EXPOSURE ASSESSMENT

Overview of exposure scenarios

The following table summarizes all exposure scenarios that are assessed in this CSR. The summary lists use volumes, life cycle stage and use desriptors only. For details on use conditions and exposure calculation results please refer to the corresponding subchapters 9.x and 10.x.

Exposure scenarios 9.2 to 9.x have been calculated using EasyTRA 4.0.0. EasyTRA uses algorithms on the basis of the latest versions of the ECHA REACH Guidance chapters R12 (as of March 2010), R14, R15, and R16 (as of October 2012) and EUSES®. EasyTRA is a graphical user interface which works in compliance with ECETOC® Targeted Risk Assessment 3 (as of July 2012; for detailed information see ECETOC Technical Report No. 114) for the calculation of worker and consumer exposure and complies with EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a for the environmental exposure (see ECHA REACH Guidance chapter R16.6.2). Results obtained by EasyTRA are routinely validated against the results obtained by performing the same calculations with the original tools.

The format of this CSR follows the current ECHA template for CSRs.

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Overview on exposure scenarios and coverage of substance life cycle

ES number	Short description of exposure scenario	Resulting life cycle stage						Sector of use (SU)	Process Category (PROC)	Product Category (PC)	Article Category (AC)	Environmental Release Category (ERC)	Volume (tonnes)
		Manufacture	Formulation	End use			Service life (for articles)						
				Industrial	Professional	Consumer							
9.179	Use as a co-formulant in plant protection products, spray applications by professionals (PPP GES 1)				x			3, 22, 10	8A, 11			8D	10000
9.180	Use as a co-formulant in plant protection products, seed and granular applications by professionals (PPP GES 2)				x			3, 22, 10	8A, 8B			8D	10000
9.181	Use as a co-formulant in plant protection products, spray applications by consumers (PPP GES 3)					x		21		27		8D	10000
9.182	Use as a co-formulant in plant protection products, seed and granular applications by consumers (PPP GES 4)					x		21		27		8D	10000

9.179 Scenario 179: Use as a co-formulant in plant protection products, spray applications by professionals (PPP GES 1)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

An overall exposure scenario may be described by a number of contributing scenarios which may be subdivided into environmental exposure, worker exposure and consumer exposure.
The following scenarios contribute to the scenario *Use as a co-formulant in plant protection products, spray applications by professionals*.

The corresponding release to the environment, exposure of workers and consumers resulting from these contributing scenarios is summarized in chapter 10.179 ff.

Table 1. Description of ES 179

Free short title	Use as a co-formulant in plant protection products, spray applications by professionals (PPP GES 1)
Systematic title based on use descriptor	ERC 8D; PROC 8A, 11
Name of contributing environmental scenario and corresponding ERC	ERC 8d Wide dispersive outdoor use of processing aids in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying

9.179.1 Contributing Scenario (1) controlling environmental exposure for ERC 8D

Operational conditions	
Annual tonnage	1.00E4 to/year
Daily amount used at site	5.479 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	100 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %

STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	ECPA SPERC 8d.2.v2 - ECPA - Co-formulants used in crop protection products (sprays). Application / Service Life. Releases dependent on co-formulant vapour pressure. Please see ECPA website (www.ecpa.eu/information-page/regulatory-affairs/reach) for furthe
Other modified EUSES values	
Local PEC in agricultural soil, averaged over 30 days (PEClocal.agric_30)	1.93E-8 kgc.kgwwt-1 *(justification: ECPA LET)*
Local PEC in marine sediments during emission episode (PEClocal.sediments_marine)	0.0161 mg/kg dwt *(justification: ECPA LET)*
Local PEC in surface water during emission episode (dissolved) (PEClocal.water)	0.000235 kgc.m-3 *(justification: ECPA LET)*
Local PEC in sediments during emission episode (PEClocal.sediments)	0.158 mg/kg dwt *(justification: ECPA LET)*
Local PEC in sea water during emission episode (dissolved) (PEClocal.water_marine)	0.000024 kgc.m-3 *(justification: ECPA LET)*

9.179.2 Contributing Scenario (2) controlling professional worker exposure for PROC 8A

Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Mixing and loading of plant protection products into delivery equipment (hand-held spraying)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional

Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value dermal	The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR. Use rate 1 kg/d.
Use of external/measured value inhalation	The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR. Use rate 1 kg/d.

9.179.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Mixing and loading of plant protection products into delivery equipment (tractor-mounted)
Product characteristics	

Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value dermal	Use rate 20kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

Use of external/measured value inhalation	Use rate 20kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

9.179.4 Contributing Scenario (4) controlling professional worker exposure for PROC 11

Name of contributing scenario	11 - Non industrial spraying
Scenario subtitle	Delivery and dispersion of plant protection products (hand-held spraying)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

Use of external/measured value dermal	Use rate 1 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.
Use of external/measured value inhalation	Use rate 1 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

9.179.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	11 - Non industrial spraying
Scenario subtitle	Delivery and dispersion of plant protection products (tractor mounted)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value dermal	Use rate 20 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.
Use of external/measured value inhalation	Use rate 20 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

9.180 Scenario 180: Use as a co-formulant in plant protection products, seed and granular applications by professionals (PPP GES 2)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

An overall exposure scenario may be described by a number of contributing scenarios which may be subdivided into environmental exposure, worker exposure and consumer exposure.
The following scenarios contribute to the scenario *Use as a co-formulant in plant protection products, seed and granular applications by professionals*.

