

FS Section	Content field
1. Title	<b>1.1 Title of SPERC:</b> Outdoor use - application of fertilizers by helicopter
	<b>1.2 SPERC code:</b> Fertilizers Europe SPERC 8e.3.v2
2. Scope	<b>2.1 Substance/Product Domain</b>
	<b>Substance types / functions / properties included or excluded:</b> Fertilizers containing environmentally hazardous components (e.g. manganese, copper and zinc substances; both organic and inorganic substances are covered).
	<b>Additional specification of product types covered:</b> Fertilizers intended for outdoor use by professionals, applied by helicopter, mainly on forests.
	<b>Inclusion of sub-SPERCs:</b> No
	<b>2.2 Process domain</b>
	<b>Description of activities/processes:</b> Local scale, outdoor use of fertilizers on agricultural soil by aerial application (helicopter) 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. The SPERs are only applicable to substances with a low vapour pressure (< 1 mPa).  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 v1.2, as available on the Fertilizers Europe website ( <a href="https://www.reachfertilizers.com/">https://www.reachfertilizers.com/</a> ).  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.
	<b>2.3 List of applicable Use Descriptors</b>
	<b>LCS:</b> PW, C (Widespread use by professional workers)
	<b>SU:</b> 1 (Agriculture, forestry, fishery)
	<b>PC:</b> 12 (Fertilizers)
3. Operational conditions	<b>3.1 Conditions of use</b>
	<b>Location of use:</b> Outdoor
	<b>Water contact during use:</b> Yes
	<b>Connected to a standard municipal biological STP:</b> No
	<b>Rigorously contained system with minimisation of release to the environment:</b> No
	<b>Further operational conditions impacting on releases to the environment:</b> Outdoor use [OOC01] Controlled application to agricultural soil [OOC25]
	<b>3.2 Waste Handling and Disposal</b>
<b>Waste Handling and Disposal:</b> 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 European and national requirements specified under Cross-Compliance of the Common Agricultural Policy of the EU ( <a href="https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/income-support/cross-compliance_en">https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/income-support/cross-compliance_en</a> )
	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	<b>5.1 Substance use rate</b>
	<b>Amount of substance use per day:</b> It is recommended to use a realistic substance use rate; guidance can be found in the Fertilizers Europe SPERC background document.
	<b>Fraction of EU tonnage used in region:</b> Not relevant.
	<b>Fraction of Regional tonnage used locally:</b> Not relevant.
	<b>Justification / information source:</b> Guidance can be found in the Fertilizers Europe SPERC background document.
	<b>5.2 Days emitting</b>
	<b>Number of emission days per year:</b> 1 application per 6-10 years is common practice (1-4 applications during the whole life cycle of forest trees).
	<b>Justification / information source:</b> Hedwall et al. (2014). More information and guidance can be found in the Fertilizers Europe SPERC background document.
	<b>5.3 Release factors</b>
	sub-SPERC identifier: N/A
	ERC: 8e
	sub-SPERC applicability: N/A
	<b>5.3.1 Release Factor – air</b>
	Numeric value / percent of input amount (Air): 0%
	<b>Justification of RFs (Air):</b> Volatilization to air is not relevant for solid fertilizers, soil improvers or related products. For liquids, volatilization can take place during application depending on the vapour pressure of the substance. In this case, 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%.
<b>5.3.2 Release Factor – water</b>	
Numeric value / percent of input amount (Water): 3.32%	

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	<p><b>Justification of RFs (Water):</b> 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 3.32% for aerial application of fertilizers (default for aerial application; FOCUS, 2015).</p> <p>Refinement of the release factor to surface water can be made in the FEE tool by taking into account crop 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 (<a href="https://www.reachfertilizers.com/">https://www.reachfertilizers.com/</a>).</p> <p>References:</p> <p>Rautmann D, et al. (2001) New basic drift values in the authorisation procedure for plant protection products; in: R. Forster, M. Streløke (Eds.), Workshop on risk assessment and risk mitigation measures in the context of the authorisation of plant protection products (WORMM)</p> <p>FOCUS (2015) Steps 1-2 in FOCUS; <a href="http://esdac.jrc.ec.europa.eu/projects/stepsonetwo">http://esdac.jrc.ec.europa.eu/projects/stepsonetwo</a></p>
	<p><b>5.3.3 Release Factor – soil</b></p>
	<p><b>Numeric value / percent of input amount (Soil):</b> 100% (agricultural soil)</p>
	<p><b>Justification of RFs (Soil):</b> 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: <a href="https://www.reachfertilizers.com/">https://www.reachfertilizers.com/</a></p>
	<p><b>5.3.4 Release Factor – waste</b></p>
	<p><b>Percent of input amount disposed as waste:</b> 0.01% (OECD Emission scenario document plastic additives, 2009).</p>
	<p><b>Justification of RFs:</b></p> <p>Please refer to the OECD Emission scenario document plastic additives (2009).</p> <p>Reference: OECD (2009) OECD Series on emission scenario documents 3, Emission scenario document on plastic additives; <a href="http://www.oecd.org/chemicalsafety/risk-assessment/emissionsscenariodocuments.htm">http://www.oecd.org/chemicalsafety/risk-assessment/emissionsscenariodocuments.htm</a></p>
<p><b>References to SPERC Background Document</b></p>	
	<p>Fertilizers Europe (2020) Specific environmental release categories (SPERCs) for professional and consumer use of fertilizer substances – Background document: <a href="https://www.reachfertilizers.com/">https://www.reachfertilizers.com/</a></p>