CONCLUSION ON PESTICIDES PEER REVIEW

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Peer review of the pesticide risk assessment for the active substance oxyfluorfen in light of confirmatory data submitted

European Food Safety Authority (EFSA)

Abstract

The conclusions of the European Food Safety Authority (EFSA) following the peer review of the initial risk assessment carried out by the competent authority of the rapporteur Member State Spain for the pesticide active substance oxyfluorfen are reported. The context of the peer review was that requested by the European Commission following the submission and evaluation of confirmatory data regarding environmental fate and behaviour and ecotoxicology. The conclusions were reached on the basis of the evaluation of the representative uses of oxyfluorfen as a herbicide in grapes, pome fruits and sunflower. The reliable endpoints concluded as being appropriate for use in regulatory risk assessment, derived from the available studies and literature in the dossier peer reviewed, are presented. Concerns are identified.

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Key words: oxyfluorfen, peer review, confirmatory data, risk assessment, pesticide, herbicide

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Summary

Oxyfluorfen was approved on 1 January 2012 by Commission Implementing Regulation (EU) No 798/2011 as an active substance in accordance with Regulation (EC) No 1107/2009. It was a specific provision of the approval that the applicant was required to submit to the European Commission further studies on the specification as commercially manufactured, on the specifications of the technical material and on the equivalence between the specifications of the technical material and of the test material used in the toxicity studies by 30 June 2012. Also further studies on the potential risk to aquatic organisms for the active substance and some of its metabolites, the potential risk from bioaccumulation and biomagnification in the aquatic food chain and on exposure data for banded application were required by 31 December 2013.

In accordance with the specific provision, the applicant, Dow AgroScience, submitted two updated dossiers in June 2012 and December 2013, which were evaluated by the designated RMS, Spain, in the form of two addenda to the draft assessment report. In compliance with guidance document SANCO 5634/2009 rev.6.1, the RMS distributed the addenda to Member States, the applicant and EFSA for comments on 1 April 2014 (first set of confirmatory data) and on 14 July 2014 (second set of confirmatory data). The RMS collated all comments on the entire set of confirmatory data in the format of a reporting table, which was submitted to EFSA on 2 October 2014.

EFSA added its scientific views on the specific points raised during the commenting phase in column 4 of the reporting table and finalised the Technical Report in October 2014.

Following consideration of the Technical Report, the European Commission requested EFSA to provide scientific and technical assistance on the unresolved issues of the Technical Report and to deliver its conclusions by 31 July 2015.

The confirmatory data submitted on environmental fate are sufficient to perform an aquatic exposure assessment for the metabolites RH-45469, MW 306, MW 347, MW 274 and for the unidentified metabolite Deg 27. However, the peer review considered that insufficient experimental spray drift data were available in this case to refine the aquatic exposure assessment for the active substance oxyfluorfen. Therefore, the new predicted environmental concentrations for oxyfluorfen were not considered acceptable.

A high risk to aquatic organisms (critical area of concern) was identified for oxyfluorfen, for the metabolite MW 347 and for the unidentified metabolite Deg 27.

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Background

Oxyfluorfen was approved on 1 January 2012 by Commission Implementing Regulation (EU) No 798/2011,[1] as an active substance in accordance with Regulation (EC) No 1107/2009.[2] EFSA previously finalised a Conclusion on this active substance on 17 November 2010 (EFSA, 2010).

It was a specific provision of the approval that the applicant was required to submit to the European Commission further studies by 30 June 2012, in particular:

(1) the specification of the technical material, as commercially manufactured including information on the relevance of the impurities;

(2) the equivalence between the specifications of the technical material, as commercially manufactured, and the specifications of the test material used in the toxicity studies.

Furthermore, the applicant was required to submit to the European Commission further studies by 31 December 2013, in particular:

(3) the potential risk to aquatic organisms for the active substance and for the metabolites RH-45469, MW 306, MW 347, MW 274 and for the unidentified metabolite Deg 27;

(4) the potential risk from bioaccumulation and biomagnification in the aquatic food chain, including sediment dwellers;

(5) exposure data for banded application adequate for use as drift mitigation values.

In accordance with the specific provision, the applicant, Dow AgroScience, submitted two updated dossiers in June 2012 and December 2013, which were evaluated by the designated rapporteur Member State (RMS), Spain, in the form of two addenda to the draft assessment report (Spain, 2014a; Spain, 2014b). In compliance with guidance document SANCO 5634/2009 rev.6.1 (European Commission, 2013), the RMS distributed the addenda to Member States, the applicant and EFSA for comments on 1 April 2014. The RMS collated all comments in the format of a Reporting Table and added its evaluation in column 3 of the Reporting Table (Spain, 2014c), which was submitted to EFSA on 2 October 2014.

EFSA added its scientific views on the specific points raised during the commenting phase in column 4 of the reporting table and finalised the Technical Report in October 2014 (EFSA, 2014).

Following consideration of the Technical Report, the European Commission requested EFSA to provide scientific and technical assistance on the unresolved issues of the Technical Report and to deliver its conclusions by 31 July 2015 and in particular to conclude on the risk to aquatics organisms from all the representative uses of oxyfluorfen.

The addenda and the reporting table were discussed at the Pesticides Peer Review Meeting on environmental fate and behaviour (Pesticides Peer Review Teleconference 113) and on ecotoxicology (Pesticides Peer Review Meeting 130) in May 2015. Details of the issues discussed, together with the outcome of these discussions were recorded in the meeting reports.

A final consultation on the conclusions arising from the peer review took place with Member States via a written procedure in June–July 2015.

The conclusions laid down in this report were reached on the basis of the peer review of the RMS's evaluation of the confirmatory data submitted in relation to the potential risk to aquatic organisms for the active substance and for the metabolites RH-45469, MW 306, MW 347, MW 274, and for the unidentified metabolite Deg 27 and the exposure data for banded application adequate for use as drift mitigation values. A key supporting document to this conclusion is the peer review report, which is a compilation of the documentation developed to evaluate and address all issues raised in the peer review, from the compilation of comments in the reporting table to the conclusion. The peer review

[1] Commission Implementing Regulation (EU) No 798/2011 of 9 August 2011 approving the active substance oxyfluorfen, in accordance with Regulation (EC) No 1107/2009 of the European Parliament and of the Council concerning the placing of plant protection products on the market, and amending the Annex to Commission Implementing Regulation (EU) No 540/2011 and Commission Decision 2008/934/EC. OJ L 205, 10.8.2011, p. 9–14.

[2] Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. OJ L 309, 24.11.2009, p. 1–50.

report (EFSA, 2015) comprises the following documents, in which all views expressed during the course of the peer review, including minority views, can be found:

- the reports of the scientific consultation with Member State experts,
- the comments received on the draft EFSA conclusion.

Given the importance of the addendum to the assessment report (Spain, 2015) and the peer review report, these documents are considered as background documents to this conclusion.

It is recommended that this conclusion report and its background documents would not be accepted to support any registration outside the EU for which the applicant has not demonstrated to have regulatory access to the information on which this conclusion report is based.

The active substance and the formulated product

Oxyfluorfen is the ISO common name for 2-chloro-α,α,α-trifluoro-*p*-tolyl 3-ethoxy-4-nitrophenyl ether (IUPAC).

The representative formulated product for the evaluation was 'Goal 4F' or 'Goal 480 SC' a suspension concentrate (SC) containing 480 g/l oxyfluorfen.

The representative uses evaluated comprise outdoor spraying against annual grasses and broadleaved weeds in grapes, pome fruit and sunflowers. Full details of the GAP can be found in the list of end points.

Conclusions of the evaluation

1. Environmental fate and behaviour

To fulfil the confirmatory data requirements in the environmental fate and behaviour section, new data and assessments for oxyfluorfen and its metabolites were submitted by the applicant and evaluated by the RMS in addenda (Spain, 2015).