The corresponding release to the environment, exposure of workers and consumers resulting from these contributing scenarios is summarized in chapter 10.180 ff.

Table 2. Description of ES 180

Free short title	Use as a co-formulant in plant protection products, seed and granular applications by professionals (PPP GES 2)
Systematic title based on use descriptor	ERC 8D; PROC 8A, 8B
Name of contributing environmental scenario and corresponding ERC	ERC 8d Wide dispersive outdoor use of processing aids in open systems
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities

9.180.1 Contributing Scenario (1) controlling environmental exposure for ERC 8D

Operational conditions	
Annual tonnage	1.00E4 to/year
Daily amount used at site	5.479 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0 %
Release fraction to wastewater from process	0 %

Release fraction to soil from process	100 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	ECPA SPERC 8d.1.v1 - ECPA - Co-formulants used in crop protection products (seed treatments and granules). Application / Service Life. Please see ECPA website (www.ecpa.eu/information-page/regulatory-affairs/reach) for further details on how to use the Sp
Other modified EUSES values	
Local PEC in agricultural soil, averaged over 30 days (PEClocal.agric_30)	1.05E-6 kgc.kgwwt-1 *(justification: ECPA LET)*
Local PEC in marine sediments during emission episode (PEClocal.sediments_marine)	0.0168 mg/kg dwt *(justification: ECPA LET)*
Local PEC in surface water during emission episode (dissolved) (PEClocal.water)	0.000235 kgc.m-3 *(justification: ECPA LET)*
Local PEC in sediments during emission episode (PEClocal.sediments)	0.166 mg/kg dwt *(justification: ECPA LET)*
Local PEC in sea water during emission episode (dissolved) (PEClocal.water_marine)	0.000024 kgc.m-3 *(justification: ECPA LET)*

9.180.2 Contributing Scenario (2) controlling professional worker exposure for PROC 8A

Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Mixing and loading of plant protection products into seed treatment or delivery equipment (M&L solid formulation into batch treater)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2

Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no
Use of external/measured value dermal	Use rate: 10 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.
Use of external/measured value inhalation	Use rate: 10 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

9.180.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities

Scenario subtitle	Mixing and loading of plant protection products into seed treatment or delivery equipment
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value dermal	Use rate 800 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

Use of external/measured value inhalation	Use rate 800 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

9.180.4 Contributing Scenario (4) controlling professional worker exposure for PROC 8A

Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Delivery and dispersion of agrochemical plant protection products or treated seeds (open cab solid broadcast spreader)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

Use of external/measured value dermal	Use rate: 800 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.
Use of external/measured value inhalation	Use rate: 800 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

9.180.5 Contributing Scenario (5) controlling professional worker exposure for PROC 8A

Name of contributing scenario	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Scenario subtitle	Delivery and dispersion of agrochemical plant protection products or treated seeds (spreading of granules/treated seeds using belly grinder including loading of equipment)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	>4 hours (default)

Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value dermal	Use rate: 20 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.
Use of external/measured value inhalation	Use rate: 20 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

9.180.6 Contributing Scenario (6) controlling professional worker exposure for PROC 8B

Name of contributing scenario	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Scenario subtitle	Transfer of treated seeds from batch treater into bags (in-doors)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 90 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	no
Use of external/measured value dermal	Use rate 10 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

Use of external/measured value inhalation	Use rate 10 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.

9.181 Scenario 181: Use as a co-formulant in plant protection products, spray applications by consumers (PPP GES 3)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

An overall exposure scenario may be described by a number of contributing scenarios which may be subdivided into environmental exposure, worker exposure and consumer exposure.
The following scenarios contribute to the scenario *Use as a co-formulant in plant protection products, spray applications by consumers.*

The corresponding release to the environment, exposure of workers and consumers resulting from these contributing scenarios is summarized in chapter 10.181 ff.

Table 3. Description of ES 181

Free short title	Use as a co-formulant in plant protection products, spray applications by consumers (PPP GES 3)
Systematic title based on use descriptor	ERC 8D; PC 27
Name of contributing environmental scenario and corresponding ERC	ERC 8d Wide dispersive outdoor use of processing aids in open systems
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 27 Plant Protection Products

9.181.1 Contributing Scenario (1) controlling environmental exposure for ERC 8D

Operational conditions	
Annual tonnage	1.00E4 to/year
Daily amount used at site	5.479 kg/day

Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	100 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	ECPA SPERC 8d.2.v2 - ECPA - Co-formulants used in crop protection products (sprays). Application / Service Life. Releases dependent on co-formulant vapour pressure. Please see ECPA website (www.ecpa.eu/information-page/regulatory-affairs/reach) for furthe
Other modified EUSES values	
Local PEC in agricultural soil, averaged over 30 days (PEClocal.agric_30)	1.93E-8 kgc.kgwwt-1 *(justification: EPCA LET)*
Local PEC in marine sediments during emission episode (PEClocal.sediments_marine)	0.0161 mg/kg dwt *(justification: ECPA LET)*
Local PEC in surface water during emission episode (dissolved) (PEClocal.water)	0.000235 kgc.m-3 *(justification: ECPA LET)*
Local PEC in sediments during emission episode (PEClocal.sediments)	0.156 mg/kg dwt *(justification: ECPA LET)*
Local PEC in sea water during emission episode (dissolved) (PEClocal.water_marine)	0.000024 kgc.m-3 *(justification: ECPA LET)*

