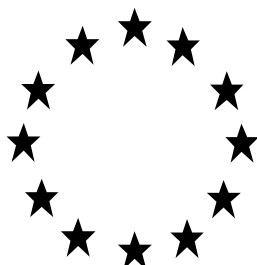


Draft Renewal Assessment Report under Regulation (EC) 1107/2009



FORAMSULFURON

List of Endpoints

Rapporteur Member State: Finland
Co-Rapporteur Member State: Slovakia

March 2015

Volume 1

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Volume 3

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Version History

When	What
2015/March	First draft RAR

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Chapter 1: Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis

Identity, Physical and Chemical Properties, Details of Uses, Further Information (Regulation (EU) N° 283/2013, Annex Part A, points 1.3 and 3.2)

Active substance (ISO Common Name)	Foramsulfuron (no synonyms)
Function (e.g. fungicide)	herbicide
Rapporteur Member State	Finland
Co-rapporteur Member State	Slovakia

Identity (Regulation (EU) N° 283/2013, Annex Part A, point 1)

Chemical name (IUPAC)	1-(4,6-dimethoxypyrimidin-2-yl)-3-(2-dimethylcarbamoyl-5-formamidophenylsulfonyl)urea
Chemical name (CA)	2-[[[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]-4-(formylamino)-N,N-dimethylbenzamide
CIPAC No	659
CAS No	173159-57-4
EC No (EINECS or ELINCS)	not assigned
FAO Specification (including year of publication)	no FAO specification
Minimum purity of the active substance as manufactured	973 g/kg
Identity of relevant impurities (of toxicological, ecotoxicological and/or environmental concern) in the active substance as manufactured	none
Molecular formula	C ₁₇ H ₂₀ N ₆ O ₇ S
Molar mass	452.44 g/mol
Structural formula	

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Section 1 Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis

Physical and chemical properties (Regulation (EU) N° 283/2013, Annex Part A, point 2)

Melting point (state purity)	194.5 °C (98.4% pure foramsulfuron)
Boiling point (state purity)	Not determined-substance decomposes before boiling point is reached (98.4%)
Temperature of decomposition (state purity)	>190 °C (98.4%)
Appearance (state purity)	white powder (97.3%)
Vapour pressure (state temperature, state purity)	4.2 x 10 ⁻¹¹ Pa for 20 °C (98.4%) 1.3 x 10 ⁻¹⁰ Pa for 25 °C (98.4%)
Henry's law constant (state temperature)	5.8 x 10 ⁻¹² Pa x m ³ x mol ⁻¹ (20 °C)
Solubility in water (state temperature, state purity and pH)	37.2 mg/L at pH 4.90 (20 °C) (98.4%) 3293 mg/L at pH 6.91 (20 °C) (98.4%) 94577 mg/L at pH 8.05 (20 °C) (98.4%)
Solubility in organic solvents (state temperature, state purity)	Solubility at 20 °C in g/L (98.4%) acetone 1.925 acetonitrile 1.111 1,2-dichloroethane 0.185 ethyl acetate 0.362 heptane <0.010 methanol 1.660 p-xylene < 0.010
Surface tension (state concentration and temperature, state purity)	65.1 mN/m at 20 °C (1.0 g/L in distilled water) (96.8%)
Partition coefficient (state temperature, pH and purity)	Partition coefficient in 1-octanol / buffered water (20 °C) (98.4%) Pow log Pow pH 2 27.5 1.44 pH 7 0.166 -0.78

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	pH 9 0.0106 -1.97
Dissociation constant (state purity)	pKa = 4.6 (21.5 °C) (98.4%)
UV/VIS absorption (max.) incl. □(state purity, pH)	UV (methanol, neutral) (99.0%) Wavelength molar extinction [nm] [L x mol ⁻¹ x cm ⁻¹] 202 42363 219 31939 252 33298 291 3245
Flammability (state purity)	Not highly flammable (97.3%)
Explosive properties (state purity)	Not explosive (97.3%)
Oxidising properties (state purity)	No oxidizing properties (97.3%)

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Summary of intended uses

GAP rev. 1, 2013-12-11

PPP (product name/code)	FSN+IDF OD 45	Formulation type:	OD
active substance 1	Foramsulfuron	Conc. of as 1:	22.5
safener	Isoxadifen-ethyl	Conc. of safener:	22.5
Applicant:	Bayer CropScience	professional use	<input checked="" type="checkbox"/>
Zone(s):	Central and Southern EU		<input type="checkbox"/>
Verified by MS:	northern/central/southern		

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1	2	3	4	5	6	7	8	9	10	11	12	13	14
Use- No.	Member state(s)	Crop and/ or situation (crop destination / purpose of crop)	F G or I	Pests or Group of pests controlled (additionally: developmental stages of the pest or pest group)	Application			Min interval between applications	Application rate			PHI (days)	Remarks: e.g. safener/synergist per ha e.g. recommended or mandatory tank mixtures
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season		kg, L product / ha a) max. rate per appl. b) max. total rate per crop/season	g, kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max		
1	All	Corn	F	Annual grasses and dicots	Broadcast, overall spraying	BBCH 12-18	a) 1 b) 1	-	a) 2.6 L/ha b) 2.6 L/ha	a) 60g /ha b) as above	150-400	-	Single application of Equip OD Safener (isoxadifen-ethyl) = 60g/ha
2	All	Corn	F	Annual grasses and dicots	Broadcast, overall spraying	BBCH 12-18	a) 2 b) 2	7-14 days	a) 2.6 L/ha b) 2.6 L/ha	a) 30g /ha b) 60g/ha	150-400	-	Split application of Equip OD. Safener (isoxadifen-ethyl) = 2 x 30g/ha

FSN – Foramsulfuron; IDF: Isoxadifen-ethyl

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Section 1 Identity, Physical and Chemical Properties, Details of Uses, Further Information, Methods of Analysis

Chapter 2: Methods of Analysis

Analytical methods for the active substance (Regulation (EU) N° 283/2013, Annex Part A, point 4.1 and Regulation (EU) N° 284/2013, Annex Part A, point 5.2)

Technical a.s. (analytical technique)	HPLC with UV detection
Impurities in technical a.s. (analytical technique)	HPLC with UV detection / GC with FID detection / Ion chromatography with a conductivity detector
Plant protection product (analytical technique)	HPLC with UV detection

Analytical methods for residues (Regulation (EU) N° 283/2013, Annex Part A, point 4.2 & point 7.4.2)

Residue definitions for monitoring purposes

Food of plant origin	foramsulfuron
Food of animal origin	foramsulfuron
Soil	foramsulfuron
Sediment	n.a.
Water surface	foramsulfuron
drinking/ground	foramsulfuron
Air	foramsulfuron
Body fluids and tissues	not required

Monitoring/Enforcement methods

Food/feed of plant origin (analytical technique and LOQ for methods for monitoring purposes)	HPLC-MS/MS. LOQ 0.01 mg/kg (sugar beet body and leaf, lemon, oilseed rape, cereal straw)
Food/feed of animal origin (analytical technique and LOQ for methods for monitoring purposes)	HPLC-MS/MS. LOQ 0.01 mg/kg (egg, milk, bovine tissues)
Soil (analytical technique and LOQ)	HPLC-MS/MS. LOQ 0.1 µg/kg
Water (analytical technique and LOQ)	HPLC-MS/MS. LOQ 0.05 µg/L (surface and drinking water)
Air (analytical technique and LOQ)	HPLC-UV. LOQ 12 µg/m ³
Body fluids and tissues (analytical technique and LOQ)	Not required

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Classification and proposed labelling (SANCO/11802 data point 10 and SANCO/11803 data point 12) according to Regulation (EC) No 1272/2008

Active substance

Pictogram:	-
Signal words:	-
Hazard statements:	H412 Harmful to aquatic life with long lasting effects
Precautionary statements:	P273 Avoid release to the environment.
	P501 Dispose of contents/container in accordance with local regulation.

Product

Pictogram:	GHS07 GHS08 GHS09
Signal words:	Danger
Hazard statements:	H315: Causes skin irritation. H304: May be fatal if swallowed and enters airways. H410 Very toxic to aquatic life with long lasting effects. EUH208: Contains Isoxadifen-ethyl. May produce an allergic reaction.
Precautionary statements:	P280: Wear protective gloves/protective clothing/eye protection/face protection P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P332 + P313: If skin irritation occurs: Get medical advice/attention. P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P331: Do NOT induce vomiting. P405: Store locked up. P501: Dispose of contents/container in accordance with local regulation. EUH401: To avoid risks to human health and the environment, comply with the instructions for use.

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Chapter 3: Impact on Human and Animal Health

Absorption, distribution, excretion and metabolism in mammals (SANCO/11802 data point 5.1)

Rate and extent of absorption:	Approx. 20 % absorption within 48 h (bile-fistulated male rats, low dose)
Distribution:	Initially widely distributed; highest residues at 30 h post application in liver and kidney (low dose), and in thyroid, adrenals, liver, female gonads and eyes (high dose); levels generally low at 72 h.
Potential for accumulation:	No evidence
Rate and extent of excretion:	≥ 95 % within 48 h (5.6 % via urine, 89.6 % via faeces, low dose)
Metabolism in animals	Limited, > 75 % excreted as parent; N-deformylation or cleavage of sulfonylurea bridge
Toxicologically significant compounds (animals and plants)	Foramsulfuron
Toxicologically significant compounds (environment)	Foramsulfuron

Acute toxicity (SANCO/11802 data point 5.2)

Rat LD ₅₀ oral	> 5000 mg/kg bw
Rat LD ₅₀ dermal	> 2000 mg/kg bw
Rat LC ₅₀ inhalation	> 5.04 mg/l (4-h, nose-only)
Skin irritation	Not irritating
Eye irritation	Not irritating
Skin sensitization (test method used and result)	Non sensitising (Magnusson-Kliegman test)
Phototoxicity	No phototoxic potential

Short term toxicity (SANCO/11802 data point 5.3)

Target / critical effect	Unspecific effects: decreased body weight gain and food consumption
Lowest relevant oral NOAEL / NOEL	Rat 28-d: 5000 ppm (434 mg/kg bw/d)
Lowest relevant dermal NOAEL / NOEL	Rat 28-d: > 1000 mg/kg bw/d
Lowest relevant inhalation NOAEL / NOEL	No study required

Genotoxicity (SANCO/11802 data point 5.4)

In <i>vitro</i> studies	Weight of evidence suggested that foramsulfuron is of no
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In vivo studies in somatic cells

genotoxic concern

In vivo studies in germ cells

Long term toxicity and carcinogenicity (SANCO/11802 data point 5.5)

Target/critical effect

None

Lowest relevant NOAEL / NOEL

Rat 2-yr oral: > 20000 ppm (> 849 mg/kg bw/d)

Carcinogenicity

No carcinogenic potential

Reproductive toxicity (SANCO/11802 data point 5.6)

Reproduction target / critical effect

No reproductive toxicity observed.