Oxyfluorfen undergoes photolytic degradation in water to form metabolites RH-45469, MW 306, MW 347, MW 274 and the unidentified metabolite Deg 27. Predicted environmental concentrations (PEC) in surface water up to FOCUS (FOCUS, 2001) Step 2 (representative use in sunflower) and Step 4 (representative uses on pome fruits/grapes) were calculated for each metabolite by adjusting PECsw for oxyfluorfen to account for the difference in molecular mass between the parent compound and the metabolite, and the maximum observed amount of each metabolite in an aqueous photodegradation study. The environmental exposure assessment for the metabolites RH-45469, MW 306, MW 347, MW 274 and for the unidentified metabolite Deg 27 is considered acceptable.

To fulfil confirmatory data on the exposure data for banded application adequate for use as drift mitigation values, the applicant submitted a new field study to quantify down-wind spray drift deposition from applications to a commercial orchard and a commercial vineyard in UK, using typical spraying equipment. The purpose of this study was to refine the standard FOCUS drift values to be used for PECsw calculations for the intended use of oxyfluorfen in vineyards and fruit orchards. Due to the limited database package of the experimental drift curves, the RMS proposed the use of the 80% drift reduction curve derived from the FOCUS standard drift reduction curve for field crops (Spain, 2015). This refinement was discussed at the Pesticides Peer Review Teleconference 113 in May 2015. It was concluded that insufficient experimental spray drift data were available in this case to justify deviating from the use of agreed FOCUS drift values and reduction curves with buffer distance for field crops. Therefore, the new PECsw calculations presented by the RMS for the active substance oxyfluorfen were not accepted by the peer review.

2. Ecotoxicology

To fulfil the confirmatory data requirements for ecotoxicology, new data and assessments for oxyfluorfen and its metabolites were submitted by the applicant and evaluated by the RMS in addenda (Spain, 2015).

As regards the risk from bioaccumulation and biomagnification in the aquatic food chain, including sediment organisms, the RMS has conducted a simulation using the model of Alonso et al. (2008). During the peer review of the confirmatory data, a low risk from bioaccumulation and biomagnification in the aquatic food chain was concluded based on this model simulation.

Additionally, a low risk to aquatic organisms was concluded for the metabolites RH-45469, MW 306, and MW 274 on the basis of the new data and assessments.

The risk assessments proposed by the RMS for oxyfluorfen, for metabolite MW 347 and for the unidentified metabolite Deg 27 were discussed at the Pesticides Peer Review Meeting 130 in May 2015.

The RMS had proposed to base the risk assessment of oxyfluorfen on the NOEAEC value of 0.5 µg a.s./L from the available aquatic mesocosm study. The experts at the meeting did not consider this

value to be reliable. However, the NOEC value of 0.02 µg a.s./L (based on reduced biomass of *myriophyllum spicatum*) was considered as a robust and reliable endpoint. The risk assessment of oxyfluorfen using this NOEC value indicated a high risk to aquatic organisms for all the representative uses even if risk mitigation options (up to 20 metres non-sprayed vegetative buffer zone) were taken into consideration.

Similarly to oxyfluorfen, the RMS proposed to base the risk assessments of the metabolite MW 347 on the NOEAEC value of 0.5 µg a.s./L from the available aquatic mesocosm study. However, the experts at the meeting considered to base the risk assessment on the available laboratory toxicity data (on green algae and lemna) of this metabolite.

No toxicity data were available for the metabolite Deg 27. The RMS proposed to assume for the risk assessment that this metabolite is as toxic as the parent oxyfluorfen. However, the experts at the meeting considered to base the risk assessment on the standard approach considering that the metabolite is 10 times more toxic than the parent (screening assessment).

The risk assessments considering the agreed approaches at the Pesticides Peer Review Meeting resulted in a high risk for both metabolites for all the representative uses even if risk mitigation options (up to 20 metres non-sprayed vegetative buffer zone) were taken into consideration.

In this respect, a data gap remains to address the risk to aquatic organisms for the active substance and for the metabolites MW 347 and Deg 27.

Data gaps

This is a list of the data gaps identified during the focussed peer review process of confirmatory data. Data gaps identified in the previously finalised EFSA Conclusion on this active substance (EFSA, 2010) that were not part of the focussed peer review process of confirmatory data remain as unchanged.

- The risk to aquatic organisms for the active substance and for the metabolites MW 347 and Deg 27 remains to be addressed (relevant for all representative uses evaluated; submission date proposed by the applicant: unkown; see Section 2).

Concerns

1. Issues that could not be finalised

An issue is listed as an issue that could not be finalised where there is not enough information available to perform an assessment, even at the lowest tier level, for the representative uses in line with the Uniform Principles in accordance with Article 29(6) of Regulation (EC) No 1107/2009 and as set out in Commission Regulation (EU) No 546/2011,[3] and where the issue is of such importance that it could, when finalised, become a concern (which would also be listed as a critical area of concern if it is of relevance to all representative uses).

1. The risk assessment to aquatic organisms for the metabolite Deg 27 could not be finalised.

2. Critical areas of concern

An issue is listed as a critical area of concern where there is enough information available to perform an assessment for the representative uses in line with the Uniform Principles in accordance with Article 29(6) of Regulation (EC) No 1107/2009 and as set out in Commission Regulation (EU) No 546/2011, and where this assessment does not permit to conclude that for at least one of the representative uses it may be expected that a plant protection product containing the active substance will not have any harmful effect on human or animal health or on groundwater or any unacceptable influence on the environment.

An issue is also listed as a critical area of concern where the assessment at a higher tier level could not be finalised due to a lack of information, and where the assessment performed at the lower tier

[3] Commission Regulation (EU) No 546/2011 of 10 June 2011 implementing Regulation (EC) No 1107/2009 of the European Parliament and of the Council as regards uniform principles for evaluation and authorisation of plant protection products. OJ L 155, 11.6.2011, p. 127–175.

level does not permit to conclude that for at least one of the representative uses it may be expected that a plant protection product containing the active substance will not have any harmful effect on human or animal health or on groundwater or any unacceptable influence on the environment.

2. A high risk to aquatic organisms was identified for the active substance and for the metabolite MW 347.

3. Overview of the concerns identified for each representative use considered

Table 1: Overview of concerns

Representative use		Grapes	Pome fruits	Sunflower
Risk to aquatic organisms	Risk identified	X[2]	X[2]	X[2]
	Assessment not finalised	X[1]	X[1]	X[1]

Columns are grey if no safe use can be identified. The superscript numbers in this table relate to the numbered points indicated in the section on concerns.

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Abbreviations

a.s.	active substance
ADI	acceptable daily intake
AF	assessment factor
AR	applied radioactivity
ARfD	acute reference dose
BCF	bioconcentration factor
bw	body weight
CAS	Chemical Abstracts Service
CIPAC	Collaborative International Pesticides Analytical Council Limited
d	day
DAR	draft assessment report
DM	dry matter
DT_{50}	period required for 50 % dissipation (define method of estimation)
DT_{90}	period required for 90 % dissipation (define method of estimation)
dw	dry weight
EbC_{50}	effective concentration (biomass)
EC_{50}	effective concentration
EEC	European Economic Community
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of New Chemical Substances
EMDI	estimated maximum daily intake
ER_{50}	emergence rate/effective rate, median
ErC_{50}	effective concentration (growth rate)
FOCUS	Forum for the Co-ordination of Pesticide Fate Models and their Use
GAP	good agricultural practice
GM	geometric mean
GS	growth stage
IEDI	international estimated daily intake
IESTI	international estimated short-term intake
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
K_{doc}	organic carbon linear adsorption coefficient
K_{Foc}	Freundlich organic carbon adsorption coefficient
LC_{50}	lethal concentration, median
LD_{50}	lethal dose, median; dosis letalis media
LOD	limit of detection
LOQ	limit of quantification (determination)
MAF	multiple application factor