9.181.2 Contributing Scenario (2) controlling consumer exposure for PC 27

Name of contributing scenario	PC 27 Plant Protection Products
Scenario subtitle	Use as a co-formulant in plant protection products, spray applications by consumers
Calculation model	Ecetoc TRA
Frequency and duration of use	
Frequency of use	0.065753 time(s)/day
Exposure time	1 h
Product characteristics	

Spray application	no
Product ingredient fraction by weight (inhalation)	100 %
Product ingredient fraction by weight (dermal)	100 %
Amounts used	
Amounts used	20 g
Human factors not influenced by risk management	
Skin surface area dermal	hands
Skin surface area oral	-
Tranfer factor dermal	100 %
Other given operational conditions affecting consumers exposure	
Room volume	20 m^3
Release fraction to air	10.0 %

9.182 Scenario 182: Use as a co-formulant in plant protection products, seed and granular applications by consumers (PPP GES 4)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

An overall exposure scenario may be described by a number of contributing scenarios which may be subdivided into environmental exposure, worker exposure and consumer exposure.
The following scenarios contribute to the scenario *Use as a co-formulant in plant protection products, seed and granular applications by consumers*.

The corresponding release to the environment, exposure of workers and consumers resulting from these contributing scenarios is summarized in chapter 10.182 ff.

Table 4. Description of ES 182

Free short title	Use as a co-formulant in plant protection products, seed and granular applications by consumers (PPP GES 4)
Systematic title based on use descriptor	ERC 8D; PC 27
Name of contributing environmental scenario and corresponding ERC	ERC 8d Wide dispersive outdoor use of processing aids in open systems
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 27 Plant Protection Products

9.182.1 Contributing Scenario (1) controlling environmental exposure for ERC 8D

Operational conditions	
Annual tonnage	1.00E4 to/year

Daily amount used at site	5.479 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	100 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	ECPA SPERC 8d.1.v1 - ECPA - Co-formulants used in crop protection products (seed treatments and granules). Application / Service Life. Please see ECPA website (www.ecpa.eu/information-page/regulatory-affairs/reach) for further details on how to use the Sp
Other modified EUSES values	
Local PEC in agricultural soil, averaged over 30 days (PEClocal.agric_30)	1.05E-6 kgc.kgwwt-1 *(justification: ECPA LET)*
Local PEC in marine sediments during emission episode (PEClocal.sediments_marine)	0.0168 mg/kg dwt *(justification: ECPA LET)*
Local PEC in surface water during emission episode (dissolved) (PEClocal.water)	0.000235 kgc.m-3 *(justification: ECPA LET)*
Local PEC in sediments during emission episode (PEClocal.sediments)	0.166 mg/kg dwt *(justification: ECPA LET)*
Local PEC in sea water during emission episode (dissolved) (PEClocal.water_marine)	0.000024 kgc.m-3 *(justification: ECPA LET)*

9.182.2 Contributing Scenario (2) controlling consumer exposure for PC 27

Name of contributing scenario	PC 27 Plant Protection Products
Scenario subtitle	Use as a co-formulant in plant protection products, seed and granular applications by consumers
Calculation model	Ecetoc TRA
Frequency and duration of use	
Frequency of use	0.065753 time(s)/day
Exposure time	1 h

Product characteristics	
Spray application	no
Product ingredient fraction by weight (inhalation)	100 %
Product ingredient fraction by weight (dermal)	100 %
Amounts used	
Amounts used	0.400 g
Human factors not influenced by risk management	
Skin surface area dermal	hands
Skin surface area oral	-
Tranfer factor dermal	100 %
Other given operational conditions affecting consumers exposure	
Room volume	20 m^3
Release fraction to air	10.0 %

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The scenarios described in chapter 9 ff result in an exposure of environment, workers and consumers. In order to determine if this specific exposure is safe for a specific scenario, the exposure is put into relation to the corresponding indicative reference value (e.g. DNEL, PNEC). The resulting risk characterisation ratio (RCR) indicates if the specific scenario is safe or not. In addition to individual exposure estimates also exposure from combined routes and compartments are displayed, as well as combined exposure from different scenarios.

Overview on exposure scenarios and coverage of substance life cycle

ES number	Short description of exposure scenario	Resulting life cycle stage						Sector of use (SU)	Process Category (PROC)	Product Category (PC)	Article Category (AC)	Environmental Release Category (ERC)	Volume (tonnes)
		Manufacture	Formulation	End use			Service life (for articles)						
				Industrial	Professional	Consumer							
9.179	Use as a co-formulant in plant protection products, spray applications by professionals (PPP GES 1)				x			3, 22, 10	8A, 11			8D	10000
9.180	Use as a co-formulant in plant protection products, seed and granular applications by professionals (PPP GES 2)				x			3, 22, 10	8A, 8B			8D	10000
9.181	Use as a co-formulant in plant protection products, spray applications by consumers (PPP GES 3)					x		21		27		8D	10000
9.182	Use as a co-formulant in plant protection products, seed and granular applications by consumers (PPP GES 4)					x		21		27		8D	10000

10.179 Scenario 179: Use as a co-formulant in plant protection products, spray applications by professionals (PPP GES 1)

The following RCR calculations refer to the contributing scenarios described in chapter 9.179

10.179.1 Contributing Scenario (1) controlling environmental exposure for ERC8D

Use as a co-formulant in plant protection products, spray applications by professionals