Lowest relevant reproductive NOAEL / NOEL

Rat: > 15000 ppm (> 1038 mg/kg bw/d)

Developmental target / critical effect

No developmental toxicity observed.

Lowest relevant developmental NOAEL / NOEL

Rabbit: > 500 mg/kg bw/d
(NOEL maternal toxicity, rabbit: 50 mg/kg bw/d)

Neurotoxicity / Delayed neurotoxicity (SANCO/11802 data point 5.7)

Acute neurotoxicity

Subchronic neurotoxicity

No study required. No structural relationship to neurotoxic substances and no evidence of neurotoxic profile in the submitted toxicological studies.

No neurotoxic effects observed in a 28-day neurotoxicity study in rat. NOAEL > 15000 ppm (> 1208 mg/kg bw/day)

Other toxicological studies (SANCO/11802 data point 5.8)

Toxicity studies of metabolites as referred to in the introduction

No studies required; low toxicity with non-specific profile, no plant or soil-specific metabolites identified.

Supplementary studies on the active substance

-

Endocrine disrupting properties

None

Medical data (SANCO/11802 data point 5.9)

.....

No reports of adverse effects on human health.

Summary

ADI

Value

Study

Safety factor

0.5 mg/kg bw/d

Rabbit
developmental
study

100

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AOEL (systemic)

0.1 mg/kg bw/d

Rabbit
developmental
study (corrected
for 20% oral
absorption)

100
[x 20%]

ARfD (acute reference dose)

Not allocated. Not necessary.

Dermal absorption (SANCO/11803 data point 7.3)

.....

Rat (in vivo): < 2% for the concentrate and the spray dilution

Acceptable exposure scenarios (including method of calculation)

Operator

Exposure is below the AOEL even if the PPE is not used:
Exposure 1.5 % of the AOEL according to German model and
9.4 % according to UK POEM.

Workers

No modelling for exposure of workers performed and not
considered necessary. Re-entry activities after spraying of Equip
on the representative use on corn are not necessary.

Bystanders

No modelling for exposure of bystanders and residents
performed and not considered necessary.

Residents

Bystanders and residents are not anticipated to be exposed for
unacceptably high levels of foramsulfuron.

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Chapter 4: Residues

Metabolism in plants (SANCO/11802 data point 6.2.1 and 6.7)

Plant groups covered	Maize
Rotational crops	Wheat, radish, soybean Soybean, wheat
Metabolism in rotational crops similar to metabolism in primary crops?	Yes
Processed commodities	None
Residue pattern in processed commodities similar to residue pattern in raw commodities	-
Plant residue definition for monitoring	Foramsulfuron
Plant residue definition for risk assessment	Foramsulfuron
Conversion factor (monitoring to risk assessment)	None

Metabolism in livestock (SANCO/11802 data points 6.2.2 to 6.2.5 and 6.7)

Animals covered	Poultry, ruminants
Time needed to reach a plateau concentration in milk and eggs	120 hours in milk 10 days for egg yolk, 8 days for egg white
Animal residue definition for monitoring	Foramsulfuron
Animal residue definition for risk assessment	Foramsulfuron
Conversion factor (monitoring to risk assessment)	None
Metabolism in rat and ruminant similar (yes/no)	Yes
Fat soluble residue: (yes/no)	No

Residues in succeeding crops (SANCO/11802 data point 6.6)

.....	<p>Relevant residues in rotational crops are not expected.</p> <p>A study has been performed for the registration of foramsulfuron in the USA (60 g/ha). This test included plantback intervals of 7 days and 14 days for soybean (emergency plantback scenario). No AE F130360 derived residues, above the limits of quantification (0.01mg/kg for parent and 0.02 mg/kg for AE F153745 in seed, 0.05 mg/kg for both compounds in forage and hay) were observed in any raw agricultural commodities from soybeans planted seven days after treatment of the bare plot.</p>
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Stability of residues (SANCO/11802 data point 6.1)

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Deep frozen storage stability tests including foramsulfuron and its metabolite AE F153745 reveal sufficient stability of residues in fortified maize forage, stover and grain during the period of 866 days for grain, 616 days for forage and 620 days for stover. These tests cover the storage conditions of samples for analysis collected in the supervised residue trials.

Residues from livestock feeding studies (SANCO/11802 data point 6.4)

Intakes by livestock ≥ 0.1 mg/kg diet (dry weight basis) (yes/no – if yes, specify the level):

Potential for accumulation (yes/no):

Metabolism studies indicate potential level of residue \geq mg/kg in edible tissue

Muscle

Liver

Kidney

Fat

Milk

Eggs

Ruminant: Yes, max 0.102 mg/kg	Poultry: No	Pig: No
No	No	No
No	No	No
< 0.01 mg/kg at realistic intake of max. 0.102 mg/kg in total dry matter feed		
< 0.01 mg/kg at realistic intake of max. 0.102 mg/kg in total dry matter feed		
< 0.01 mg/kg at realistic intake of max. 0.102 mg/kg in total dry matter feed		
< 0.01 mg/kg at realistic intake of max. 0.102 mg/kg in total dry matter feed		
< 0.01 mg/kg at realistic intake of max. 0.102 mg/kg in total dry matter feed		
< 0.01 mg/kg at realistic intake of max. 0.02 mg/kg in total dry matter feed		

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Summary of critical residues data (SANCO/11802 data point 6.3)

Crop	Northern/ Southern field or glasshouse	Trials results relevant to the critical GAP (a)	Recommendation/comments	MRL mg/kg	HR mg/kg (c)	STMR mg/kg (b)
Maize grain	NEU Field	25 x <0.01		0.01*	0.01	0.01
	SEU Field	22 x <0.01		0.01*	0.01	0.01
Maize forage	NEU Field	25 x <0.05		0.05*	0.05	0.05
	SEU Field	22 x <0.05		0.05*	0.05	0.05

*indicates that the MRL is set at the limit of analytical quantification

(a) Numbers of trials in which particular residue levels were reported eg. 3 x <0.01, 1 x 0.01, 6 x 0.02, 1 x 0.04, 1 x 0.08, 2 x 0.1, 2 x 0.15, 1 x 0.17

(b) Supervised Trials Median Residue ie. the median residue level estimated on the basis of supervised trials relating to the critical GAP

(c) Highest residue

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Consumer risk assessment (SANCO/11802 data point 6.9)

ADI	0.5 mg/kg bw/d
TMDI (% ADI) according to EFSA PRIMo model rev 2	<0.1 %
NEDI (% ADI)	-
Factors included in IEDI and NEDI	-
ARfD	Not allocated
IENTI (% ARfD)	-
NESTI (% ARfD) according to national large portion consumption data	-
Factors included in IESTI and NESTI	-

Processing factors (SANCO/11802 data point 6.5)

Crop / processed crop	Number of studies	Transfer factor	% Transference*
Not relevant			

*Calculated on the basis of distribution in the different portions, parts, or products as determined through balance studies

Proposed MRLs (SANCO/11802 data point 6.7)

Maize grain	0.01* mg/kg
Meat of ruminants	0.01* mg/kg
Fat of ruminants	0.01* mg/kg
Liver of ruminants	0.01* mg/kg
Kidney of ruminants	0.01* mg/kg
Milk of ruminants	0.01* mg/kg

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Chapter 5: Fate and Behaviour in the Environment

Route of degradation (aerobic) in soil (SANCO/11802 data point 7.1.1.1)

Mineralization after 100 days	0.2 - 1.2 % (phenyl label; 80, 90 or 107 days) 2.5 – 16.3 % (pyrimidyl label; 80, 90 or 107 days)
Non-extractable residues after 100 days	73.8 – 93.3 % (phenyl label; 80, 90, or 107 days) 54.7 - 93.1 % (pyrimidyl label; 80, 90 or 107 days)
Metabolites requiring further consideration - name and/or code, % of applied (range and maximum)	AE F130619 (5.1 – 29.1%) AE F092944 (3.4 – 17.8%) AE F153745 (1.7 – 7.8%)

Route of degradation in soil (anaerobic and photolysis) (SANCO/11802 data points 7.1.1.2 and 7.1.1.3)

Anaerobic degradation

Mineralization after 100 days	0.1% AR (phenyl-label, extrapolated) 0.1% AR (pyrimidyl-label, extrapolated)
Non-extractable residues after 100 days	17% AR (phenyl-label, extrapolated) 19% AR (pyrimidyl-label, extrapolated)
Metabolites requiring further consideration - name and/or code, % of applied (range and maximum)	None (AE F130619: 6.6%)

Soil photolysis

Metabolites requiring further consideration - name and/or code, % of applied (range and maximum)	Pyrimidyl label: None. Foramsulfuron was stable to photolysis. Phenyl label: AE F153745 (max. 10.4% AR). DT ₅₀ = 47 d (Athens light conditions)
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Rate of degradation in soil (SANCO/11802 data point 7.1.2 and SANCO/11803 data point 9.1.1)