NESTI	national estimated short-term intake
NOAEC	no observed adverse effect concentration
NOAEL	no observed adverse effect level
NOEAEC	no observed ecologically adverse effect concentration
NOEC	no observed effect concentration
NOEL	no observed effect level
OM	organic matter content
Pa	pascal
PD	proportion of different food types
PEC	predicted environmental concentration
PEC_{air}	predicted environmental concentration in air
PEC_{gw}	predicted environmental concentration in groundwater
PEC_{sed}	predicted environmental concentration in sediment
PEC_{soil}	predicted environmental concentration in soil
PEC_{sw}	predicted environmental concentration in surface water
PHI	pre-harvest interval
pK_a	negative logarithm (to the base 10) of the dissociation constant
P_{ow}	partition coefficient between *n*-octanol and water
PPE	personal protective equipment
ppm	parts per million (10^{-6})
PT	proportion of diet obtained in the treated area
QSAR	quantitative structure–activity relationship
r^2	coefficient of determination
SD	standard deviation
SFO	single first-order
SMILES	simplified molecular-input line-entry system
SSD	species sensitivity distribution
STMR	supervised trials median residue
$t_{1/2}$	half-life (define method of estimation)
TER	toxicity exposure ratio
TER_A	toxicity exposure ratio for acute exposure
TER_{LT}	toxicity exposure ratio following chronic exposure
TER_{ST}	toxicity exposure ratio following repeated exposure
TK	technical concentrate
TLV	threshold limit value
TMDI	theoretical maximum daily intake
TRR	total radioactive residue
TWA	time-weighted average
UDS	unscheduled DNA synthesis

UV	ultraviolet
W/S	water/sediment
w/v	weight per unit volume
w/w	weight per unit weight
WBC	white blood cell
WG	water dispersible granule
WHO	World Health Organization
wk	week
yr	year

Appendix A – List of end points for the active substance and the representative formulation

Summary of representative uses evaluated (oxyfluorfen)

Crop and/ or situation (a)	Member State or Country	Product name	F G or I (b)	Pests or Group of pests controlled (c)	Formulation		Application				Application rate per treatment			PHI (days) (l)	Remarks (m)
					Type (d-f)	Conc. of as (i)	method kind (f-h)	growth stage & season (j)	number min max (k)	interval between applica-tions (days)	kg as/hL min max	water L/ha min max	kg as/ha min max		
grapes	Northern and Southern Europe	Goal 4F	F	annual grasses, broadleaves	SC	480 g/l	Boom spraying Directed spray to ground	dormant (Nov.15th-Feb. 1st) BBCH 00	1		-	200-1000,	0.48-1.44	6 months	Banded application
pome fruits	Northern and Southern Europe	Goal 4F	F	annual grasses, broadleaves, annual weeds	SC	480 g/l	Boom spraying Directed spray to ground	dormant (Nov.15th-Feb. 1st) or BBCH 00	1		-	200-1000	0.48-1.44	6 months	Banded application
sunflower	Northern and Southern Europe	Goal 4F or Goal 480 SC	F	annual grasses, broadleaves	SC	480 g/l	Boom spraying	Pre-emergence BBCH 00	1		-	200-1000	0.192-0.24	2-3 months	

(a): For crops, the EU and Codex classifications (both) should be used; where relevant, the use situation should be described (*e.g.* fumigation of a structure)
(b): Outdoor or field use (F), glasshouse application (G) or indoor application (I)
(c): e.g. biting and suckling insects, soil born insects, foliar fungi, weeds
(d): e.g. wettable powder (WP), emulsifiable concentrate (EC), granule (GR)
(e): GCPF Codes - GIFAP Technical Monograph No 2, 1989
(f): Method, *e.g.* high volume spraying, low volume spraying, spreading, dusting, drench
(g): All abbreviations used must be explained
(h): Kind, *e.g.* overall, broadcast, aerial spraying, row, individual plant, between the plants – type of equipment used must be indicated
(i): g/kg or g/l
(j): Growth stage at last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application
(k): The minimum and maximum number of application possible under practical conditions of use must be provided
(l): PHI – minimum pre-harvest interval
(m): Remarks may include: Extent of use/economic importance/restrictions

PEC (surface water) and PEC sediment (Annex IIIA, point 9.2.3)

Parent Parameters used in FOCUSsw step 1 and 2	Molecular weight 361.7 (g/mol): Water solubility 0.116 (mg/L): K_{OC} 5657 (L/kg): DT_{50} soil (d): *138* days (Geomean value from Lab. In accordance with FOCUS SFO) DT_{50} water/sediment system (d): 29.2 Crop interception (%): 0 Default FOCUS Drift values
Parameters used in FOCUSsw step 3 (if performed)	Vapour pressure: 2.6×10^{-5} Pa Koc: 5657 (L/kg): 1/n: 0.873 (Freundlich exponent for soil) Default FOCUS ground spray Drift values Q10 2.58, Walker equation coefficient 0.7
Application rate	<u>Crop: vine/ pome fruits</u> Crop interception: 0 Number of applications: *1* Interval (d): *N/A* Application rate(s): Oxyfluorfen is intended to be used as a banded application on the plantation lines or around each tree 480 g a.s./ha for runoff/erosion entries and 1440 g a.s./ha for drift entries Application window: Oct Feb (FOCUS Step 1-2) 15 Nov-31 Dec (FOCUS Step 3) <u>Crop: sunflowers</u> Crop interception: 0 Number of applications: *1* Interval (d): *N/A* Application rate(s): 240 g a.s./ha Application window: Mar-May (FOCUS Step 1-2) application window finishes 15 d before emergence (FOCUS Step 3)

A) SUNFLOWER

FOCUS STEP 1	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
		Actual	TWA	Actual	TWA
	0	11.5720		529.7643	
	1	9.3974	10.4847	531.6102	530.6873
	2	9.1769	9.8857	519.1395	528.0187
	4	8.7514	9.4241	495.0688	517.5138
	7	8.1499	9.0054	461.0392	500.5159
	14	6.9022	8.2571	390.4569	462.6435
	21	5.8455	7.6245	330.6804	428.3428
	28	4.9506	7.0648	280.0552	397.4239
	42	3.5508	6.1138	200.8696	344.3737

FOCUS STEP 2 Scenario	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
		Actual	TWA	Actual	TWA
Southern EU	0	4.0503	---	222.1125	---
	1	3.9263	3.9883	221.9586	222.0355
	2	3.9236	3.9566	221.8048	221.9586
	4	3.9182	3.9388	221.4975	221.8049
	7	3.9100	3.9282	221.0374	221.5745
	14	3.8911	3.9144	219.9675	221.0383
	21	3.8723	3.9035	218.9028	220.5038
	28	3.8535	3.8933	217.8433	219.9710
	42	3.8163	3.8739	215.7395	218.9106

FOCUS STEP 2 Scenario	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0	2.2146	---	118.3391	---
	1	2.0919	2.1532	118.2571	118.2981
	2	2.0905	2.1222	118.1751	118.2571
	4	2.0876	2.1056	118.0114	118.1752
	7	2.0832	2.0969	117.7663	118.0524
	14	2.0731	2.0876	117.1962	117.7667
	21	2.0631	2.0811	116.6290	117.4819
	28	2.0531	2.0753	116.0645	117.1981
	42	2.0333	2.0646	114.9436	116.6331

FOCUS STEP 3 Scenario	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
D5	**pond**	0 h	0.0501		0.596	
		24 h	0.0482	0.0491	0.596	0.596
		2 d	0.0464	0.0482	0.596	0.596
		4 d	0.0432	0.0465	0.596	0.596
		7 d	0.0392	0.0442	0.596	0.596
		14 d	0.0323	0.0398	0.595	0.596
		21d	0.0274	0.0365	0.594	0.596
		28 d	0.024	0.0337	0.592	0.595
		42 d	0.0189	0.0295	0.589	0.595
D5	**stream**	0 h	1.024		0.027	
		24 h	0.000001	0.0381	0.0265	0.0268
		2 d	0.000001	0.0191	0.0259	0.0265
		4 d	0.000001	0.00953	0.0249	0.026
		7 d	0.000002	0.00544	0.0235	0.0252
		14 d	0.000001	0.00272	0.0208	0.0237
		21 d	0.000001	0.00182	0.0186	0.0223
		28 d	0.000001	0.00136	0.0168	0.0212
		42 d	0.000001	0.000908	0.0141	0.0192