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

10.179.1.1 Aquatic compartment (including sediment)

Table 5. Environmental risk aquatic of ES 179.1

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	0.235 mg/L	0.240 mg/L	0.979167	5.596
Freshwater sediment	0.158 mg/kg_{dwt}	0.9168 mg/kg_{dwt}	0.172339	31.795
Marine water	0.0238 mg/L	0.024 mg/L	0.991667	5.525
Marine water sediment	0.0161 mg/kg_{dwt}	0.0917 mg/kg_{dwt}	0.175573	31.209

10.179.1.2 Terrestrial compartment

Table 6. Environmental risk terrestrial of ES 179.1

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.021877 mg/kg_{dwt}	7.5 mg/kg_{dwt}	0.002917	4.10E4

10.179.1.4 Man via environment

Secondary poisoning considers indirect exposure of man via foods, air and drinking water. The following table shows the calculated exposure to the substance from exemplary food sources at different trophic levels together with the total exposure over all routes and food sources.

Table 7. Environmental risk man via environment of ES 179.1

Food source	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL	MSafe kg/d
Fish	8.56E-6 mg/kg_{bw}/day	15 mg/kg_{bw}/day	5.70E-7	-
Root crop	3.89E-6 mg/kg_{bw}/day	15 mg/kg_{bw}/day	2.59E-7	-

Food source	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL	MSafe kg/d
Leaf crop	0.000188 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	0.000013	-
Milk	6.01E-8 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	4.01E-9	-
Meat	3.23E-9 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	2.15E-10	-
Drinking water	0.000106 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	7.04E-6	-
inhalation	4.68E-6 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	3.12E-7	-
Total	0.00031 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	0.000021	2.65E5

10.179.2 Contributing Scenario (2) controlling professional worker exposure for PROC 8A

Use as a co-formulant in plant protection products, spray applications by professionals Mixing and loading of plant protection products into delivery equipment (hand-held spraying)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes if applicable.

Table 8. Worker risk of ES 179.2

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, long-term systemic (measured / external: The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be	2.929 mg/kg$_{bw}$/day	2,750 mg/kg$_{bw}$/day	0.001065

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR. Use rate 1 kg/d.)			
inhalation, long-term systemic (measured / external: The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR. Use rate 1 kg/d.)	0.005 mg/m^3	175 mg/m^3	0.000029
Combined routes	2.93 mg/kg$_{bw}$/day	-	0.001094

10.179.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Use as a co-formulant in plant protection products, spray applications by professionals Mixing and loading of plant protection products into delivery equipment (tractor-mounted)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes if applicable.

Table 9. Worker risk of ES 179.3

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, long-term systemic (measured / external: Use rate 20kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)	1.714 mg/kg_{bw}/day	2,750 mg/kg_{bw}/day	0.000623
inhalation, long-term systemic (measured / external: Use rate 20kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of	0.140 mg/m^3	175 mg/m^3	0.0008

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
the CSR.)			
Combined routes	1.734 mg/kg$_{bw}$/day	-	0.001423

10.179.4 Contributing Scenario (4) controlling professional worker exposure for PROC 11

Use as a co-formulant in plant protection products, spray applications by professionals Delivery and dispersion of plant protection products (hand-held spraying)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes if applicable.

Table 10. Worker risk of ES 179.4

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, long-term systemic (measured / external: Use rate 1 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)	0.577 mg/kg$_{bw}$/day	2,750 mg/kg$_{bw}$/day	0.00021
inhalation, long-term systemic (measured / external: Use rate 1 kg/d; The European Crop Protection Association provides a detailed description how REACh require-	3.503 mg/m^3	175 mg/m^3	0.020017

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
ments can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)			
Combined routes	1.077 mg/kg$_{bw}$/day	-	0.020227

10.179.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Use as a co-formulant in plant protection products, spray applications by professionals Delivery and dispersion of plant protection products (tractor mounted)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes if applicable.

Table 11. Worker risk of ES 179.5

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, long-term systemic (measured / external: Use rate 20 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has	0.583 mg/kg$_{bw}$/day	2,750 mg/kg$_{bw}$/day	0.000212

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)			
inhalation, long-term systemic (measured / external: Use rate 20 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)	0.002 mg/m^3	175 mg/m^3	0.000011
Combined routes	0.583286 mg/kg_{bw}/day	-	0.000223

10.180 Scenario 180: Use as a co-formulant in plant protection products, seed and granular applications by professionals (PPP GES 2)

The following RCR calculations refer to the contributing scenarios described in chapter 9.180

10.180.1 Contributing Scenario (1) controlling environmental exposure for ERC8D

Use as a co-formulant in plant protection products, seed and granular applications by professionals

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

10.180.1.1 Aquatic compartment (including sediment)

Table 12. Environmental risk aquatic of ES 180.1

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	0.235 mg/L	0.240 mg/L	0.979167	5.596
Freshwater sediment	0.166 mg/kg_{dwt}	0.9168 mg/kg_{dwt}	0.181065	30.262
Marine water	0.0238 mg/L	0.024 mg/L	0.991667	5.525
Marine water sediment	0.0168 mg/kg_{dwt}	0.0917 mg/kg_{dwt}	0.183206	29.909

10.180.1.2 Terrestrial compartment

Table 13. Environmental risk terrestrial of ES 180.1

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	1.195 mg/kg_{dwt}	7.5 mg/kg_{dwt}	0.159295	4.10E4

10.180.1.4 Man via environment

Secondary poisoning considers indirect exposure of man via foods, air and drinking water. The following table shows the calculated exposure to the substance from exemplary food sources at different trophic levels together with the total exposure over all routes and food sources.