Method of calculation	FOCUS Kinetics, 2006
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Laboratory studies (range or median, with n value, with r^2 value)	<p>DT_{50lab} (20°C, aerobic): <u>EU trigger endpoints at 20 to 25°C:</u> Foramsulfuron: 1.1 – 9.2 days (n = 5; FOMC), worst case: 9.2 days AE F130619: 0.2 – 6.5 days (n = 7; SFO/FOMC/DFOP), worst case: 6.5 days AE F092944: 2.9 – 254.4 days (n = 5; SFO/FOMC), worst case: 254 days AE F153745: 0.2 – 3.3 days (n = 4; SFO or FOMC), worst case: 3.3 days</p> <p><u>Modelling endpoints (normalized, 20°C, pF 2):</u> Foramsulfuron: 1.9 – 65.9 days (n = 5; FOMC or DFOP), geomean: 13.5 days AE F130619: 0.1 – 15.2 days (n = 7; SFO/FOMC/DFOP), geomean: 2.3 days AE F092944: 3.4 – 147.6 days (n = 5; SFO or FOMC), geomean: 25.9 days AE F153745: 0.2 – 3.7 days (n = 4; SFO or FOMC), geomean: 0.85 days</p>
	<p>DT_{90lab} (20°C, aerobic): <u>EU trigger endpoints at 20 to 25°C:</u> Foramsulfuron: 10.9 – 178.8 days (n = 5; FOMC), worst case: 178.8 days AE F130619: 0.7 – 27.6 days (n = 7; SFO/FOMC/DFOP), worst case: 27.6 days AE F092944: 9.6 – 844.6 days (n = 5; SFO or FOMC), worst case: 845 days AE F153745: 0.7 – 11.6 days (n = 4; SFO or FOMC), worst case: 11.6 days</p>
	<p>DT_{50lab} (10°C, aerobic): Foramsulfuron: 19.5 days (DFOP, geomean of phenyl and pyrimidyl label) DT_{90lab} (10°C, aerobic): Foramsulfuron: 232.6 days (DFOP, geomean of phenyl and pyrimidyl label)</p>
	<p>DT_{50lab} (20°C, anaerobic): Foramsulfuron: 165 days (SFO)</p>
	<p>degradation in the saturated zone: was not investigated in a specific study since it is not anticipated that residues will reach saturated zones after use according to the GAP</p>
Field studies (state location, range or median with n value)	<p>No studies performed because not triggered by laboratory studies. DT_{50f}: None</p>
	<p>DT_{90f}: None</p>
Soil accumulation and plateau concentration	<p>No accumulation anticipated.</p>

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Soil adsorption/desorption (SANCO/11802 data point 7.1.3)

K_f / K_{oc}

Soil	K_f	$K_{f,oc}$	1/n
Silty loam	2.61	151	0.96
Silty sand	0.42	89	0.82
Loamy sand	0.91	51	0.86
Clayey sand	0.31	38	0.86
Sandy clay loam	1.17	63	0.87
Geometric mean:		69.7	-
arithmetic mean:		78.4	0.87
Metabolite AE F130619:			
Soil	K_f	$K_{f,oc}$	1/n
Clayey sand	0.36	44	0.93
Sandy clay loam	0.79	40	0.90
Silty sand	1.90	63	0.93
Sandy loam	2.98	144	0.94
Geometric mean:		63.2	-
arithmetic mean:		72.8	0.93
Metabolite AE F092944:			
Soil	K_f	$K_{f,oc}$	1/n
Loamy sand	2.47	211	0.69
Loamy sand	2.59	89	0.86
Sandy loam	8.25	625	0.65
Loamy sand	1.05	663	0.52
Sandy loam	1.82	696	0.63
Sandy loam	4.11	395	0.78
Silt loam	81.3	11289	0.58
Silty clay	16.5	917	0.62
Geometric mean:		63	-
arithmetic mean:		621	0.67
Metabolite AE F153745:			
Soil	K_f	$K_{f,oc}$	1/n
Sand	0.51	63	0.98
clay loam	1.43	35	0.97
Sandy loam	1.49	50	0.92
loam	0.99	48	1.00
Geometric mean:		48	-
arithmetic mean:		49	0.97
K_d	Not calculated. K_f and $K_{f, oc}$ taken from Freundlich isotherms		
pH dependence (yes / no) (if yes type of dependence)	No		

Mobility in soil (SANCO/11802 data points 7.1.4 and SANCO/11803 data points 9.1.2)

Column leaching

Not tested; adsorption determined by batch equilibrium studies

Aged residues leaching

Not tested; adsorption determined by batch equilibrium studies

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

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Lysimeter/field leaching studies	Mean annual average concentration in leachates was below 0.1 µg a.s.-equiv./L for foramsulfuron and its metabolites. Radioactive residues in leachates bound to fulvic acid fraction from soil organic matter.
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PEC (soil) (SANCO/11803 data point 9.1.3)

Parent

Method of calculation	1 st tier approach (Excel sheet) 5 cm soil mixing depth, 1.5 kg/L bulk density 25% crop interception DT ₅₀ = 82 d (maximum DT ₅₀ of laboratory studies; normalized to 20°C and field capacity)
Application rate	1 x 60 g a.s./ha in maize, BBCH 12-18 2 x 30 g a.s./ha in maize, 7 d interval, BBCH 12-18

PEC_(s)

		Single application 60 g a.s./ha Actual	Single application 60 g a.s./ha Time weighted average	Multiple application 2 x 30 g a.s./ha Actual	Multiple application 2 x 30 g a.s./ha Time weighted average
Initial		0.060	---	0.058	---
Short term	24h	0.059	0.060	0.058	0.058
	2d	0.059	0.059	0.057	0.058
	4d	0.058	0.059	0.056	0.057
Long term	7d	0.057	0.058	0.055	0.057
	28d	0.047	0.053	0.046	0.052
	50d	0.039	0.049	0.038	0.048
	100d	0.026	0.040	0.025	0.039

Metabolite

Method of calculation	1 st tier approach (Excel sheet) 5 cm soil mixing depth, 1.5 kg/L bulk density 25% crop interception <u>AE F130619</u> DT ₅₀ = 25.7 d ¹⁾ Maximum occurrence = 29.1 % Molar mass = 424.44 g/mol <u>AE F153745</u> DT ₅₀ = 3.68 d ¹⁾ Maximum occurrence = 7.8 % Molar mass = 271.30 g/mol <u>AE F092944</u> DT ₅₀ = 147.67 d ¹⁾ Maximum occurrence = 17.8 %
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Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

	Molar mass = 155.16 g/mol 1) maximum DT ₅₀ of laboratory studies; normalized to 20°C and field capacity
Application rate	1 x 60 g a.s./ha in maize, BBCH 12-18 2 x 30 g a.s./ha in maize, 7 d interval, BBCH 12-18

PEC_(s)
AE F130619

		Single application 60 g a.s./ha Actual	Single application 60 g a.s./ha Time weighted average	Multiple application 2 x 30 g a.s./ha Actual	Multiple application 2 x 30 g a.s./ha Time weighted average
Initial		0.016	---	0.015	---
Short term	24h	0.016	0.016	0.015	0.015
	2d	0.016	0.016	0.014	0.015
	4d	0.015	0.016	0.013	0.014
Long term	7d	0.014	0.015	0.012	0.014
	28d	0.008	0.011	0.007	0.011
	50d	0.004	0.009	0.004	0.008
	100d	0.001	0.006	0.001	0.005

PEC_(s)
AE F153745

		Single application 60 g a.s./ha Actual	Single application 60 g a.s./ha Time weighted average	Multiple application 2 x 30 g a.s./ha Actual	Multiple application 2 x 30 g a.s./ha Time weighted average
Initial		0.003	---	0.002	---
Short term	24h	0.002	0.003	0.001	0.002
	2d	0.002	0.002	0.001	0.001
	4d	0.001	0.001	0.001	0.001
Long term	7d	0.001	0.001	<0.001	0.001
	28d	<0.001	0.001	<0.001	<0.001
	50d	<0.001	<0.001	<0.001	<0.001
	100d	<0.001	<0.001	<0.001	<0.001

PEC_(s)
AE F092944

		Single application 60 g a.s./ha Actual	Single application 60 g a.s./ha Time weighted average	Multiple application 2 x 30 g a.s./ha Actual	Multiple application 2 x 30 g a.s./ha Time weighted average
Initial		0.004	---	0.004	---

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Short term	24h	0.004	0.004	0.004	0.004
	2d	0.004	0.004	0.004	0.004
	4d	0.004	0.004	0.004	0.004
Long term	7d	0.004	0.004	0.003	0.003
	28d	0.003	0.003	0.003	0.003
	50d	0.003	0.003	0.003	0.003
	100d	0.002	0.003	0.002	0.003

Route and rate of degradation in water (SANCO/11802 data point 7.2 and SANCO/11803 data point 9.2)

Hydrolysis of active substance and relevant metabolites > 10% (DT₅₀) (state pH and temperature)

pH 4 (25°C): DT₅₀ = 3.7 days (AE F092944, AE F153745)

pH 5 (25°C): DT₅₀ = 10.1 days (AE F092944, AE F153745)

pH 7 (25°C): DT₅₀ = 128 days (none)

pH 9 (25°C): DT₅₀ = 132 days (none)

Photolytic degradation of active substance and relevant metabolite above 10%

Sterile aqueous buffer at pH 7:
DT₅₀ (experimental): 2.81 days (SFO, mean of phenyl and pyrimidyl label)
DT₅₀ (Athens light conditions; 12 h day/night): 13.3 days (SFO, mean of phenyl and pyrimidyl label)

Phototransformation products: BCS-CW90756 (16.6% AR), BCS-CV29520 (10.2%), BCS-AW41401 (14.2%) and AE F099095 (35.2%)

Sterile natural water at pH 8.3:
DT₅₀ (experimental): 2.0 days (SFO, mean of phenyl and pyrimidyl label)
DT₅₀ (Athens light conditions): 10.2 days (SFO, mean of phenyl and pyrimidyl label)

Phototransformation products: AE F130619 (10.7%), BCS-CW90756 (19.7% AR), BCS-CV29520 (12.8%), BCS-AW41401 (17.6%) and AE F099095 (19.7%) and AE F092944 (26.5%)

Readily biodegradable (yes/no)

No

Mineralization in surface water:

Mineralization insignificant (<0.1% AR)
DT₅₀: not calculated due to insignificant degradation observed

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Finland	March 2015	foramsulfuron