FOCUS STEP 3 Scenario	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
R1	**pond**	0 h	0.0759		3.64	
		24 h	0.0742	0.0751		3.638
		2 d	0.0726	0.0743		3.636
		4 d	0.0697	0.073		3.631
		7 d	0.0658	0.0713		3.625
		14 d	0.0588	0.0679		3.611
		21 d	0.0543	0.0667		3.59
		28 d	0.0635	0.0652		3.557
		42 d	0.0531	0.0615		3.476
R1	**stream**	0 h	0.863		14.158	
		24 h	0.000038	0.216	14.14	14.152
		2 d	0.000036	0.109	14.122	14.143
		4 d	0.000033	0.0547	14.087	14.125
		7 d	0.000029	0.0454	14.036	14.1
		14 d	0.000022	0.033	13.924	14.042
		21 d	0.000432	0.0254	13.821	13.987
		28 d	0.000488	0.0215		13.96
		42 d	0.000364	0.0181		13.866
R3	**stream**	0 h	1.211		17.355	
		24 h	0.000694	0.364	17.313	17.345
		2 d	0.000172	0.182	17.265	17.325
		4 d	0.000157	0.0911	17.174	17.281
		7 d	0.364	0.0696	17.046	17.215
		14 d	0.218	0.0476	16.769	17.071
		21 d	0.315	0.0455	16.52	16.936
		28 d	0.00211	0.0431	16.545	16.838
		42 d	0.00175	0.0344	16.39	16.732
R4	**stream**	0 h	0.86		33.311	
		24 h	0.000056	0.487	33.209	33.278
		2 d	0.000054	0.344	33.105	33.234
		4 d	0.00005	0.173	32.906	33.145
		7 d	0.000046	0.0993	32.63	33.005
		14 d	0.000082	0.0549	32.066	32.699
		21 d	0.00231	0.0435	31.557	32.42
		28 d	0.00171	0.0409	32.049	32.234
		42 d	0.00085	0.0354	31.081	32.023

FOCUS STEP 4 20 m (runoff + drift)	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
D5	**pond**	0 h	0.0214		0.264	
		24 h	0.0206	0.021	0.264	0.264
		2 d	0.0198	0.0206	0.264	0.264
		4 d	0.0185	0.0199	0.264	0.264
		7 d	0.0167	0.0189	0.264	0.264
		14 d	0.0137	0.017	0.263	0.264
		21 d	0.0116	0.0155	0.263	0.264
		28 d	0.0101	0.0143	0.262	0.263
		42 d	0.00785	0.0125	0.26	0.263

FOCUS STEP 4 20 m (runoff + drift)	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
D5	**stream**	0 h	0.118		0.00334	
		24 h	0	0.00441	0.00329	0.00332
		2 d	0	0.0022	0.00324	0.00329
		4 d	0	0.0011	0.00315	0.00324
		7 d	0	0.00063	0.00302	0.00318
		14 d	0	0.000315	0.00275	0.00303
		21 d	0	0.00021	0.00252	0.0029
		28 d	0	0.000158	0.00233	0.00278
		42 d	0	0.000105	0.00202	0.00258
R1	**pond**	0 h	0.0214		0.816	
		24 h	0.0206	0.021		0.816
		2 d	0.0198	0.0206		0.815
		4 d	0.0185	0.0199		0.814
		7 d	0.0167	0.0189		0.813
		14 d	0.0136	0.0178		0.81
		21 d	0.0172	0.0173		0.805
		28 d	0.0166	0.0173		0.797
		42 d	0.0132	0.0165		0.78
R1	**stream**	0 h	0.0999		0.84	
		24 h	0.000003	0.0516	0.838	0.839
		2 d	0.000003	0.026		0.838
		4 d	0.000003	0.013		0.834
		7 d	0.000003	0.0107		0.832
		14 d	0.000002	0.0077		0.827
		21 d	0.000026	0.00585		0.823
		28 d	0.000033	0.0049		0.823
		42 d	0.000027	0.00418		0.816
R3	**stream**	0 h	0.14		1.012	
		24 h	0.000074	0.062	1.008	1.011
		2 d	0.000015	0.0333	1.003	1.009
		4 d	0.000014	0.021	0.995	1.005
		7 d	0.087	0.0121	0.983	0.999
		14 d	0.0535	0.0106	0.959	0.986
		21 d	0.0767	0.00936	0.938	0.974
		28 d	0.000158	0.00853	0.961	0.969
		42 d	0.000143	0.00689	0.963	0.968
R4	**stream**	0 h	0.14		1.883	
		24 h	0.000203	0.116	1.875	1.88
		2 d	0.00011	0.0818	1.866	1.876
		4 d	0.000133	0.0409	1.851	1.869
		7 d	0.000119	0.0234	1.829	1.858
		14 d	0.000072	0.0129	1.786	1.835
		21 d	0.000058	0.00936	1.749	1.814
		28 d	0.105	0.00957	1.843	1.804
		42 d	0.000068	0.00823	1.761	1.804

FOCUS STEP 4 20 m runoff + 100 m drift	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
D5	pond	0 h	0.00629		0.0821	
		24 h	0.00606	0.00617	0.0821	0.0821
		2 d	0.00583	0.00606	0.0821	0.0821
		4 d	0.00543	0.00584	0.0821	0.0821
		7 d	0.00492	0.00555	0.0821	0.0821
		14 d	0.00401	0.00499	0.082	0.0821
		21 d	0.00335	0.00455	0.0818	0.0821
		28 d	0.00289	0.00419	0.0816	0.082
		42 d	0.00222	0.00363	0.0811	0.082
R1	pond	0 h	0.0153		0.689	
		24 h	0.015	0.0152		0.688
		2 d	0.0147	0.015		0.688
		4 d	0.0142	0.0147		0.687
		7 d	0.0135	0.0144		0.685
		14 d	0.0122	0.0136		0.681
		21 d	0.0112	0.0133		0.676
		28 d		0.013		0.668
		42 d		0.0122		0.649

B) VINES AND POME FRUITS

FOCUS STEP 1	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
		Actual	TWA	Actual	TWA
	0	32.18		1.06E+03	
		19.83	26.00	1.12E+03	1.09E+03
		19.37	25.85	1.10E+03	1.10E+03
		18.47	19.20	1.04E+03	1.07E+03
		17.20	17.89	9.73E+02	1.03E+03
		14.57	13.84	8.24E+02	9.54E+02
	21	12.34	15.99	6.98E+02	8.83E+02
	28	10.45	16.29	5.91E+02	8.19E+02
	42	7.49	13.28	4.24E+02	7.10E+02

FOCUS STEP 2 Scenario	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
		Actual	TWA	Actual	TWA
Southern EU	0	9.61		289.69	
	1	9.61	9.61	497.04	393.36
	2	9.60	9.61	496.69	445.11
	4	9.59	9.60	496.00	470.73
	7	9.57	9.59	494.97	481.34
	14	9.52	9.57	492.58	487.56
	21	9.48	9.55	490.19	488.83
	28	9.34	9.48	483.11	487.74
	42	9.61		289.69	

FOCUS STEP 2 Scenario	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
		Actual	TWA	Actual	TWA
Northern EU	0	11.45		601.23	
	1	11.44	11.45	600.81	601.02
	2	11.44	11.44	600.39	600.81
	4	11.42	11.44	599.56	600.39
	7	11.40	11.42	598.32	599.77
	14	11.34	11.40	595.42	598.32
	21	11.29	11.37	592.54	596.87
	28	11.23	11.34	589.67	595.43
	42	11.12	11.29	583.98	592.56