Table 14. Environmental risk man via environment of ES 180.1

Food source	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL	MSafe kg/d
Fish	8.56E-6 mg/kg_{bw}/day	15 mg/kg_{bw}/day	5.70E-7	-
Root crop	3.89E-6 mg/kg_{bw}/day	15 mg/kg_{bw}/day	2.59E-7	-
Leaf crop	0.000188 mg/kg_{bw}/day	15 mg/kg_{bw}/day	0.000013	-
Milk	6.01E-8 mg/kg_{bw}/day	15 mg/kg_{bw}/day	4.01E-9	-

Food source	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL	MSafe kg/d
Meat	3.23E-9 mg/kg_{bw}/day	15 mg/kg_{bw}/day	2.15E-10	-
Drinking water	0.000106 mg/kg_{bw}/day	15 mg/kg_{bw}/day	7.04E-6	-
inhalation	4.68E-6 mg/kg_{bw}/day	15 mg/kg_{bw}/day	3.12E-7	-
Total	0.00031 mg/kg_{bw}/day	15 mg/kg_{bw}/day	0.000021	2.65E5

10.180.2 Contributing Scenario (2) controlling professional worker exposure for PROC 8A

Use as a co-formulant in plant protection products, seed and granular applications by professionals Mixing and loading of plant protection products into seed treatment or delivery equipment (M&L solid formulation into batch treater)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes if applicable.

Table 15. Worker risk of ES 180.2

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, long-term systemic (measured / external: Use rate: 10 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip)	0.0086 mg/kg_{bw}/day	2,750 mg/kg_{bw}/day	3.13E-6

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
. The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)			
inhalation, long-term systemic (measured / external: Use rate: 10 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip) . The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)	0.007 mg/m^3	175 mg/m^3	0.00004
Combined routes	0.0096 mg/kg_{bw}/day	-	0.000043

10.180.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Use as a co-formulant in plant protection products, seed and granular applications by professionals Mixing and loading of plant protection products into seed treatment or delivery equipment

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes if applicable.

Table 16. Worker risk of ES 180.3

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, long-term systemic (measured / external: Use rate 800 kg/d;	0.212 mg/kg_{bw}/day	2,750 mg/kg_{bw}/day	0.000077

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)			
inhalation, long-term systemic (measured / external: Use rate 800 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)	0.300 mg/m^3	175 mg/m^3	0.001714

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
Combined routes	0.254857 mg/kg_{bw}/day	-	0.001791

10.180.4 Contributing Scenario (4) controlling professional worker exposure for PROC 8A

Use as a co-formulant in plant protection products, seed and granular applications by professionals Delivery and dispersion of agrochemical plant protection products or treated seeds (open cab solid broadcast spreader)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes if applicable.

Table 17. Worker risk of ES 180.4

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, long-term systemic (measured / external: Use rate: 800 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)	0.250 mg/kg_{bw}/day	2,750 mg/kg_{bw}/day	0.000091
inhalation, long-term systemic (measured / external: Use rate: 800 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for	0.300 mg/m^3	175 mg/m^3	0.001714

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)			
Combined routes	0.292857 mg/kg_{bw}/day	-	0.001805

10.180.5 Contributing Scenario (5) controlling professional worker exposure for PROC 8A

Use as a co-formulant in plant protection products, seed and granular applications by professionals Delivery and dispersion of agrochemical plant protection products or treated seeds (spreading of granules/treated seeds using belly grinder including loading of equipment)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes if applicable.

Table 18. Worker risk of ES 180.5

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, long-term systemic (measured / external: Use rate: 20 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has	6.307 mg/kg_{bw}/day	2,750 mg/kg_{bw}/day	0.002293

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)			
inhalation, long-term systemic (measured / external: Use rate: 20 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)	0.274 mg/m^3	175 mg/m^3	0.001566
Combined routes	6.346 mg/kg_{bw}/day	-	0.003859

10.180.6 Contributing Scenario (6) controlling professional worker exposure for PROC 8B

Use as a co-formulant in plant protection products, seed and granular applications by professionals Transfer of treated seeds from batch treater into bags (indoors)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes if applicable.

Table 19. Worker risk of ES 180.6

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, long-term systemic (measured / external: Use rate 10 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)	0.0069 mg/kg_{bw}/day	2,750 mg/kg_{bw}/day	2.51E-6
inhalation, long-term systemic (measured / external: Use rate 10 kg/d; The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage	1.25 mg/m^3	175 mg/m^3	0.007143

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
(http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here. For more details please refer to Chapter 9 of the CSR.)			
Combined routes	0.185471 mg/kg_{bw}/day	-	0.007145

10.181 Scenario 181: Use as a co-formulant in plant protection products, spray applications by consumers (PPP GES 3)

The following RCR calculations refer to the contributing scenarios described in chapter 9.181

10.181.1 Contributing Scenario (1) controlling environmental exposure for ERC8D

Use as a co-formulant in plant protection products, spray applications by consumers

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

10.181.1.1 Aquatic compartment (including sediment)

Table 20. Environmental risk aquatic of ES 181.1

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	0.235 mg/L	0.240 mg/L	0.979167	5.596
Freshwater sediment	0.156 mg/kg_{dwt}	0.9168 mg/kg_{dwt}	0.170157	32.202
Marine water	0.0238 mg/L	0.024 mg/L	0.991667	5.525
Marine water sediment	0.0161 mg/kg_{dwt}	0.0917 mg/kg_{dwt}	0.175573	31.209

10.181.1.2 Terrestrial compartment

Table 21. Environmental risk terrestrial of ES 181.1

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.021877 mg/kg_{dwt}	7.5 mg/kg_{dwt}	0.002917	4.10E4

10.181.1.4 Man via environment

Secondary poisoning considers indirect exposure of man via foods, air and drinking water. The following table

shows the calculated exposure to the substance from exemplary food sources at different trophic levels together with the total exposure over all routes and food sources.

