers in enclosed structures is covered when crops are cultivated in contact with the soil (e.g. non-permanent covers, walk-in tunnels and nurseries). In this case, outdoor use represents a worst-case for environmental exposure. High-tech greenhouse structures, with no direct soil contact and closed water circulation systems are not covered by the Fertilizers Europe SPERCs.
	Inclusion of sub-SPERCs: No
	2.2 Process domain
	Description of activities/processes: Local scale, outdoor use of fertilizers in liquid form on agricultural soil by surface spreading, sprinkler, pivot, foliar spray and slurry is covered. The Fertilizers Europe SPERCs cover both the application stage, as well as the preceding mixing and loading step and the subsequent cleaning of equipment of the fertilizer uses. Emissions from formulation and re-packaging at industrial manufacturing sites are not addressed by the Fertilizers Europe SPERCs. Application methods, substance properties, crop types, timing of application and yield scenarios are important in order to estimate environmental exposure; further refinements of the local assessment by SPERCs can be made using the Fertilizer Environmental Exposure (FEE) tool, as available on the Fertilizers Europe website http://www.reachfertilizers.com/ . Since the standard REACH models for environmental exposure assessment (ECETOC TRA, EUSES, Chesar) do not include appropriate scenarios and processes for direct fertilizer application to soil, the FEE tool is recommended to be used in quantitative environmental exposure assessment of fertilizer substances instead of the standard REACH models.
	2.3 List of applicable Use Descriptors
	LCS: PW, C (Widespread use by professional workers; Consumer use)
	SU: 1 (Agriculture, forestry, fishery)
	PC: 12 (Fertilizers)
3. Operational conditions	3.1 Conditions of use
	Location of use: Outdoor
	Water contact during use: Yes
	Connected to a standard municipal biological STP: No
	Rigorously contained system with minimisation of release to the environment: No
	Further operational conditions impacting on releases to the environment: Outdoor use [OOC01] Controlled application to agricultural soil [OOC25]
	3.2 Waste Handling and Disposal
	Waste Handling and Disposal: Dispose of waste product or used containers according to local regulations. Service life is not applicable to fertilizers.

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4. Obligatory RMMs onsite	RMM limiting release to air: None
	RMM Efficiency (air): N/A
	Reference for RMM Efficiency (air): N/A
	RMM limiting release to water: It is assumed that operators will comply with best agricultural practice.
	RMM Efficiency (water): N/A
	Reference for RMM Efficiency (water): N/A
	RMM limiting release to soil: None, intentionally released to agricultural soil.
	RMM Efficiency (soil): N/A
	Reference for RMM Efficiency (soil): N/A
5. Exposure Assessment Input	5.1 Substance use rate
	Amount of substance use per day: Assessment defaults as set by ERC 8e. It is recommended to use a realistic substance use rate; guidance can be found in the Fertilizers Europe SPERC background document.
	Fraction of EU tonnage used in region: Not relevant.
	Fraction of Regional tonnage used locally: Not relevant.
	Justification / information source: Guidance can be found in the Fertilizers Europe SPERC background document.
	5.2 Days emitting
	Number of emission days per year: 1-5 applications per year; depending on crop type and agricultural soil characteristics.
	Justification / information source: Guidance can be found in the Fertilizers Europe SPERC background document.
	5.3 Release factors
	sub-SPERC identifier: N/A
	ERC: 8e
	sub-SPERC applicability: N/A
	5.3.1 Release Factor – air
	Numeric value / percent of input amount (Air): 0%
	Justification of RFs (Air): Volatilization to air of fertilizers in liquid form can take place during application, depending on the vapour pressure of the substance. Therefore, emissions to air could lead to aerial deposition on (agricultural) soil. This pathway is considered to be covered by the release factors to soil, since for all SPERCs this was set to 100%. Therefore, releases to air are considered not relevant for the environmental exposure assessment of fertilizers, soil improvers and related products and this release factor is 0%.
	5.3.2 Release Factor – water
	Numeric value / percent of input amount (Water): 1.57%
	Justification of RFs (Water): Direct emissions to surface water can be caused by spray drift during product application. Default values for emissions to surface water were selected based upon Rautmann drift values (Rautmann et al, 2001). This results in a release factor to surface water of 1.57%, using the spray drift value for "Pome/stone fruit (late)" as realistic worst-case proxy for fertilizer in liquid form spray applications (FOCUS, 2015).

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	<p>Refinement of the release factor to surface water can be made in the FEE tool by taking into account crop type and growth stages (according to FOCUS scenarios; FOCUS, 2015) or drift reduction due to specific risk management measures.</p> <p>More information and guidance can be found in the Fertilizers Europe SPERC background document; or on the Fertilizers Europe website http://www.reachfertilizers.com/</p>
	<p>5.3.3 Release Factor – soil</p>
	<p>Numeric value / percent of input amount (Soil): 100% (agricultural soil)</p>
	<p>Justification of RFs (Soil): Direct application to agricultural soil, intentional release. As a conservative approach, it is assumed that 100% of the fertilizer substance applied can be released to soil. This was based on the consideration that fertilizers are applied directly onto/into soil or on the foliage of crops, in order to promote growth of cultivated crops.</p> <p>Further details on release factors to the environment can be found in the Fertilizers Europe SPERC background document.</p> <p>A fertilizer environmental exposure (FEE) tool was developed for environmental fate modelling and quantitative risk assessment of fertilizer substances and soil improvers. This tool can be downloaded at: http://www.reachfertilizers.com/</p>
	<p>5.3.4 Release Factor – waste</p>
	<p>Percent of input amount disposed as waste: 0.01% (OECD Emission scenario document plastic additives, 2009).</p>
	<p>Justification of RFs:</p> <p>Please refer to the OECD Emission scenario document plastic additives (2009).</p>
<p>References to SPERC Background Document</p>	
	<p>Fertilizers Europe (2017) Specific environmental release categories (SPERCs) for professional and consumer use of fertilizer substances – Background document: http://www.reachfertilizers.com/</p>