List of Endpoints

Degradation in water/sediment	- DT ₅₀ water - DT ₉₀ water	<p>DT₅₀:</p> <p><u>EU trigger endpoints, geomean of phenyl- and pyrimidyl label:</u></p> <p>Foramsulfuron</p> <p>14.8 days for Pikeville system</p> <p>22.0 days for Hoechst sand system, worst case 22.0 days</p> <p>AE F130619</p> <p>16.8 days for Pikeville system</p> <p>115.0 days for Hoechst sand system, worst case 115.0 days</p> <p>AE F092944</p> <p>n.d. for Pikeville system</p> <p>n.d. for Hoechst sand system</p> <p>AE F153745</p> <p>n.d. for Pikeville system</p> <p>31.2 days for Hoechst sand system, worst case 31.2 days</p> <p>AE 0338795</p> <p>8.0 days for Pikeville system</p> <p>104.0 days for Hoechst sand system, worst case 104 days</p> <p><u>Modelling endpoints (20°C, pF 2 normalised):</u></p> <p>Foramsulfuron</p> <p>14.8 days for Pikeville system</p> <p>42.8 days for Hoechst sand system, geomean 25.2 days</p> <p>AE F130619</p> <p>16.8 days for Pikeville system</p> <p>115.0 days for Hoechst sand system, geomean 44.0 days</p> <p>AE F092944</p> <p>n.d. for Pikeville system</p> <p>n.d. for Hoechst sand system, geomean n.a.</p> <p>AE F153745</p> <p>n.d. for Pikeville system</p> <p>31.2 days for Hoechst sand system, geomean 31.2 days</p> <p>DT₉₀:</p> <p><u>EU trigger endpoints:</u></p> <p>n.d.</p> <p><u>Modelling endpoints (20°C, pF 2 normalised):</u></p> <p>n.d.</p> <p>n.d.: not determined/could not be calculated</p>
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Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

- DT ₅₀ whole system - DT ₉₀ whole system	<p>DT₅₀: <u>EU trigger endpoints, geomean of phenyl- and pyrimidyl label:</u> Foramsulfuron 27.3 days for Pikeville system 39.6 days for Hoechst sand system, worst case 39.6 days AE F130619 5.4 days for Pikeville system 45.8 days for Hoechst sand system, worst case 45.8 days AE F092944 109.6 days for Pikeville system n.d. for Hoechst sand system, worst case 110 days AE F153745 72.1 days for Pikeville system n.d. for Hoechst sand system, worst case 72.1 days AE 0338795 n.d. for Pikeville system 65.4 days for Hoechst sand system, worst case 65.4 days</p> <p><u>Modelling endpoints (20°C, pF 2 normalised):</u> Foramsulfuron 27.3 days for Pikeville system 39.6 days for Hoechst sand system, geomean 32.9 days AE F130619 5.4 days for Pikeville system 45.8 days for Hoechst sand system, geomean 15.7 days AE F092944 110 days for Pikeville system n.d. for Hoechst sand system, geomean 110 days AE F153745 72.1 days for Pikeville system n.d. for Hoechst sand system, geomean 72.1 days AE 0338795 n.d. for Pikeville system 65.4 days for Hoechst sand system, geomean 65.4 days</p> <p>DT₉₀: <u>EU trigger endpoints:</u> n.d. <u>Modelling endpoints (20°C, pF 2 normalised):</u> n.d. n.d.: not determined/could not be calculated</p>
Mineralization	1.1-6.2 % AR for Pikeville system after 210 days 1.5-5.0 % AR for Hoechst sand system after 211 days
Non-extractable residues	max 82.0% AR for Pikeville system after 210 days max 53.4 % AR for Hoechst sand system after 211 days
Distribution in water / sediment systems (active substance)	<p>Geomean values from phenyl and pyrimidyl label Pikeville system 93.9% of AR by day zero to 0.2% by day 119 in water and to 0.6% by day 211 in sediment, maximum of 24.8% by day 14</p> <p>Hoechst sand system 94.3% of AR by day zero to 1.4 % by day 210 in water and to 0.5% by day 211 in sediment, maximum of 21.1% by day 14</p>

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Distribution in water / sediment systems (metabolites)	<p>Max. occurrences in total system:</p> <p>AE F130619</p> <p><u>Pikeville</u></p> <p>1.4% AR (day 14, phenyl label)</p> <p>1.1% (day 14, pyrimidyl label)</p> <p><u>Hoechst sand</u></p> <p>5.6% (day 31, phenyl label)</p> <p>7.0% (day 57, pyrimidyl label)</p> <p>AE F092944</p> <p><u>Pikeville</u></p> <p>7.3% (day 57, pyrimidyl label)</p> <p><u>Hoechst sand</u></p> <p>1.4% (day 7, pyrimidyl label)</p> <p>AE 0338795</p> <p><u>Pikeville</u></p> <p>14.0% (day 29, phenyl label)</p> <p>13.9% (day 57, pyrimidyl label)</p> <p><u>Hoechst sand system</u></p> <p>14.5% (day 57, phenyl label)</p> <p>23.7% (day 57, pyrimidyl label)</p> <p>AE F153745</p> <p><u>Pikeville</u></p> <p>24.6% (day 57, phenyl label)</p> <p><u>Hoechst sand</u></p> <p>12.7% (day 119, phenyl label)</p>
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Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

PEC (surface water and sediment) (SANCO/11803 data point 9.2.5) OK

Parent

Parameters used in FOCUS _{SW} step 1 and 2	Minimal crop coverage (25 % interception) Water Solubility = 3293 mg/L Koc = 69.7 mL/g DT ₅₀ in soil = 13.5 d total system = 32.9 d water = 32.9 d sediment = 32.9 d
Parameters used in FOCUS _{SW} step 3 (if performed)	Water Solubility = 3293 mg/L Vapour pressure = 4.2E-11 Pa Koc = 69.7 mL/g Freundlich Exponent 1/n = 0.87 DT ₅₀ in soil = 13.5 d water = 32.9 d sediment = 1000 d
Application rate	1 x 60 g a.s./ha in maize, BBCH 12-18 2 x 30 g a.s./ha in maize, 7 d interval, BBCH 12-18
Main routes of entry	Spray drift, run-off

FOCUS STEP 1 and 2

	Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha)	
	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
STEP 1	18.85	12.75	18.85	12.75
STEP 2 Northern EU	2.713	1.842	2.291	1.556
STEP 2 Southern EU	4.948	3.368	4.189	2.851

FOCUS STEP 3

	Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha) max either from single or multiple application	
	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
FOCUS scenario				
D3 (ditch)	0.314	0.075	0.157	0.044
D4 (pond)	0.013	0.022	0.010	0.019
D4 (stream)	0.271	0.017	0.136	0.010
D5 (pond)	0.015	0.031	0.013	0.037
D5 (stream)	0.251	0.012	0.126	0.017
D6 (ditch)	0.316	0.072	0.158	0.050
R1 (pond)	0.025	0.047	0.062	0.102
R1 (stream)	1.284	0.230	1.281	0.259
R2 (stream)	0.972	0.226	0.456	0.111
R3 (stream)	2.225	0.411	1.084	0.209
R4 (stream)	2.341	0.550	1.315	0.375

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

FOCUS STEP 4
10 m (SD & RO)

FOCUS scenario

D3 (ditch)
D4 (pond)
D4 (stream)
D5 (pond)
D5 (stream)
D6 (ditch)
R1 (pond)
R1 (stream)
R2 (stream)
R3 (stream)
R4 (stream)

Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha) max either from single or multiple application	
PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
0.055	0.015	0.027	0.008
0.008	0.015	0.006	0.016
0.061	0.005	0.030	0.005
0.010	0.024	0.009	0.032
0.057	0.008	0.028	0.014
0.058	0.029	0.034	0.026
0.012	0.025	0.027	0.047
0.547	0.101	0.580	0.120
0.426	0.101	0.200	0.049
1.006	0.192	0.490	0.097
1.065	0.258	0.598	0.175

FOCUS STEP 4
20 m (SD & RO)

FOCUS scenario

D3 (ditch)
D4 (pond)
D4 (stream)
D5 (pond)
D5 (stream)
D6 (ditch)
R1 (pond)
R1 (stream)
R2 (stream)
R3 (stream)
R4 (stream)

Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha) max either from single or multiple application	
PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
0.028	0.008	0.014	0.004
0.006	0.013	0.004	0.014
0.032	0.004	0.016	0.005
0.008	0.020	0.007	0.029
0.030	0.007	0.015	0.014
0.032	0.028	0.034	0.026
0.007	0.015	0.014	0.026
0.279	0.053	0.303	0.065
0.221	0.054	0.104	0.026
0.526	0.104	0.256	0.053
0.558	0.140	0.313	0.095

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Metabolites

Parameters used in FOCUS_{SW} step 1 and 2

Minimal crop coverage (25 % interception)

AE F130619:

Molar mass = 424.44 g/mol
Water Solubility = 35.5 mg/L
Koc = 63.2 mL/g
DT₅₀ in soil = 2.3 d
total system = 15.7 d
water = 15.7 d
sediment = 15.7 d
max. occurrence in water/sediment = 10.7 %
max. occurrence in soil = 29.1 %

AE F153745:

Molar mass = 271.3g/mol
Water Solubility = 5830 mg/L
Koc = 48 mL/g
DT₅₀ in soil = 0.9 d
total system = 72.1 d
water = 72.1 d
sediment = 72.1 d
max. occurrence in water/sediment = 24.6%
max. occurrence in soil = 7.8 %

AE F092944:

Molar mass = 155.16 g/mol
Water Solubility = 5484 mg/L
Koc = 621 mL/g
DT₅₀ in soil = 25.9 d
total system = 110 d
water = 110 d
sediment = 110 d
max. occurrence in water/sediment = 26.5%
max. occurrence in soil = 17.8 %

AE 0338795:

Molar mass = 438.42 g/mol
Water Solubility = 200000mg/L
Koc = 17.67 mL/g
DT₅₀ in soil = 1000 d
total system = 65.4 d
water = 65.4 d
sediment = 65.4 d
max. occurrence in water/sediment = 23.7 %
max. occurrence in soil = 0.001 %

AE F099095:

Molar mass = 198.18 g/mol
Water Solubility = 1000 mg/L
Koc = 351 mL/g
DT₅₀ in soil = 1000 d
total system = 1000 d
water = 1000 d
sediment = 1000 d
max. occurrence in water/sediment = 35.2 %
max. occurrence in soil = 0.001 %