FOCUS STEP 3 Pome fruits	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
D3	**ditch**	0 h	9.053		6.42	
		24 h	4.081	6.936	6.251	6.392
		2 d	0.459	4.411	6.008	6.323
		4 d	0.0242	2.262	5.562	6.141
		7 d	0.0177	1.301	5.002	5.853
		14 d	0.0109	0.657	4.058	5.262
		21 d	0.00725	0.441	3.44	4.795
		28 d	0.00506	0.332	3.012	4.424
		42 d	0.00287	0.223	2.467	3.876
D4	**pond**	0 h	0.311		3.125	
		24 h	0.3	0.305	3.125	3.125
		2 d	0.29	0.3	3.124	3.125
		4 d	0.272	0.29	3.122	3.125
		7 d	0.248	0.277	3.117	3.124
		14 d	0.209	0.252	3.106	3.121
		21 d	0.172	0.232	3.098	3.118
		28 d	0.142	0.213	3.094	3.114
		42 d	0.105	0.182	3.087	3.108
D4	**stream**	0 h	7.642		0.885	
		24 h	0.000301	1.181	0.856	0.874
		2 d	0.000278	0.591	0.828	0.86
		4 d	0.000242	0.295	0.776	0.834
		7 d	0.000206	0.169	0.709	0.797
		14 d	0.000149	0.0845	0.589	0.723
		21 d	0.000359	0.0587	0.538	0.668
		28 d	0.000019	0.0444	0.476	0.629
		42 d	0.000009	0.0297	0.388	0.563
D5	**pond**	0 h	0.311		3.721	
		24 h	0.301	0.306	3.72	3.721
		2 d	0.291	0.301	3.717	3.721
		4 d	0.273	0.291	3.706	3.72
		7 d	0.251	0.279	3.678	3.717
		14 d	0.213	0.254	3.592	3.708
		21 d	0.187	0.236	3.531	3.696
		28 d	0.169	0.221	3.492	3.68
		42 d	0.145	0.199	3.447	3.644
D5	**stream**	0 h	8.451		2.416	
		24 h	0.038	3.23	2.336	2.394
		2 d	0.00271	1.619	2.25	2.356
		4 d	0.00237	0.811	2.093	2.278
		7 d	0.00197	0.464	1.892	2.168
		14 d	0.00132	0.233	1.546	1.951
		21 d	0.000916	0.156	1.312	1.781
		28 d	0.000662	0.117	1.147	1.646
		42 d	0.000382	0.0781	0.934	1.444

FOCUS STEP 3 Pome fruits	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
R1	**pond**	0 h	0.311		3.724	
		24 h	0.299	0.305	3.724	3.724
		2 d	0.289	0.299	3.723	3.724
		4 d	0.269	0.289	3.723	3.724
		7 d	0.245	0.275	3.72	3.723
		14 d	0.202	0.248	3.712	3.723
		21 d	0.173	0.228	3.701	3.721
		28 d	0.151	0.211	3.686	3.719
		42 d	0.122	0.186	3.651	3.714
R1	**stream**	0 h	5.989		1.383	
		24 h	0.000366	1.279	1.366	1.376
		2 d	0.000344	0.64	1.349	1.367
		4 d	0.000308	0.32	1.318	1.351
		7 d	0.000261	0.183	1.276	1.329
		14 d	0.000182	0.0916	1.197	1.283
		21 d	0.000049	0.0611	1.137	1.245
		28 d	0.000036	0.0458	1.09	1.212
		42 d	0.000022	0.0306	1.141	1.189
R2	**stream**	0 h	7.899		6.215	
		24 h	0.000102	0.696	6.192	6.206
		2 d	0.000097	0.348	6.17	6.195
		4 d	0.000087	0.174	6.127	6.174
		7 d	0.000075	0.0995	6.068	6.143
		14 d	0.000054	0.0498	5.949	6.077
		21 d	0.000027	0.0332	5.849	6.02
		28 d	0.000111	0.0355	5.763	5.968
		42 d	0.000077	0.0253	5.616	5.877
R3	**stream**	0 h	8.244		6.014	
		24 h	0.000578	1.496	5.954	5.994
		2 d	0.000542	0.748	5.893	5.966
		4 d	0.000483	0.374	5.781	5.908
		7 d	0.000408	0.214	5.635	5.827
		14 d	0.00122	0.168	5.368	5.667
		21 d	0.00121	0.113	5.171	5.536
		28 d	0.000882	0.0872	5.019	5.427
		42 d	0.00053	0.0586	4.798	5.254
R4	**stream**	0 h	5.898		1.744	
		24 h	0.000173	0.851	1.723	1.737
		2 d	0.000164	0.426	1.701	1.727
		4 d	0.000148	0.213	1.661	1.708
		7 d	0.000127	0.122	1.606	1.681
		14 d	0.000092	0.0609	1.594	1.663
		21 d	0.000068	0.0459	1.582	1.653
		28 d	0.000053	0.0438	1.575	1.639
		42 d	0.000034	0.0406	1.518	1.625

FOCUS STEP 3 vines	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
D6	**ditch**	0 h	9.134		27.772	
		24 h	8.214	8.652	27.642	27.759
		2 d	7.42	8.227	27.31	27.721
		4 d	5.797	7.43	26.31	27.573
		7 d	2.994	6.118	23.486	27.197
		14 d	0.0458	3.737	18.76	25.526
		21 d	0.00672	2.497	15.895	23.612
		28 d	0.0158	1.876	14.001	21.913
		42 d	0.00757	1.255	11.581	19.271
R1	**pond**	0 h	0.311		3.699	
		24 h	0.299	0.305	3.699	3.699
		2 d	0.289	0.299	3.699	3.699
		4 d	0.269	0.289	3.698	3.699
		7 d	0.244	0.275	3.696	3.699
		14 d	0.202	0.248	3.688	3.698
		21 d	0.172	0.227	3.676	3.697
		28 d	0.15	0.211	3.661	3.695
		42 d	0.121	0.185	3.626	3.689
R1	**stream**	0 h	5.95		1.309	
		24 h	0.00024	1.056	1.293	1.302
		2 d	0.000227	0.528	1.277	1.294
		4 d	0.000203	0.264	1.248	1.28
		7 d	0.000173	0.151	1.21	1.259
		14 d	0.000122	0.0756	1.137	1.216
		21 d	0.000037	0.0504	1.081	1.181
		28 d	0.000027	0.0378	1.037	1.151
		42 d	0.000016	0.0252	1.093	1.131
R2	**stream**	0 h	7.896		6.197	
		24 h	0.0001	0.692	6.174	6.188
		2 d	0.000095	0.346	6.152	6.177
		4 d	0.000086	0.173	6.11	6.156
		7 d	0.000074	0.0989	6.051	6.125
		14 d	0.000053	0.0495	5.933	6.06
		21 d	0.000026	0.033	5.834	6.003
		28 d	0.000109	0.0352	5.748	5.951
		42 d	0.000076	0.0251	5.602	5.861
R3	**stream**	0 h	8.232		5.971	
		24 h	0.000529	1.444	5.912	5.951
		2 d	0.000497	0.722	5.852	5.923
		4 d	0.000443	0.361	5.743	5.867
		7 d	0.000375	0.207	5.6	5.788
		14 d	0.00116	0.164	5.338	5.631
		21 d	0.00119	0.11	5.145	5.503
		28 d	0.000863	0.0845	4.995	5.396
		42 d	0.00052	0.0567	4.778	5.226

FOCUS STEP 3 vines	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
R4	**stream**	0 h	5.889		1.735	
		24 h	0.000182	0.823	1.709	1.725
		2 d	0.000173	0.412	1.683	1.713
		4 d	0.000156	0.206	1.635	1.689
		7 d	0.000135	0.118	1.572	1.655
		14 d	0.000098	0.0589	1.455	1.586
		21 d	0.000074	0.0393	1.368	1.529
		28 d	0.00006	0.0436	1.301	1.481
		42 d	0.000039	0.03	1.203	1.405