Table 22. Environmental risk man via environment of ES 181.1

Food source	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL	MSafe kg/d
Fish	8.56E-6 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	5.70E-7	-
Root crop	3.89E-6 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	2.59E-7	-
Leaf crop	0.000188 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	0.000013	-
Milk	6.01E-8 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	4.01E-9	-
Meat	3.23E-9 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	2.15E-10	-
Drinking water	0.000106 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	7.04E-6	-
inhalation	4.68E-6 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	3.12E-7	-
Total	0.00031 mg/kg$_{bw}$/day	15 mg/kg$_{bw}$/day	0.000021	2.65E5

10.181.2 Contributing Scenario (2) controlling consumer exposure for PC 27

Use as a co-formulant in plant protection products, spray applications by consumers Use as a co-formulant in plant protection products, spray applications by consumers

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA using the Ecetoc TRA calculation model.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes if applicable.

Table 23. Consumer risk of ES 181.2

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal long-term systemic (measured / external: Calculated with ECPA OWB v2.5 and the default values of ECPA OWB, i.e. 100% concentration; amount used: 20g/d, Frequency and duration: Once daily, No PPE, outdoors and	0.206 mg/kg$_{bw}$/day	1,650 mg/kg$_{bw}$/day	0.000125

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
indoors covered assuming natural ventilation. The calculation covers Mixing & Loading and the spray application. For more details please refer to Chapter 9 of the CSR. The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here.)			
inhalation long-term systemic (measured / external: Calculated with ECPA OWB v2.5 and the default values of ECPA OWB, i.e. 100% concentration; amount used: 20g/d, Frequency and duration: Once daily, No PPE, outdoors and indoors covered assuming natural ventilation. The calculation covers Mixing & Loading and the spray application. For more details please refer to Chapter 9 of the CSR. The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has	0.002 mg/m^3	52 mg/m^3	0.000038

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here.)			
oral	-	-	-
Combined routes	0.208 mg/kg_{bw}/day	-	0.000163

10.182 Scenario 182: Use as a co-formulant in plant protection products, seed and granular applications by consumers (PPP GES 4)

The following RCR calculations refer to the contributing scenarios described in chapter 9.182

10.182.1 Contributing Scenario (1) controlling environmental exposure for ERC8D

Use as a co-formulant in plant protection products, seed and granular applications by consumers

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

10.182.1.1 Aquatic compartment (including sediment)

Table 24. Environmental risk aquatic of ES 182.1

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	0.235 mg/L	0.240 mg/L	0.979167	5.596
Freshwater sediment	0.166 mg/kg_{dwt}	0.9168 mg/kg_{dwt}	0.181065	30.262
Marine water	0.0238 mg/L	0.024 mg/L	0.991667	5.525
Marine water sediment	0.0168 mg/kg_{dwt}	0.0917 mg/kg_{dwt}	0.183206	29.909

10.182.1.2 Terrestrial compartment

Table 25. Environmental risk terrestrial of ES 182.1

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	1.19 mg/kg_{dwt}	7.5 mg/kg_{dwt}	0.158691	4.10E4

10.182.1.4 Man via environment

Secondary poisoning considers indirect exposure of man via foods, air and drinking water. The following table shows the calculated exposure to the substance from exemplary food sources at different trophic levels together with the total exposure over all routes and food sources.

Table 26. Environmental risk man via environment of ES 182.1

Food source	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL	MSafe kg/d
Fish	8.56E-6 mg/kg_{bw}/day	15 mg/kg_{bw}/day	5.70E-7	-
Root crop	3.89E-6 mg/kg_{bw}/day	15 mg/kg_{bw}/day	2.59E-7	-
Leaf crop	0.000188 mg/kg_{bw}/day	15 mg/kg_{bw}/day	0.000013	-
Milk	6.01E-8 mg/kg_{bw}/day	15 mg/kg_{bw}/day	4.01E-9	-
Meat	3.23E-9 mg/kg_{bw}/day	15 mg/kg_{bw}/day	2.15E-10	-
Drinking water	0.000106 mg/kg_{bw}/day	15 mg/kg_{bw}/day	7.04E-6	-
inhalation	4.68E-6 mg/kg_{bw}/day	15 mg/kg_{bw}/day	3.12E-7	-
Total	0.00031 mg/kg_{bw}/day	15 mg/kg_{bw}/day	0.000021	2.65E5

10.182.2 Contributing Scenario (2) controlling consumer exposure for PC 27

Use as a co-formulant in plant protection products, seed and granular applications by consumers Use as a co-formulant in plant protection products, seed and granular applications by consumers

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA using the Ecetoc TRA calculation model.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes if applicable.