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

	<p><u>4-amino-N-methylbenzamide:</u> Molar mass = 150.18 g/mol Water Solubility = 1000 mg/L Koc = 0 mL/g DT₅₀ in soil = 1000 d total system = 1000 d water = 1000 d sediment = 1000 d max. occurrence in water/sediment = 12.8 % max. occurrence in soil = 0.001 %</p> <p><u>4-formamido-N-methylbenzamide:</u> Molar mass = 178.19 g/mol Water Solubility = 1000 mg/L Koc = 0 mL/g DT₅₀ in soil = 1000 d total system = 1000 d water = 1000 d sediment = 1000 d max. occurrence in water/sediment = 19.7 % max. occurrence in soil = 0.001 %</p> <p><u>Foramsulfuron- sulfamic acid:</u> Molar mass = 278.24 g/mol Water Solubility = 1000 mg/L Koc = 0 mL/g DT₅₀ in soil = 1000 d total system = 1000 d water = 1000 d sediment = 1000 d max. occurrence in water/sediment = 17.6 % max. occurrence in soil = 0.001 %</p>
Parameters used in FOCUS _{SW} step 3 (if performed)	<p><u>AE F130619:</u> Molar mass = 424.44 g/mol Water Solubility = 35.5 mg/L Vapour pressure = 5.8E-13 Pa Koc = 63 mL/g Freundlich Exponent 1/n = 0.93 Degradation in soil: DT₅₀ in soil = 2.3 d Form. Frac. PRZM (molar basis) = 0.920 Form. Frac. MACRO (mass basis) = 0.863 DT₅₀ in water = 15.7 d DT₅₀ in sediment = 1000 d</p>
Application rate	<p>1 x 60 g a.s./ha in maize, BBCH 12-18 2 x 30 g a.s./ha in maize, 7 d interval, BBCH 12-18</p>
Main routes of entry	Spray drift, run-off

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

AE F130619

FOCUS STEP 1 and 2

STEP 1

STEP 2 Northern EU

STEP 2 Southern EU

Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha)	
PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
5.071	3.182	5.071	3.182
0.255	0.155	0.149	0.090
0.481	0.298	0.276	0.170

AE F153745

FOCUS STEP 1 and 2

STEP 1

STEP 2 Northern EU

STEP 2 Southern EU

Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha)	
PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
0.961	0.422	0.961	0.422
0.081	0.038	0.068	0.031
0.087	0.041	0.070	0.033

AE F092944

FOCUS STEP 1 and 2

STEP 1

STEP 2 Northern EU

STEP 2 Southern EU

Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha)	
PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
0.682	4.147	0.682	4.147
0.099	0.601	0.090	0.547
0.189	1.156	0.172	1.055

AE 0338795

FOCUS STEP 1 and 2

STEP 1

STEP 2 Northern EU

STEP 2 Southern EU

Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha)	
PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
0.127	<0.001	0.127	<0.001
0.127	0.021	0.107	0.018
0.127	0.021	0.107	0.018

AE F099095

FOCUS STEP 1 and 2

STEP 1

STEP 2 Northern EU

STEP 2 Southern EU

Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha)	
PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
0.085	<0.001	0.085	<0.001
0.085	0.203	0.066	0.179
0.085	0.203	0.066	0.179

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

4-amino-N-methylbenzamide

FOCUS STEP 1 and 2

	Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha)	
	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
STEP 1	0.024	<0.001	0.024	<0.001
STEP 2 Northern EU	0.023	<0.001	0.021	<0.001
STEP 2 Southern EU	0.023	<0.001	0.021	<0.001

4-formamido-N-methylbenzamide

FOCUS STEP 1 and 2

	Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha)	
	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
STEP 1	0.043	<0.001	0.043	<0.001
STEP 2 Northern EU	0.043	<0.001	0.038	<0.001
STEP 2 Southern EU	0.043	<0.001	0.038	<0.001

Foramsulfuron-sulfamic acid

FOCUS STEP 1 and 2

	Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha)	
	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
STEP 1	0.060	<0.001	0.060	<0.001
STEP 2 Northern EU	0.060	<0.001	0.053	<0.001
STEP 2 Southern EU	0.060	<0.001	0.053	<0.001

AE F130619

FOCUS STEP 3

	Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha) max either from single or multiple application	
	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
FOCUS scenario				
D3 (ditch)	0.032	0.006	0.016	0.003
D4 (pond)	0.001	0.002	<0.001	0.002
D4 (stream)	0.001	<0.001	0.001	<0.001
D5 (pond)	0.002	0.003	0.001	0.004
D5 (stream)	<0.001	0.001	0.001	0.002
D6 (ditch)	0.032	0.006	0.016	0.005
R1 (pond)	0.004	0.005	0.010	0.010
R1 (stream)	0.081	0.013	0.099	0.017
R2 (stream)	0.106	0.021	0.052	0.013
R3 (stream)	0.178	0.028	0.089	0.014
R4 (stream)	0.202	0.041	0.121	0.029

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

<u>AE F130619</u> FOCUS STEP 4 10 m (SD & RO) FOCUS scenario	Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha) max either from single or multiple application	
	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
D3 (ditch)	<0.001	<0.001	<0.001	<0.001
D4 (pond)	<0.001	0.001	<0.001	0.002
D4 (stream)	0.001	<0.001	0.001	<0.001
D5 (pond)	<0.001	0.002	0.001	0.003
D5 (stream)	<0.001	0.001	0.001	0.002
D6 (ditch)	0.008	0.004	0.008	0.004
R1 (pond)	<0.001	<0.001	0.002	0.002
R1 (stream)	0.035	0.005	0.045	0.008
R2 (stream)	0.046	0.009	0.023	0.006
R3 (stream)	0.080	0.013	0.040	0.007
R4 (stream)	0.092	0.019	0.055	0.013

<u>AE F130619</u> FOCUS STEP 4 20 m (SD & RO) FOCUS scenario	Maize (1 x 60 g a.s./ha)		Maize (2 x 30 g a.s./ha) max either from single or multiple application	
	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)	PEC _{SW} (µg/L)	PEC _{SED} (µg/kg)
D3 (ditch)	<0.001	<0.001	<0.001	<0.001
D4 (pond)	<0.001	0.001	<0.001	0.002
D4 (stream)	0.001	<0.001	0.001	<0.001
D5 (pond)	<0.001	0.002	0.001	0.003
D5 (stream)	<0.001	0.001	0.001	0.002
D6 (ditch)	0.008	0.004	0.008	0.004
R1 (pond)	<0.001	<0.001	<0.001	<0.001
R1 (stream)	0.018	0.003	0.024	0.004
R2 (stream)	0.024	0.005	0.012	0.003
R3 (stream)	0.042	0.007	0.021	0.004
R4 (stream)	0.048	0.010	0.029	0.007

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

PEC (ground water) (SANCO/11803 data point 9.2.4)

Method of calculation and type of study (eg. modelling, monitoring, lysimeter)

Modelling with FOCUS PEARL (v. 4.4.4), FOCUS PELMO (v. 4.4.3)

Q10 = 2.58; molar active. energie = 65.4 kJ/mol

Foramsulfuron:

DT50 = 13.5 d

Kom = 40.7 mL/g

Koc = 69.7 mL/g

Freundlich Exponent = 0.87

AE F130619:

DT50 = 2.3 d

Kom = 36.6 mL/g

Koc = 63.2 mL/g

Freundlich Exponent = 0.93

AE F153745:

DT50 = 0.9 d

Kom = 27.8 mL/g

Koc = 48.0 mL/g

Freundlich Exponent = 0.97

AE F092944:

DT50 = 25.9 d

Kom = 360 mL/g

Koc = 621 mL/g

Freundlich Exponent = 0.67

Degradation fraction from → to (FOCUS PEARL):

0.92 foramsulfuron -> AE F130619

0.22 foramsulfuron -> AE F153745

0.22 foramsulfuron -> AE F092944

Degradation rate from → to (FOCUS PELMO):

0.047 foramsulfuron -> AE F130619

0.011 foramsulfuron -> AE F153745

0.011 foramsulfuron -> AE F092944

0.301 AE F130619 -> <bound residues/CO₂

0.815 AE F153745 -> <bound residues/CO₂

0.026 AE F092944 -> <bound residues/CO₂

Application rate

1 x 60 g a.s./ha in maize, BBCH 12-18

2 x 30 g a.s./ha in maize, 7 d interval, BBCH 12-18

PEC_(gw)

Maximum concentration

80th percentile of mean annual leachate concentration:

Foramsulfuron: <0.001 µg/L

AE F130619: <0.001 µg/L

AE F153745: <0.001 µg/L

AE F092944: <0.001 µg/L

Average annual concentration

-

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Fate and behaviour in air (SANCO/11802 data point 7.3 and SANCO/11803 data point 9.3)

Direct photolysis in air	Not studied - no data requested due to low volatility
Quantum yield of direct phototransformation	Quantum yield $\Phi = 6.18 \times 10^{-4}$ according to ECETOC method in aqueous solution
Photochemical oxidative degradation in air	Latitude: Season: DT ₅₀ : Photo-chemical DT50: 0.07 days Estimation (Atkinson) from 'short-term' atmospheric hydroxyl radical concentration ($1.5 \times 10^{+6}$ OH radicals/cm ³ air) and 12 hours daylight per day.
Volatilization	No potential to reach the atmosphere by volatilization due to vapor pressure below triggers and low value for the Henry constant From plant and soil surfaces: anticipated to be minimal because of low vapour pressure
Metabolites	None

PEC (air)

Method of calculation	Not relevant due to low vapor pressure and rapid rate of degradation
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PEC_(a)

Maximum concentration	Not relevant due to low vapor pressure and rapid rate of degradation
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Definition of the Residue (SANCO/11802 data point 7.4)

Soil (risk assessment & monitoring):	Risk assessment: Foramsulfuron, AE F130619, AE F092944, AE F153745 Monitoring: Foramsulfuron
Surface water (risk assessment & monitoring):	<u>Risk assessment:</u> Foramsulfuron, AE F130619, AE F092944, AE F153745, AE 0338795, 4-Formamido-N-methylbenzamide (FMB, BCS-CW90756), 4-Amino-N-methylbenzamide (AMB, BCS-CV29520), foramsulfuron urea (AE 099095), foramsulfuron sulfamic acid (BCS-AW41401) <u>Monitoring:</u> Foramsulfuron
Groundwater (risk assessment & monitoring):	<u>Risk assessment:</u> Foramsulfuron, AE F130619, AE F092944, AE F153745 <u>Monitoring:</u> Foramsulfuron
Air (risk assessment & monitoring):	<u>Risk assessment:</u> Foramsulfuron <u>Monitoring:</u> Foramsulfuron

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Monitoring data, if available (SANCO/11802 data point 7.5)

Soil (indicate location and type of study)	None available from formal monitoring requests at EU or national level
Surface water (indicate location and type of study)	None available from formal monitoring requests at EU or national level
Ground water (indicate location and type of study)	None available from formal monitoring requests at EU or national level
Air (indicate location and type of study)	None available from formal monitoring requests at EU or national level

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Chapter 6: Effects on Non-target Species