FOCUS STEP 4 Pome fruit 20 m (runoff +drift)	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
D3	**ditch**	0 h	0.674		0.488	
		24 h	0.304	0.516	0.479	0.486
		2 d	0.0336	0.328	0.466	0.483
		4 d	0.00134	0.168	0.441	0.473
		7 d	0.00101	0.0965	0.408	0.457
		14 d	0.00071	0.0487	0.347	0.422
		21 d	0.000523	0.0326	0.302	0.392
		28 d	0.000395	0.0246	0.269	0.367
		42 d	0.000247	0.0165	0.223	0.328
ºD4	**pond**	0 h	0.129		1.395	
		24 h	0.125	0.127	1.395	1.395
		2 d	0.12	0.125	1.394	1.395
		4 d	0.113	0.12	1.393	1.395
		7 d	0.103	0.115	1.391	1.394
		14 d	0.0858	0.104	1.387	1.393
		21 d	0.0742	0.0962	1.384	1.392
		28 d	0.061	0.089	1.382	1.39
		42 d	0.0447	0.0765	1.379	1.388
ºD4	**stream**	0 h	0.767		0.0974	
		24 h	0.000021	0.118	0.0962	0.0972
		2 d	0.00002	0.0593	0.0943	0.0965
		4 d	0.000018	0.0296	0.0907	0.0949
		7 d	0.000016	0.0169	0.086	0.0937
		14 d	0.000013	0.00848	0.0805	0.0894
		21 d	0.000353	0.00793	0.0724	0.0864
		28 d	0.000013	0.00631	0.066	0.0831
		42 d	0.000003	0.00435	0.0567	0.0803
D5	**pond**	0 h	0.129		1.599	
		24 h	0.125	0.127	1.599	1.599
		2 d	0.121	0.125	1.597	1.599
		4 d	0.113	0.121	1.593	1.599
		7 d	0.104	0.115	1.582	1.598
		14 d	0.0874	0.105	1.549	1.594
		21 d	0.0764	0.0974	1.524	1.589
		28 d	0.0686	0.0911	1.508	1.583
		42 d	0.0582	0.0817	1.489	1.568

FOCUS STEP 4 Pome fruit 20 m (runoff +drift)	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
D5	**stream**	0 h	0.848		0.244	
		24 h	0.00372	0.324	0.239	0.243
		2 d	0.000197	0.162	0.232	0.24
		4 d	0.000179	0.0813	0.22	0.234
		7 d	0.000156	0.0465	0.204	0.226
		14 d	0.000116	0.0233	0.174	0.208
		21 d	0.000088	0.0156	0.152	0.194
		28 d	0.000068	0.0117	0.135	0.182
		42 d	0.000043	0.00783	0.112	0.162
R1	**pond**	0 h	0.129		1.807	
		24 h	0.124	0.126	1.807	1.807
		2 d	0.12	0.124	1.807	1.807
		4 d	0.112	0.12	1.806	1.807
		7 d	0.101	0.114	1.806	1.807
		14 d	0.0832	0.103	1.802	1.806
		21 d	0.0705	0.094	1.796	1.806
		28 d	0.0614	0.0869	1.79	1.805
		42 d	0.0492	0.0762	1.773	1.802
R1	**stream**	0 h	0.678		1.055	
		24 h	0.000123	0.429	1.043	1.05
		2 d	0.000163	0.215	1.03	1.044
		4 d	0.000147	0.107	1.008	1.032
		7 d	0.000128	0.0615	0.978	1.016
		14 d	0.000094	0.0308	0.921	0.983
		21 d	0.000071	0.0206	0.879	0.955
		28 d	0.000055	0.0154	0.846	0.932
		42 d	0.000038	0.0134	0.92	0.925
R2	**stream**	0 h	0.793		0.406	
		24 h	0.000008	0.0698	0.403	0.405
		2 d	0.000008	0.0349	0.401	0.404
		4 d	0.000007	0.0175	0.396	0.401
		7 d	0.000006	0.00998	0.39	0.398
		14 d	0.000005	0.00577	0.377	0.391
		21 d	0.000003	0.00543	0.366	0.385
		28 d	0.000012	0.00488	0.357	0.379
		42 d	0.000009	0.00361	0.343	0.37
R3	**stream**	0 h	0.827		0.481	
		24 h	0.000047	0.181	0.474	0.478
		2 d	0.000045	0.1	0.467	0.475
		4 d	0.000041	0.0506	0.454	0.469
		7 d	0.000036	0.029	0.437	0.459
		14 d	0.00014	0.0252	0.404	0.441
		21 d	0.000147	0.0169	0.38	0.425
		28 d	0.000111	0.0133	0.361	0.411
		42 d	0.000067	0.00896	0.333	0.39

FOCUS STEP 4 Pome fruit 20 m (runoff +drift)	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
R4	**stream**	0 h	0.592		0.315	
		24 h	0.000016	0.169	0.31	0.313
		2 d	0.000015	0.092	0.306	0.311
		4 d	0.000014	0.046	0.297	0.308
		7 d	0.000013	0.0263	0.285	0.302
		14 d	0.00001	0.0132	0.283	0.296
		21 d	0.000008	0.0105	0.281	0.295
		28 d	0.000007	0.00999	0.28	0.291
		42 d	0.000005	0.00924	0.27	0.29

FOCUS STEP 4 Pome fruit 20 m run off + 100 m drift	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
ºD4	**Pond**	0 h	0.0379		0.494	
		24 h	0.0366	0.0372	0.494	0.494
		2 d	0.0354	0.0366	0.493	0.494
		4 d	0.0331	0.0354	0.493	0.494
		7 d	0.0301	0.0337	0.493	0.493
		14 d	0.0249	0.0306	0.492	0.493
		21 d	0.0261	0.0286	0.491	0.493
		28 d	0.0217	0.0275	0.491	0.493
		42 d	0.0156	0.0244	0.49	0.492
D5	**pond**	0 h	0.038		0.496	0.496
		24 h	0.0367	0.0373	0.496	0.496
		2 d	0.0355	0.0367	0.495	0.496
		4 d	0.0333	0.0355	0.494	0.495
		7 d	0.0305	0.0339	0.492	0.494
		14 d	0.0254	0.0309	0.484	0.493
		21 d	0.022	0.0285	0.479	0.492
		28 d	0.0196	0.0265	0.475	0.488
		42 d	0.0164	0.0236	0.47	0.486
R1	**pond**	0 h	0.0416		0.822	
		24 h	0.0404	0.041	0.822	0.822
		2 d	0.0392	0.0404	0.822	0.822
		4 d	0.0372	0.0393	0.822	0.822
		7 d	0.0345	0.0379	0.821	0.822
		14 d	0.0296	0.0349	0.82	0.822
		21 d	0.0262	0.0326	0.817	0.821
		28 d	0.0236	0.0307	0.814	0.821
		42 d	0.0218	0.0282	0.809	0.82

FOCUS STEP 4 Vines 20 m runoff + 20 m drift	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
D6	ditch	0 h	0.68		2.208	
		24 h	0.611	0.644	2.199	2.207
		2 d	0.551	0.612	2.178	2.204
		4 d	0.426	0.551	2.099	2.195
		7 d	0.212	0.451	1.92	2.17
		14 d	0.00289	0.271	1.602	2.059
		21 d	0.00052	0.181	1.386	1.931
		28 d	0.00125	0.136	1.231	1.813
		42 d	0.000665	0.0911	1.034	1.62
R1	pond	0 h	0.129		1.794	
		24 h	0.124	0.126	1.794	1.794
		2 d	0.12	0.124	1.794	1.794
		4 d	0.111	0.12	1.793	1.794
		7 d	0.101	0.114	1.792	1.794
		14 d	0.0829	0.103	1.789	1.793
		21 d	0.0702	0.0938	1.783	1.792
		28 d	0.061	0.0867	1.776	1.792
		42 d	0.0488	0.0759	1.76	1.789
R1	stream	0 h	0.658		1.035	
		24 h	0.000113	0.414	1.023	1.03
		2 d	0.000155	0.207	1.011	1.024
		4 d	0.000141	0.104	0.99	1.013
		7 d	0.000122	0.0592	0.961	0.997
		14 d	0.00009	0.0297	0.907	0.965
		21 d	0.000068	0.0198	0.866	0.939
		28 d	0.000053	0.0149	0.834	0.917
		42 d	0.000037	0.0129	0.909	0.911
R2	stream	0 h	0.792		0.404	
		24 h	0.000008	0.0694	0.401	0.403
		2 d	0.000007	0.0347	0.399	0.401
		4 d	0.000007	0.0174	0.394	0.399
		7 d	0.000006	0.00992	0.388	0.396
		14 d	0.000005	0.00568	0.375	0.389
		21 d	0.000003	0.00535	0.364	0.383
		28 d	0.000011	0.00484	0.355	0.377
		42 d	0.000009	0.00358	0.341	0.368
R3	stream	0 h	0.826		0.473	
		24 h	0.000043	0.176	0.466	0.471
		2 d	0.000041	0.0987	0.46	0.468
		4 d	0.000037	0.0498	0.447	0.461
		7 d	0.000033	0.0285	0.431	0.452
		14 d	0.000132	0.0246	0.399	0.434
		21 d	0.000143	0.0164	0.375	0.419
		28 d	0.000108	0.0129	0.356	0.406
		42 d	0.000065	0.00868	0.329	0.385