Table 27. Consumer risk of ES 182.2

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal long-term systemic (measured / external: Calculated with ECPA OWB v2.5 and the default values of ECPA OWB, i.e. 100% concentration; amount used: 0.4 g/d, Frequency and duration: Once daily, Skin exposed: 960 cm2 (both hands), No PPE, outdoors and indoors covered assuming natural ventilation. For more details please refer to Chapter 9 of the CSR. The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For professional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here.)	5.298 mg/kg_{bw}/day	1,650 mg/kg_{bw}/day	0.003211
inhalation long-term systemic (measured / external: Calculated with ECPA OWB v2.5 and the default values of ECPA OWB, i.e. 100% concentration; amount used: 0.4 g/d, Frequency and duration: Once daily, Skin exposed: 960 cm2 (both hands), No PPE, outdoors and indoors covered assuming natural ventilation. For more details please refer to Chapter 9 of the CSR. The European Crop Protection Association provides a detailed description how REACh requirements can be applied for chemicals used as co-formulant in plant protection products. For pro-	0.002 mg/m^3	52 mg/m^3	0.000038

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
fessional workers (operators) and consumers (amateurs), a specific tool (ECPA OWB) has been developed which is specifically designed to assess crop protection uses and provides a more realistic assessment for these uses in comparison to the standard REACH tools. The actual version (ECPA OWB-Tool v2.5) can be downloaded on ECPA homepage (http://www.ecpa.eu/files/attachments/OWB%20Final%2015Jul2013.zip). The calculated exposure estimates are given here.)			
oral	-	-	-
Combined routes	5.3 mg/kg_{bw}/day	-	0.003249

QUALITATIVE CSA - SKIN IRRITATION AND EYE DAMAGE pages 046 – 048

Worker

The human health hazard assessment of alkyl ethersulfates (AES) resulted in the identification of skin and eye irritation as the leading health effect. All alkyl ethersulfates of the category are classified for eye damage (H318/R41) and skin irritation (H315/R38). Specific concentration limits for eye damage were established ≥5 and <10% (irritating to eyes). The generic concentration limit for skin irritants is 10% according to CLP and 20% according to DPD. The available data for this effect do not provide quantitative dose-response information; thus, no short-term local DNELs have been derived for dermal exposure and no quantitative risk assessment was performed. Exposure assessment and risk characterisation are performed on a qualitative basis.

The purpose of a qualitative risk characterization is to assess "the likelihood that effects are avoided when implementing the exposure scenario…" (REACH Annex 1, Section 6.5). This qualitative Chemical Safety Assessment (CSA) approach aims to reduce/avoid contact when there is no basis for setting a DNEL or DMEL for a certain human health adverse effect, i.e. when the available data for this adverse effect do not provide quantitative dose-response information, but there exist toxicity data appropriate to allow a qualitative risk characterization. Implementation of risk management measures (RMMs) and operational conditions (OCs) need to be proportional to the degree of concern for the health hazard presented by the substance. Skin irritation is considered a low hazard while eye damage represents a moderate hazard (ECHA Guidance on information requirements and chemical safety assessment, Part E; November 2012). Thus, alkyl ethersulfates are allocated to the moderate hazard category for a qualitative exposure assessment. Exposures should be controlled to at least the levels that represent an acceptable level of risk, i.e. implementation of the chosen RMMs will ensure that the likelihood of an event occurring due to the hazard of the substance is negligible, and the risk is considered to be controlled to a level of no concern.

As qualitative approach dermal exposure should be minimised by appropriate RMMs. Personal protective equipment (PPE) such as protective clothing, closely fitting goggles and chemical-resistant gloves are required in all parts of the facility where contact with product is possible. Further technical and organisational measures apply, such as good general ventilation, good documentation of substance-handling procedures, training for workers on good practice, good standard of personal hygiene, special procedures for cleaning and maintenance etc. When these RMMs and OCs are applied, the risk for dermal exposure is sufficiently controlled. Where activities may lead to aerosol release (e.g. spraying of concentrated AES), additional skin and eye protection measures such as impervious suits and face shields as well as respiratory protection are required.

Handling and storage risk management measures that are generally identified for skin and eye irritation are given in the table below.

Components of the Qualitative Risk Assessment to prevent skin and eye contact

Examples of relevant Precautionary (P) Statements and Response (R) Phrases	**Components of the Qualitative Risk Assessment**
Prevention: • Do not get in eyes, on skin, or on clothing (P262) • Wear protective gloves/protective clothing/eye protection/face protection (P280) • Avoid contact with skin and eyes (S24/25) • In case of contact with eyes rinse immediately with plenty of water and seek medical advice (S26) • Wear suitable gloves and eye/face protection (S37/39) Response: • IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing (P305 + P351 + P338) • If eye irritation persists: Get medical advice/attention (P337 + P313)	• Avoid direct contact with product; • Wear protective gloves and suitable eye protection (chemical *goggles*) at all times when handling the substance • Where activities may lead to aerosol release e.g. spraying of concentrated AES or handling of concentrated dusty AES, then additional skin and eye protection measures such as impervious suits and face shields as well as respiratory protection are required. • Avoid splashes and spills; • Avoidance of contact with contaminated tools and objects; • Clean up contamination/spills as soon as they occur; • Implementation of basic standards of occupational hygiene; • Minimise number of staff exposed; • Minimise number of manual phases; • Regular cleaning of equipment and work area; • Ensure a good standard of general ventilation; • Ensure suitable management/supervision is in place to check that the RMMs in place are being used correctly and OCs followed; • Train staff on good practice to prevent / minimise exposures and to report any eye problems that may develop; • Adopt good standards of personal hygiene.