Effects on terrestrial vertebrates (SANCO/11802 data point 8.1, SANCO/11803 data point 10.1)

Acute toxicity to birds	LD ₅₀ ≥ 2000 mg as/kg bw (bobwhite quail and mallard duck)
Dietary toxicity to birds	LC ₅₀ >5000 ppm (bobwhite quail and mallard duck)
Reproductive toxicity to birds	NOEC ≥ 1000 ppm (bobwhite quail and mallard duck) ≡ NOEL ≥ 104 mg as/kg bw/d
Acute toxicity to mammals	LD ₅₀ >5000 mg/kg bw (rat)
Reproductive/long term toxicity to mammals	NO(A)EC ≥ 15 000 ppm ≡ NO(A)EL ≥ 1038 mg as/kg bw/d
Developmental target / critical effect	No developmental toxicity observed.
Lowest relevant developmental NOAEL / NOEL	Rabbit: > 500 mg/kg bw/d (NOEL maternal toxicity, rabbit: 50 mg/kg bw/d)

Toxicity/exposure ratios for terrestrial vertebrates (SANCO/11803 data point 10.1)

Birds

Acute risk assessment for birds (Maize, 1 x 60 g a.s./ha)

Crop	Indicator species	DDD			DDD	LD ₅₀ [mg/kg bw]	TER _A	Trigger
		Appl. rate [kg/ha]	SV ₉₀	MAF ₉₀				
Foramsulfuron								
Maize	Small omnivorous bird “lark” <Woodlark>	0.06	158.8	1	9.53	> 2000	>209.86	10

Long-term reproductive risk assessment for birds (Maize, 1 x 60 g a.s./ha)

Crop	Indicator species	DDD				DDD	NO(A)EL [mg/kg bw/d]	TER _{LT}	Trigger
		Appl. rate [kg/ha]	SV _m	MAF _m	f _{twa}				
Foramsulfuron									
Maize	Small omnivorous bird “lark” <Woodlark>	0.06	64.8	1	0.53	2.06	> 104	>50.48	5

Other terrestrial vertebrates

Acute dietary risk assessment for mammals (Maize, 1 x 60 g a.s./ha)

Crop	Indicator species	DDD			DDD	LD ₅₀ [mg/kg bw]	TER _A	Trigger
		Appl. rate [kg/ha]	SV ₉₀	MAF ₉₀				
Foramsulfuron								
Maize	Small herbivorous mammal “vole” <Common vole>	0.06	136.4	1	8.18	> 5000	> 611.25	10

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Long-term reproductive risk assessment for mammals (Maize, 1 x 60 g a.s./ha)

Crop	Indicator species	DDD				DDD	NO(A)EL [mg/kg bw/d]	TER _{LT}	Trigger
		Appl. rate [kg/ha]	SV _m	MAF _m	f _{twa}				
Foramsulfuron									
Maize	Small herbivorous mammal “vole” <Common vole>	0.06	72.3	1.0	0.53	2.3	≥ 500	≥ 217.39	5

Toxicity data for aquatic species (most sensitive species of each group) (SANCO data point IIA 8.2 and SANCO/11803 data point IIIA 10.2)

Test substance	Test species	Endpoint
Foramsulfuron	Fish, acute: <i>Oncorhynchus mykiss</i> , <i>Lepomis macrochirus</i>	LC ₅₀ > 100 mg as/L
	Fish, chronic: <i>Pimephales promelas</i>	NOEC 10.5 mg as/L
	Invertebrate, acute: <i>Daphnia magna</i>	EC ₅₀ > 100 mg as/L
	Invertebrate, chronic: <i>Daphnia magna</i>	NOEC > 100 mg as/L
	Algae: <i>Anabaena flos-aquae</i>	E _r C ₅₀ 8.1 mg as/L
	Aquatic plant: <i>Lemna gibba</i>	E _r C ₅₀ 0.00101 mg as/L
	Aquatic plant: <i>Myriophyllum spicatum</i>	EC ₅₀ >0.084 mg as/L
	Aquatic plant: macrophyte outdoor growth inhibition study; ten species	NOEC (6 weeks) 0.1 µg as/L
		NOEC (48h peak) 4.1 µg as/L
	Aquatic plant: <i>Lemna gibba</i> (6 week study; mimicking exposure of outdoor study)	E _r C ₅₀ (frond number) 0.00118 mg a.s./L
	Aquatic plants: probabilistic risk assessment: macrophyte outdoor data plus 6-week <i>Lemna</i>	HC5 0.000652 mg a.s./L
	Aquatic plant: <i>Lemna gibba</i> peak exposure; 24 h	E _r C ₅₀ >0.0567 mg as/L
AE F153745	Aquatic plant: <i>Lemna gibba</i>	EC ₅₀ > 100 mg/L
AE 0338795	Aquatic plant: <i>Lemna gibba</i>	E _r C ₅₀ 27.2 mg/L
AE F092944	Fish, acute: <i>Oncorhynchus mykiss</i>	LC ₅₀ 254 mg a.s./L
	Invertebrate, acute: <i>Daphnia magna</i>	EC ₅₀ 233 mg a.s./L
	Algae: <i>Desmodesmus subspicatus</i>	E _r C ₅₀ > 560 mg/L
	Aquatic plant: <i>Lemna gibba</i>	E _r C _{50>} > 100 mg/L
AE F099095	Algae: <i>Pseudokirchneriella subcapitata</i>	E _r C ₅₀ > 100 mg/L
	Aquatic plant: <i>Lemna gibba</i>	E _r C ₅₀ > 100 mg/L
AE F130619	Aquatic plant: <i>Lemna gibba</i>	E _r C ₅₀ : 0.000889 mg a.s./L
4-amino-N-methylbenzamide	Aquatic plant: <i>Lemna gibba</i>	E _r C ₅₀ >10 mg a.s./L
4-formamido-N-methylbenzamide	Aquatic plant: <i>Lemna gibba</i>	E _r C ₅₀ >10 mg a.s./L
Foramsulfuron-sulfamic acid	Aquatic plant: <i>Lemna gibba</i>	E _r C ₅₀ >10 mg a.s./L

Acute and chronic aquatic risk assessment based on FOCUS STEP 2

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Compound	Species	Endpoint [µg/L]	PEC _{sw,max} [µg/L]	TER _{LT}	Trigger
Maize, 1 x 60 g a.s./ha					
FSN + IDF OD 45 (22.5+22.5)	Fish, acute	LC ₅₀ 7 800	23.17	337	100
	Invertebrate, acute	LC ₅₀ 6 900	23.17	298	100
	Fish, chronic	NOEC 1 800	23.17	78	10
	Invertebrate, chronic	NOEC 400	23.17	17	10
	Green algae, chronic	E _r C ₅₀ > 5 000	23.17	216	10
	Aquatic plants, chronic	E _r C ₅₀ 53.23	23.17	2.30	10
Foramsulfuron	Fish, acute	LC ₅₀ > 100 000	4.948	> 20 210	100
	Invertebrate, acute	LC ₅₀ > 100 000	4.948	> 20 210	100
	Fish, chronic	NOEC 10 500	4.948	2 122	10
	Invertebrate, chronic	NOEC > 100 000	4.948	> 20 210	10
	Green algae, chronic	E _r C ₅₀ 8100	4.948	1637	10
	Aquatic plants, chronic	E _r C ₅₀ 1.01	4.948	0.20	10
AE F092944	Fish, acute	LC ₅₀ 254 000	0.189	1 343 915	100
	Invertebrate, acute	LC ₅₀ 223 000	0.189	1 179 894	100
	Green algae, chronic	E _r C ₅₀ > 560 000	0.189	2 962 962	10
	Aquatic plants, chronic	EC ₅₀ > 100 000	0.189	> 529 101	10
AE F099095	Green algae, chronic	E _r C ₅₀ > 100 000	0.085	> 1 176 471	10
	Aquatic plants, chronic	EC ₅₀ > 100 000	0.085	> 1 176 471	10
AE F153745	Aquatic plants, chronic	EC ₅₀ > 100 000	0.087	> 1 149 425	10
AE 0338795	Aquatic plants, chronic	E _r C ₅₀ 27 200	0.127	214 173	10
AE F130619	Aquatic plants, chronic	EC ₅₀ 0.889	0.481	1.85	10
4-Amino-N-methylbenzamide	Aquatic plants, chronic	E _r C ₅₀ > 10 000	0.023	> 434 783	10
4-Formylamido-N-methylbenzamide	Aquatic plants, chronic	E _r C ₅₀ > 10 000	0.043	> 232 558	10
Foramsulfuron sulfamic acid	Aquatic plants, chronic	E _r C ₅₀ > 10 000	0.060	> 166 667	10
Maize, 2 x 30 g a.s./ha					
FSN + IDF OD 45 (22.5+22.5)	Fish, acute	LC ₅₀ 7 800	11.59	673	100
	Invertebrate, acute	LC ₅₀ 6 900	11.59	595	100
	Fish, chronic	NOEC 1 800	11.59	155	10
	Invertebrate, chronic	NOEC 400	11.59	35	10
	Green algae, chronic	E _r C ₅₀ > 5 000	11.59	431	10
	Aquatic plants, chronic	E _r C ₅₀ 53.23	11.59	4.60	10
Foramsulfuron	Fish, acute	LC ₅₀ > 100 000	4.189	> 23 872	100
	Invertebrate, acute	LC ₅₀ > 100 000	4.189	> 23 872	100
	Fish, chronic	NOEC 10 500	4.189	2 507	10
	Invertebrate, chronic	NOEC > 100 000	4.189	> 23 872	10
	Green algae, chronic	E _r C ₅₀ 8100	4.189	1933	10
	Aquatic plants, chronic	E _r C ₅₀ 1.01	4.189	0.24	10
AE F092944	Fish, acute	LC ₅₀ 254 000	0.172	1 476 744	100
	Invertebrate, acute	LC ₅₀ 223 000	0.172	1 296 512	100
	Green algae, chronic	E _r C ₅₀ > 560 000	0.172	3 255 813	10