FOCUS STEP 4 Vines 20 m runoff + 20 m drift	Water body	Day after overall maximum	PEC_{SW} (µg/L)		PEC_{SED} (µg/kg)	
			Actual	TWA	Actual	TWA
R4	stream	0 h	0.591		0.274	
		24 h	0.00002	0.178	0.269	0.272
		2 d	0.000019	0.0956	0.264	0.27
		4 d	0.000018	0.0478	0.255	0.265
		7 d	0.000016	0.0274	0.243	0.259
		14 d	0.000013	0.0137	0.22	0.245
		21 d	0.00001	0.00915	0.202	0.234
		28 d	0.000009	0.0102	0.188	0.225
		42 d	0.000006	0.00699	0.167	0.209

Water photodegradation metabolites

RH-123394
Molecular weight: 332 g/mol
Maximum occurrence observed 17.4%
RH-35451
Molecular weight: 331 g/mol
Maximum occurrence observed 23 %
RH-45469
Molecular weight: 345 g/mol
Maximum occurrence observed 10.5%
MW 306
Molecular weight:306 g/mol
Maximum occurrence observed 27%[a]
MW 347
Molecular weight:347 g/mol
Maximum occurrence observed 27%[a]
MW 274
Molecular weight:274 g/mol
Maximum occurrence observed 13 %
RH-34670
Molecular weight:333 g/mol
Maximum occurrence observed <10 %
unidentified Deg 27
Maximum occurrence observed 11 %
Method of calculation:

$$PEC_{initial,\ parent} \times \frac{\text{max \% met}}{100} \times \frac{\text{m.wt. metab}}{\text{m.wt. parent}}$$

[a] not individually quantified but this is the maximum of two peaks combined

		Step 1	Step 2	Step 3	Step 4 20 m(drift + runoff)
		PEC_{SW} (µg/L) Max Actual	PEC_{SW} (µg/L) Max Actual	PEC_{SW} (µg/L) Max Actual	PEC_{SW} (µg/L) Max Actual
Sunflower	RH123394	1.85	0.65	Not calculated (except for MW 347 and Deg 27)	Not calculated (except for MW 347 and Deg 27)
	RH-35451	2.44	0.85		
	RH-45469	1.16	0.41		
	MW 306	2.65	0.93		
	MW 347	3.00	1.05		
	MW274	1.17	0.41		
	RH-34670	1.07	0.37		
	Deg 27	1.27	0.45		

MW-347

SUNFLOWERS			
Scenario		FOCUS STEP 3 PECSW (µg/L)	FOCUS STEP 4 20 m (runoff + drift) PECSW (µg/L)
D5	pond	0.013	0.006
D5	stream	0.266	0.031
R1	pond	0.020	0.006
R1	stream	0.224	0.026
R3	stream	0.314	0.036
R4	stream	0.223	0.036

POMES			
Scenario		FOCUS STEP 3 PECSW (µg/L)	FOCUS STEP 4 20 m (runoff + drift) PECSW (µg/L)
D3	ditch	2.350	0.175
D4	pond	0.081	0.033
D4	stream	1.983	0.199
D5	pond	0.081	0.033
D5	stream	2.193	0.220
R1	pond	0.081	0.033
R1	stream	1.554	0.176
R2	stream	2.050	0.206
R3	stream	2.140	0.215
R4	stream	1.531	0.154

VINES			
Scenario		FOCUS STEP 3 PECSW (µg/L)	FOCUS STEP 4 20 m runoff + 20 m drift PECSW (µg/L)
D6	ditch	2.371	0.176
R1	pond	0.081	0.033
R1	stream	1.544	0.171
R2	stream	2.049	0.206
R3	stream	2.136	0.214
R4	stream	1.528	0.153

Deg 27

SUNFLOWERS			
Scenario		FOCUS STEP 3 PECSW (µg/L)	FOCUS STEP 4 20 m (runoff + drift) PECSW (µg/L)
D5	pond	0.006	0.002
D5	stream	0.113	0.013
R1	pond	0.008	0.002
R1	stream	0.095	0.011
R3	stream	0.133	0.015
R4	stream	0.095	0.015

POMES			
Scenario		FOCUS STEP 3 PECSW (µg/L)	FOCUS STEP 4 20 m (runoff + drift) PECSW (µg/L)
D3	ditch	0.996	0.074
D4	pond	0.034	0.014
D4	stream	0.841	0.084
D5	pond	0.034	0.014
D5	stream	0.930	0.093
R1	pond	0.034	0.014
R1	stream	0.659	0.075
R2	stream	0.869	0.087
R3	stream	0.907	0.091
R4	stream	0.649	0.065

VINES			
Scenario		FOCUS STEP 3 PECSW (µg/L)	FOCUS STEP 4 20 m runoff + 20 m drift PECSW (µg/L)
D6	ditch	1.005	0.075
R1	pond	0.034	0.014
R1	stream	0.655	0.072
R2	stream	0.869	0.087
R3	stream	0.906	0.091
R4	stream	0.648	0.065

	o	Step 1	Step 2	Step 3[a]	Step 4[a] 20 m(drift + runoff)
		PEC_{SW} (µg/L) Max Actual	PEC_{SW} (µg/L) Max Actual	PEC_{SW} (µg/L) Max Actual	PEC_{SW} (µg/L) Max Actual
Pome fruits/vines	RH123394	5.15	1.83	1.46	0.14
	RH-35451	6.79	2.41	1.93	0.18
	RH-45469	3.23	1.15	0.92	0.09
	MW 306	7.37	2.62	2.09	0.19
	MW 347	8.36	2.97	2.37	0.22
	MW274	3.25	1.16	0.92	0.09
	RH-34670	2.97	1.06	0.84	0.08
	Deg 27[b]	3.54	1.26	1.00	0.09

[a] based on the worst case observed in step 3 and step 4 for these crops.
[b] mass weight supposed to be the same as parent compound

Toxicity data for aquatic species (most sensitive species of each group) (Annex IIA, point 8.2, Annex IIIA, point 10.2)

Group	**Test substance**	**Time-scale (Test type)**	**End point**	**Toxicity[1] (µg as/L)**
Laboratory tests ‡				
Fish				
Aquatic vertebrate: fish Bluegill sunfish	Oxyfluorfen (71.4%)	96 h-Static	LC_{50}	210 (mm)
Aquatic vertebrate: fish Fathead minnow	Oxyfluorfen (71%)	34-d Flow-through	NOEC	38 (mm)
Aquatic invertebrate				
Aquatic crustacean *Daphnia magna*	Oxyfluorfen (96%)	48-h Static	EC_{50}	72 (mm)
Aquatic crustacean *Daphnia magna*	Oxyfluorfen (71.8%)	21 days Flow-through	NOEC	13 (mm)
Bivalve Eastern oyster *Crassostrea virginica*	Oxyfluorfen (71.4 %)	96-h Flow-through	EC_{50} (mortality) EC_{50} (growth)	>219.7 (mm) 69.3 (mm)
Sediment dwelling organisms				
Aquatic insect *Chironomus riparius*	Oxyfluorfen (99.3%)	28 days Static	NOEC	80 (mm)
Algae				
Algae *Selenastrum subcapitata*	GOAL 4F (42.09%)	96-h Static	E_bC_{50}	0.172 (mm) 0.4 µg Goal/L
Pseudokirchneriella subcapitata	Oxyfluorfen (99.19%)	10-days Static, Sediment-water	E_bC_{50} E_rC_{50}	**>2.9** (mm)