A review of these RMMs indicates that, if the user complies with the generic statements, workers´ exposure to AES will be negligible and risks due to skin and eye irritation can be considered to be adequately controlled.

General population

The general population will not come into contact with the neat substances. According to a voluntary industry program carrying out Human and Environmental Risk Assessments (HERA, 2003) the maximum concentration of AES in consumer products is almost 30%. As described above, skin and eye irritation of AES according to the classification criteria laid down in Regulation (EC) 1272/2008 and Directive 67/548/EEC, respectively are not expected below concentrations of 5%. Eye irritation upon accidental spilling of AES containing products is expected to represent the scenario of concern for the general population. In case the concentration of 5% AES is exceeded within the respective consumer exposure scenario, e.g. during use of hand dish washing products, toilet cleaners or laundry liquids, suited risk management measures are in place to ensure safe use. Suited risk management measures may comprise of increased viscosity of products in order to avoid splashes and spills during handling, the use of completed dosing solutions (including tableting of powders), child-resistant fastenings or further product-integrated measures, like increase of particle size to decrease the inhalable fraction of powders. The listed risk management measures are however not comprehensive and further RMMs suited to minimise dermal exposure may be applied. In addition, products containing higher concentrations of AES are commonly used after dilution in water. Handling of diluted AES however is not of concern regarding skin irritation and eye damage. Skin contact to products containing higher concentrations of AES will in general be limited to short exposure periods before being washed off (e.g. hand dishwashing products). Also co-formulation with other surfactants decreases the irritating potential of surfactants when compared to the neat surfactant. Co-formulation results in a lowered critical micelle concentration and subsequently in formation of micelles what in turn reduces the irritating potential when compared to the neat alkyl ethersulfate. This was reported for various surfactants like alkyl sulfates but also alkyl ethersulfates

(Dillarstone & Paye, 1993, Effendy & Maibach, 2006; Paye et al, 2006). The low eye irritating potential of AES containing consumer products is also reflected by the long experience with those products. Although eye irritation may occur upon accidental spilling of AES containing products into the eye, this irritation is generally reversible in nature and thus does not represent a serious hazard to the general population. This is supported by poison control center data evaluated within the HERA report: "…Accidental eye contact with AES containing products will at worst result in a transient irritation which heals within a few days with no irreversible effects to the eye. Nevertheless, in case of such an accident, the eyes should be rinsed immediately with plenty of water."
Thus, the irritating potential of AES in products considered for consumer uses are sufficiently controlled via a variety of risk management measures and available data proved their efficiency. This conclusion is also supported by the HERA report. Nevertheless, it should be stated to avoid contact with the eyes and to flush eyes with plenty of water in case of accidental spilling.

Dillarstone & Paye 1993:
Antagonism in concentrated surfactant systems. Contact Derm. 28, 198
Effendy & Maibach 2006:
Detergents. In Irritant Dermatitis, Chew A-L and Maibach HI, (Eds.), Springer 2006
HERA report 2003:
http://www.heraproject.com/files/1-HH-04-HERA%20AES%20HH%20web%20wd.pdf
Paye et al. 2006:
Antagonisms between surfactants: The case of laundry detergents. Tenside Surf. Det. 43, 290-294.

Secondary poisoning:
Based on the available information, there is no indication of a bioaccumulation potential and, hence, secondary poisoning is not considered relevant

Information on the exposure assessment tool
Exposure scenarios 9.1 to 9.x have been calculated using EasyTRA 4.0.0. EasyTRA uses algorithms on the basis of the latest versions of the ECHA REACH Guidance chapters R12 (as of March 2010), R14, R15, and R16 (as of October 2012) and EUSES®. EasyTRA is a graphical user interface which works in compliance with ECETOC® Targeted Risk Assessment 3 (as of July 2012; for detailed information see ECETOC Technical Report No. 114) for the calculation of worker and consumer exposure and complies with EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a for the environmental exposure (see ECHA REACH Guidance chapter R16.6.2). Results obtained by EasyTRA are routinely validated against the results obtained by performing the same calculations with the original tools.

Details on used Targeted Risk Assessment:
Exposure assessment in EasyTRA follows a tiered approach, offering increasingly sophisticated refinements at later tiers to adapt the scenarios to real-life situations. The Tier 1 assessments (reduced number of parameters, conservative results) refer to ECETOC TRA v3, 2012 for the consumer, worker and environmental exposure assessment. The Tier 2 assessments refer to ConsExpo 4.1 model for consumer exposure assessment or EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a for the calculation of environmental exposure (EUSES), including full access to all EUSES parameters as a third step in the refinement. EasyTRA can also perform a qualitative assessment, following ECHA Guidance Part E or externally calculated values can be considered. EasyTRA offers the options to generate user defined spERCs, article and product categories as a first refinement in the exposure calculations, before switching to higher Tier tools. The following modifications are possible for the worker exposure assessment, that are already suggested in the ECETOC TRA guidance document TR114: Factor for Peak exposure, use of the exact concentration instead of ECETOCs category approach, and use of the exact process duration instead of ECETOCs category approach. In addition, the exact value for the effectiveness of specific types of respiratory protection can be entered. Values originate from EU standards DIN EN136, EN140, EN143, EN149, EN12941, EN12942. All deviations require mandatory justifications, which are documented in the CSR to assure full transparency of the calculations and underlying assumptions.