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Compound	Species	Endpoint [µg/L]	PEC _{sw,max} [µg/L]	TER _{LT}	Trigger
	Aquatic plants, chronic	EC ₅₀ > 100 000	0.172	> 581 395	10
AE F099095	Green algae, chronic	E _b C ₅₀ > 100 000	0.066	> 1 515 152	10
	Aquatic plants, chronic	EC ₅₀ > 100 000	0.066	> 1 515 152	10
AE F153745	Aquatic plants, chronic	EC ₅₀ > 100 000	0.070	> 1 428 571	10
AE 0338795	Aquatic plants, chronic	E _r C ₅₀ 27 200	0.107	254 205	10
AE F130619	Aquatic plants, chronic	EC ₅₀ 0.889	0.276	3.22	10
4-Amino-N-methylbenzamide	Aquatic plants, chronic	E _r C ₅₀ > 10 000	0.021	> 476 190	10
4-Formylamido-N-methylbenzamide	Aquatic plants, chronic	E _r C ₅₀ > 10 000	0.038	> 263 158	10
Foramsulfuron sulfamic acid	Aquatic plants, chronic	E _r C ₅₀ > 10 000	0.053	>188 679	10

Refined risk assessment for aquatic plants, based on FOCUS STEP 3

Species	Endpoint [µg/L]	PEC _{sw,max} [µg/L]	FOCUS scenario	TER _{LT}	Trigger
Foramsulfuron, Maize, 1 x 60 g/ha					
Aquatic plants, chronic	E _r C ₅₀ 1.01	0.314	D3 (ditch)	3.2	10
		0.013	D4 (pond)	77.7	10
		0.271	D4 (stream)	3.7	10
		0.015	D5 (pond)	67.3	10
		0.251	D5 (stream)	4.0	10
		0.316	D6 (ditch)	3.2	10
		0.025	R1 (pond)	40.4	10
		1.284	R1 (stream)	0.8	10
		0.972	R2 (stream)	1.0	10
		2.225	R3 (stream)	0.5	10
		2.341	R4 (stream)	0.4	10
AE F130619, Maize, 1 x 60 g/ha					
Aquatic plants, chronic	E _r C ₅₀ 0.889	0.032	D3 (ditch)	27.8	10
		0.001	D4 (pond)	889	10
		0.001	D4 (stream)	889	10
		0.002	D5 (pond)	445	10
		<0.001	D5 (stream)	>889	10
		0.032	D6 (ditch)	27.8	10
		0.004	R1 (pond)	222	10
		0.081	R1 (stream)	11.0	10
		0.106	R2 (stream)	8.4	10
		0.178	R3 (stream)	5.0	10
		0.202	R4 (stream)	4.4	10
Foramsulfuron, Maize, 2 x 30 g/ha					
Aquatic plants, chronic	E _r C ₅₀ 1.01	0.157	D3 (ditch)	6.4	10
		0.010	D4 (pond)	101.0	10
		0.136	D4 (stream)	7.4	10

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Species	Endpoint [µg/L]	PEC _{sw,max} [µg/L]	FOCUS scenario	TER _{LT}	Trigger
		0.013	D5 (pond)	77.7	10
		0.126	D5 (stream)	8.0	10
		0.158	D6 (ditch)	6.4	10
		0.062	R1 (pond)	16.3	10
		1.281	R1 (stream)	0.8	10
		0.456	R2 (stream)	2.2	10
		1.084	R3 (stream)	0.9	10
		1.315	R4 (stream)	0.8	10
AE F130619, Maize, 2 x 30 g/ha					
Aquatic plants, chronic	E _r C ₅₀ 0.889	0.016	D3 (ditch)	55.6	10
		<0.001	D4 (pond)	>889	10
		0.001	D4 (stream)	889	10
		0.001	D5 (pond)	889	10
		0.001	D5 (stream)	889	10
		0.016	D6 (ditch)	55.6	10
		0.010	R1 (pond)	88.9	10
		0.099	R1 (stream)	9.0	10
		0.052	R2 (stream)	17.1	10
		0.089	R3 (stream)	10.0	10
		0.121	R4 (stream)	7.3	10

Refined risk assessment for aquatic plants, based on FOCUS STEP 3, STEP 4 and refined toxicity endpoints

Species	Endpoint [µg/L]	PEC _{sw,max} [µg/L]	FOCUS scenario	TER _{LT}	Trigger
Foramsulfuron, Maize, 1 x 60 g/ha					
Aquatic plants, chronic	long-term exposure HC ₅ : 0.652	0.314	D3 (ditch)	2.1	3
	peak exposure peak E _r C ₅₀ :>56.7	0.271	D4 (stream)	209	10
		0.251	D5 (stream)	226	10
		0.316	D6 (ditch)	179	10
		1.284	R1 (stream)	44.2	10
		0.972	R2 (stream)	58.3	10
		2.225	R3 (stream)	25.5	10
		2.341	R4 (stream)	24.2	10
AE F130619, Maize, 1 x 60 g/ha					
Aquatic plants, chronic	peak exposure peak E _r C ₅₀ :>56.7	0.106	R2 (stream)	535	20
		0.178	R3 (stream)	319	20
		0.202	R4 (stream)	281	20
Foramsulfuron, Maize, 2 x 30 g/ha					
Aquatic plants, chronic	long-term exposure HC ₅ : 0.652	0.157	D3 (ditch)	4.2	3
	peak exposure peak E _r C ₅₀ :>56.7	0.136	D4 (stream)	417	10
		0.126	D5 (stream)	450	10

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

		0.158	D6 (ditch)	359	10
		1.281	R1 (stream)	44.3	10
		0.456	R2 (stream)	124.3	10
		1.084	R3 (stream)	52.3	10
		1.315	R4 (stream)	43.1	10
AE F130619, Maize, 2 x 30 g/ha					
Aquatic plants, chronic	peak exposure peak E _r C ₅₀ :>56.7	0.052	R1 (stream)	1090	20
		0.089	R3 (stream)	637	20
		0.121	R4 (stream)	469	20
Foramsulfuron, Maize, 1 x 60 g/ha; 10 m spray drift & runoff buffer					
Aquatic plants, chronic	long-term exposure HC ₅ : 0.652	0.055	D3 (ditch)	11.9	3

Since RMS does not agree that an endpoint from a single pulse exposure is suitable to be used for a comparison with a PEC_{sw} , RMS has performed TER_{LT} calculations based on FOCUS Step 4 PEC_{sw} values for foramsulfuron and metabolite AE F130619 together with the SSD HC_5 value of 0.652 $\mu g/L$ and assessment factor of 3.

Refined risk assessment for aquatic plants, based on FOCUS STEP 4 and refined toxicity endpoint of SSD HC_5 (10 m spray drift & runoff buffer)

Species	Endpoint [$\mu g/L$]	$PEC_{sw,max}$ [$\mu g/L$]	FOCUS scenario	TER_{LT}	Trigger
Foramsulfuron, Maize, 1 x 60 g/ha; 10 m spray drift & runoff buffer					
Aquatic plants, chronic	$ErC_{50} = 0.652$	0.055	D3 (ditch)	11.855	3
		0.008	D4 (pond)	81.500	3
		0.061	D4 (stream)	10.689	3
		0.010	D5 (pond)	65.200	3
		0.057	D5 (stream)	11.439	3
		0.058	D6 (ditch)	11.241	3
		0.012	R1 (pond)	54.333	3
		0.547	R1 (stream)	1.192	3
		0.426	R2 (stream)	1.531	3
		1.006	R3 (stream)	0.648	3
		1.065	R4 (stream)	0.612	3
AE F130619, Maize, 1 x 60 g/ha					
Aquatic plants, chronic	$ErC_{50} = 0.652$	<0.001	D3 (ditch)	>889.0	10
		<0.001	D4 (pond)	>889.0	10
		0.001	D4 (stream)	889.0	10
		<0.001	D5 (pond)	>889.0	10
		<0.001	D5 (stream)	>889.0	10
		0.008	D6 (ditch)	111.1	10
		<0.001	R1 (pond)	>889.0	10
		0.035	R1 (stream)	25.4	10
		0.046	R2 (stream)	19.3	10
		0.080	R3 (stream)	11.1	10
		0.092	R4 (stream)	9.7	10
Foramsulfuron, Maize, 2 x 30 g/ha					
Aquatic plants, chronic	$ErC_{50} = 0.652$	0.027	D3 (ditch)	24.01	3
		0.006	D4 (pond)	108.7	3
		0.030	D4 (stream)	21.7	3

Rapporteur Member State	Month and year	Active Substance
Finland	March 2015	foramsulfuron

List of Endpoints

Species	Endpoint [µg/L]	PEC _{sw,max} [µg/L]	FOCUS scenario	TER _{LT}	Trigger
		0.009	D5 (pond)	72.4	3
		0.028	D5 (stream)	23.3	3
		0.034	D6 (ditch)	19.2	3
		0.027	R1 (pond)	24.1	3
		0.580	R1 (stream)	1.1	3
		0.200	R2 (stream)	3.3	3
		0.490	R3 (stream)	1.3	3
		0.598	R4 (stream)	1.1	3
AE F130619, Maize, 2 x 30 g/ha					
Aquatic plants, chronic	ErC ₅₀ = 0.889	<0.001	D3 (ditch)	>889.0	10
		<0.001	D4 (pond)	>889.0	10
		0.001	D4 (stream)	889.0	10
		0.001	D5 (pond)	889.0	10
		0.001	D5 (stream)	889.0	10
		0.008	D6 (ditch)	111.1	10
		0.002	R1 (pond)	444.5	10
		0.045	R1 (stream)	19.8	10
		0.023	R2 (stream)	38.7	10
		0.040	R3 (stream)	22.2	10
		0.055	R4 (stream)	16.2	10

Bold values require further refinement

Refined risk assessment for aquatic plants, based on FOCUS STEP 4 and refined toxicity endpoint of HC5 (20 m spray drift & runoff buffer)

Species	Endpoint [µg/L]	PEC _{sw,max} [µg/L]	FOCUS scenario	TER _{LT}	Trigger
Foramsulfuron, Maize, 1 x 60 g/ha; 20 m spray drift & runoff buffer					
Aquatic plants, chronic	ErC ₅₀ = 0.652	0.279	R1 (stream)	2.3	3
		0.221	R2 (stream)	3.0	3
		0.526	R3 (stream)	1.2	3
		0.558	R4 (stream)	1.2	3
AE F130619, Maize, 1 x 60 g/ha					
Aquatic plants, chronic	ErC ₅₀ = 0.889	0.048	R4 (stream)	18.5	10
Foramsulfuron, Maize, 2 x 30 g/ha					
Aquatic plants, chronic	ErC ₅₀ = 0.652	0.303	R1 (stream)	2.2	3
		0.256	R3 (stream)	2.5	3
		0.313	R4 (stream)	2.1	3

Bold values require further refinement

Bioconcentration

Log Pow	1.44 (pH 2) - 0.78 (pH 7)
Bioconcentration factor (BCF)	Not relevant
Risk assessment trigger for the bioconcentration factor	-

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List of Endpoints

Clearance time (CT ₅₀)	-
(CT ₉₀)	-
Level of residues (%) in organisms after the 14 day depuration phase	-

Effects on honeybees (SANCO data point 8.3.1 and SANCO/11803 data point 10.3.1)

Test substance	Acute oral toxicity LD ₅₀	Acute contact toxicity LD ₅₀
Foramsulfuron, tech.	>110.1 µg a.s./bee	>100 µg a.s./bee
Foramsulfuron + Isoxadifen-ethyl OD 45 (22.5 + 22.5 g/L)	> 214.4 µg f.p./bee ¹ > 5.0 µg a.s./bee	> 200 µg f.p./bee ¹ > 4.66 µg a.s./bee
Field or semi-field tests		
Not required		

¹f.p. = formulated product

Hazard quotients for honey bees (SANCO/11803 data point 10.3.1)

Maize (1 x 60g as/ha)

Test substance	Exposure route	Hazard quotient	TER risk assessment trigger
Foramsulfuron, tech.	oral	< 1	50
Foramsulfuron + Isoxadifen-ethyl OD 45 (22.5 + 22.5 g/L)	oral	< 12	50
Foramsulfuron, tech.	contact	< 1	50
Foramsulfuron + Isoxadifen-ethyl OD 45 (22.5 + 22.5 g/L)	contact	< 13	50

Effects on other arthropod species (SANCO data point 8.3.2 and SANCO/11803 data point 10.3.2)

Laboratory tests with standard sensitive species

Test species	Test substance	Type of study	Endpoint LR ₅₀
<i>Typhlodromus pyri</i>	FSN + IDF OD 45	laboratory test	> 2670 mL f.p./ha > 62.2 g a.s./ha
<i>Typhlodromus pyri</i>	FSN + IDF OD 45	laboratory test	> 2330 mL f.p./ha
<i>Aphidius rhopalosiphi</i>	FSN + IDF OD 45	laboratory test	241 mL f.p./ha 5.6 g a.s./ha
<i>Aphidius rhopalosiphi</i>	FSN + IDF OD 45	laboratory test	> 4000 mL f.p./ha

f.p. = formulated product

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Finland	March 2015	foramsulfuron

List of Endpoints

Hazard quotients for non-target arthropods other than bees (SANCO/11803 data point 10.3.2)

Maize (1 x 60 g as/ha)

Test substance	Species	Endpoint LR ₅₀	HQ in-field	HQ off-field	TER risk assessment trigger
Foramsulfuron + Isoxadifen-ethyl OD 45 (22.5 + 22.5 g/L)	<i>T. pyri</i>	> 2670 mL prod./ha > 62.2 g a.s./ha	<1.0	0.03	2
Foramsulfuron + Isoxadifen-ethyl OD 45 (22.5 + 22.5 g/L)	<i>A. rhopalosiphi</i>	241 mL prod./ha 5.6 g a.s./ha	10.8	0.3	2

Extended laboratory tests with standard sensitive species and additional species

Test species	Test substance	Type of study	Endpoint LR ₅₀ / ER ₅₀
<i>Typhlodromus pyri</i>	FSN + IDF OD 45	extended lab., exposure on detached <i>Polygonum convolvulus</i> leaves	> 3500 mL f.p./ha
<i>Aphidius rhopalosiphi</i>	FSN + IDF OD 45	aged residues, spray deposits on potted maize plants	> 2670 mL f.p./ha
<i>Chrysoperla carnea</i>	FSN + IDF OD 45	laboratory test, glass plate	> 4000 mL f.p./ha
<i>Aleochara bilineata</i>	FSN + IDF OD 45	laboratory test, spray deposits on quartz sand	> 4000 mL f.p./ha
<i>Poecilus cupreus</i>	FSN + IDF OD 45	laboratory test, spray deposits on quartz sand	> 4660 mL f.p./ha
<i>Pardosa sp.</i>	FSN + IDF OD 45	laboratory test, spray deposits on quartz sand	> 4000 mL f.p./ha

Effects on earthworms (SANCO/11802 data point 8.4.2 and SANCO/11803 data point 10.4.1)

Acute toxicity

Not required

Reproductive toxicity

FSN + IDF OD 45: NOEC ≥ 370 mg prod./kg dws

Foramsulfuron: NOEC ≥ 2.75 mg a.s./kg dws

AE F092944: NOEC 10 mg/kg dws

AE F153745: NOEC ≥ 100 mg/kg dws

AE F130619: NOEC 56 mg/kg dws

Toxicity/exposure ratios for earthworms (SANCO/11803 data point 10.4.1)

Compound, test design	Species	Endpoint	PEC _{soil,max/accu} [mg/kg]	TER _{LT}	Trigger
FSN + IDF OD 45 reproduction	<i>Eisenia fetida</i>	NOEC ≥ 370 mg prod./kg dws	2.499	≥ 148	5
Foramsulfuron reproduction	<i>Eisenia fetida</i>	NOEC ≥ 2.75 mg a.s./kg dws	0.063	≥ 43.7	5
AE F092944 reproduction	<i>Eisenia fetida</i>	NOEC 10 mg a.s./kg dws	0.004	2 500	5

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List of Endpoints

AE F153745 reproduction	<i>Eisenia fetida</i>	NOEC ≥ 100 mg a.s./kg dws	0.003	$\geq 33\ 333$	5
AE F130619 reproduction	<i>Eisenia fetida</i>	NOEC 56 mg a.s./kg dws	0.016	3 500	5

Effects on non-target soil meso- and macrofauna (other than earthworms) (SANCO/11802 data point 8.4.1 and SANCO/11803 data point 10.4.2)

Species level testing

FSN + IDF OD 45:

Hypoaspis aculeifer, reproduction

Folsomia candida, reproduction

NOEC ≥ 370 product/kg dws

NOEC 142 mg product/kg dws

Foramsulfuron:

Hypoaspis aculeifer, reproduction

Folsomia candida, reproduction

NOEC ≥ 1000 mg a.s./kg dws

NOEC = 178 mg a.s./kg dws

AE F092944:

Hypoaspis aculeifer, reproduction

Folsomia candida, reproduction

NOEC ≥ 100 mg/kg dws

NOEC ≥ 100 mg/kg dws

AE F153745:

Hypoaspis aculeifer, reproduction

Folsomia candida, reproduction

NOEC ≥ 100 mg/kg dws

NOEC ≥ 100 mg/kg dws

AE F130619:

Hypoaspis aculeifer, reproduction

Folsomia candida, reproduction

NOEC ≥ 100 mg/kg dws

NOEC ≥ 100 mg/kg dws

Higher tier testing

No data

Toxicity/exposure ratios for non-target soil meso- and macrofauna (other than earthworms) (SANCO/11803 data point 10.4.2)

Compound	Species	Endpoint	PEC _{soil,max/accu} [mg/kg]	TER	Trigger
FSN + IDF OD 45	<i>Folsomia candida</i>	NOEC 142 mg product/kg dws	2.499	56.8	5
	<i>Hypoaspis aculeifer</i>	NOEC ≥ 370 product /kg dws	2.499	≥ 148	5
Foramsulfuron	<i>Folsomia candida</i>	NOEC 178 mg a.s./kg dws	0.063	2 825	5
	<i>Hypoaspis aculeifer</i>	NOEC ≥ 1000 mg a.s./kg dws	0.063	$\geq 15\ 873$	5
AE F092944	<i>Folsomia candida</i>	NOEC ≥ 100 mg/kg dws	0.004	$\geq 25\ 000$	5
	<i>Hypoaspis aculeifer</i>	NOEC ≥ 100 mg/kg dws	0.004	$\geq 25\ 000$	5
AE F153745	<i>Folsomia candida</i>	NOEC ≥ 100 mg/kg dws	0.003	$\geq 33\ 333$	5
	<i>Hypoaspis aculeifer</i>	NOEC ≥ 100 mg/kg dws	0.003	$\geq 33\ 333$	5
AE F130619	<i>Folsomia candida</i>	NOEC ≥ 100 mg/kg dws	0.016	$\geq 6\ 250$	5
	<i>Hypoaspis aculeifer</i>	NOEC ≥ 100 mg/kg dws	0.016	$\geq 6\ 250$	5

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List of Endpoints

Effects on soil nitrogen transformation (SANCO/11802 data point 8.5 and SANCO/11803 data point 10.5)

Nitrogen mineralization

FSN + IDF OD 45:
No unacceptable effects at ≥ 23.8 mg product/mg dws

Foramsulfuron : No unacceptable effects at ≥ 0.3 mg a.s./kg dws

Foramsulfuron + bound residues:
No unacceptable effects at ≥ 0.735 mg a.s./kg dws

AE F153745: No unacceptable effects at ≥ 0.240 mg/kg dws
AE F130619: No unacceptable effects at ≥ 0.375 mg/kg dws
AE F092944: No unacceptable effects at ≥ 0.137 mg/kg dws

Effects on terrestrial non-target higher plants (SANCO/11802 data point 8.6 and SANCO/11803 data point 10.6)

Most sensitive crop species	Test substance	ER ₅₀ (g/ha) vegetative vigour	ER ₅₀ (g/ha) emergence	Exposure (g/ha)	TER	Trigger
lettuce	FSN + IDF OD 45 (22.5 + 22.5 g/L)		38.8 g a.s./ha	3.324 g a.s./ha ¹⁾	11.67	5
radish		1.88 g a.s./ha		0.332 g a.s./ha ²⁾	5.66	5
				0.342 g a.s./ha ³⁾	5.50	
				0.348 g a.s./ha ⁴⁾	5.40	

¹⁾ 1 m distance, no drift reducing nozzles

²⁾ 1 m distance, 90 % drift reduction by drift reducing nozzles

³⁾ 5 m distance, 50 % drift reduction by drift reducing nozzles

⁴⁾ 1 m distance, no drift reducing nozzles

Effects on biological methods for sewage treatment (SANCO/11802 data point 8.8)

Test type/organism	Endpoint
Respiration inhibition test with activated sludge from domestic sewage treatment plant	EC ₅₀ to activated sludge > 625.0 mg a.s./L