Group	Test substance	Time-scale (Test type)	End point	Toxicity[1] (µg as/L)
Pseudokirchneriella subpitata	RH-123394	72-h Static	E_yC_{50} E_rC_{50}	**64** (mm) 240 (mm)
Pseudokirchneriella subpitata	RH-35451	72-h Static	E_yC_{50}	**210** (mm)
Pseudokirchneriella subpitata	RH-34670	72-h Static	E_yC_{50} E_rC_{50}	**6.0** (mm) 9.9 (mm)
Pseudokirchneriella subpitata	RH-45469	72-h Static	E_yC_{50} E_rC_{50}	**887** (mm) >2600 (mm)
Pseudokirchneriella subpitata	MW274	72-h Static	E_yC_{50} E_rC_{50}	**12000** (mm) 29000 (mm)
Pseudokirchneriella subpitata	MW306	72-h Static	E_yC_{50} E_rC_{50}	>20000 (mm) **11000** (mm)
Pseudokirchneriella subpitata	MW347	72-h Static	E_yC_{50} E_rC_{50}	**0.19** (mm) 0.33 (mm)
Higher plant				
Plant *Lemna gibba*	Oxyfluorfen (99.3%)	14d Renewal	E_bC_{50}	**0.32** (mm)
Lemna gibba	Oxyfluorfen (99.3%)	14 days water sediment study	EC_{50} NOEC	**4.13** (mm) 1.95 (mm)
Lemna gibba	RH-123394	7-day Static	E_rC_{50} E_yC_{50}	**>610** (mm)
Lemna gibba	RH-35451	7-day Static	E_rC_{50} E_yC_{50}	**370** (mm)
Lemna gibba	RH-34670	7-day Static	E_rC_{50} E_yC_{50}	110 (mm)**14** (mm)
Lemna gibba	RH-45469	7-day Static renewal	E_rC_{50} E_yC_{50}	**>3800** (mm) >3800 (mm
Lemna gibba	MW274	7-day Static renewal	E_rC_{50} E_yC_{50}	**>100000** (mm) >100000 (mm)
Lemna gibba	MW306	7-day Static renewal	E_rC_{50} E_yC_{50}	**>16000** (mm) >16000 (mm
Lemna gibba	MW347	7-day Static renewal	E_rC_{50} E_yC_{50}	2.5 (mm) **0.46** (mm
Microcosm or mesocosm tests				
An aquatic mesocosm study was available, where two applications (14 days apart) of formulated GF-1049 (40.3 % w/w oxyfluorfen) gave initial nominal concentrations of 0.02, 0.1, 0.5, 2.5 and 12.5 µg a.s/L. The impact of oxyfluorfen to aquatic flora and aquatic invertebrates was studied for 70 days after the first application. NOEC= of 0.02 µg as/L based on effects on the terminal wet and dry weight of *Myriophyllum spicatum* was derived.				

[1] mm: mean measured concentrations

Toxicity/exposure ratios for the most sensitive aquatic organisms (Annex IIIA, point 10.2)

Tier 1: Maximum PEC_{sw} values and TER values for oxyfluorfen - pomes 1.44 kg a.s./ha, banded applications

Scenario	PEC global max (µg/L)	Fish acute	Fish prolonged	Daphnia acute	Daphnia prolonged	Sed. dweller prolonged	Algae acute	Aquatic plants	Mesocosm	
		Bluegill sunfish	*P. promelas*	*Daphnia magna*	*Daphnia magna*	*C. riparius*	*S. subcapitata*	*L. gibba*	NOEAEC/AF= 0.5/3=0.167 Initial RMS proposal	NOEC/AF= 0.02/2=0.01 Agreement at PPR meeting 130
		LC_{50}	NOEC	EC_{50}	NOEC	NOEC	E_bC_{50}	E_bC_{50}		
		210	38	72	13	80	0.17	0.32		
FOCUS Step 1	32.18	**6.5**	**1.2**	**2.2**	**0.4**	**2.5**	**0**	**0**	**0.005**	**0.000**
FOCUS Step 2										
North Europe	11.45	**18.34**	**3.32**	**0.2**	**1.14**	**6.99**	**0.01**	**0.03**	**0.015**	**0.001**
South Europe	9.61	**21.9**	**4**	**7.5**	**1.4**	**8.3**	**0**	**0**	**0.017**	**0.001**
FOCUS Step 3										
D3 / ditch	9.05	**23.2**	**4.2**	**7.96**	**1.44**	**8.84**	**0.02**	**0.04**	**0.018**	**0.001**
D4 / pond	0.311	675.24	122.19	231.51	41.8	257.23	**0.55**	**1.09**	**0.537**	**0.032**
D4 / stream	7.642	**27.48**	**4.97**	**9.42**	**1.7**	10.47	**0.02**	**0.04**	**0.022**	**0.001**
D5 / pond	0.311	675.24	122.19	231.51	41.8	257.23	**0.55**	**1.09**	**0.537**	**0.032**
D5 / stream	8.451	**24.85**	**4.5**	**8.52**	**1.54**	**9.47**	**0.02**	**0.04**	**0.020**	**0.001**
R1 / pond	0.311	675.24	122.19	231.51	41.8	257.23	**0.55**	**1.09**	**0.537**	**0.032**
R1 / stream	5.989	**35.06**	**6.34**	**12.02**	**2.17**	13.36	**0.03**	**0.06**	**0.028**	**0.002**
R2 / stream	7.899	**26.59**	**4.81**	**9.12**	**1.65**	10.13	**0.02**	**0.04**	**0.021**	**0.001**
R3 / stream	8.244	**25.47**	**4.61**	**8.73**	**1.58**	**9.7**	**0.02**	**0.04**	**0.020**	**0.001**
R4 / stream	5.898	**35.61**	**6.44**	**12.21**	**2.2**	13.56	**0.03**	**0.06**	**0.028**	**0.002**
Annex VI Trigger		**100**	**10**	**100**	**10**	**10**	**10**	**10**	**1**	**1**

Refinement 1: Maximum PECsw and TER values for oxyfluorfen - pomes 1.44 kg a.s./ha, banded applications

Scenario	PEC global max (µg/L)	fish acute	Fish prolonged	Daphnia acute	Daphnia prolonged	Sed. dweller prolonged	Algae acute	Aquatic plants	Mesocosm	
		Bluegill sunfish	***P. promelas***	***Daphnia magna***	***Daphnia magna***	***C. riparius***	***S. subcapitata***	***L. gibba***	**NOEAEC/AF= 0.5/3=0.167 Initial RMS proposal**	**NOEC/AF= 0.02/2=0.01 ~~After~~ Agreement at PPR meeting 130**
		LC_{50}	NOEC	EC_{50}	NOEC	NOEC	E_bC_{50}	E_bC_{50}		
		210	38	72	13	80	0.17	0.32		
Refinement 1: 20 m non-spray buffer zone										
FOCUS Step 4										
D3 / ditch	0.674	311.57	56.38	106.82	19.29	118.69	**0.25**	**0.5**	**0.248**	**0.015**
D4 / pond	0.129	1627.91	294.57	558.14	100.78	620.16	**1.32**	**2.64**	1.295	**0.078**
D4 / stream	0.767	273.79	49.54	**93.87**	16.95	104.3	**0.22**	**0.44**	**0.218**	**0.013**
D5 / pond	0.129	1627.91	294.57	558.14	100.78	620.16	**1.32**	**2.64**	1.295	**0.078**
D5 / stream	0.848	247.64	44.81	**84.91**	15.33	94.34	**0.2**	**0.4**	**0.197**	**0.012**
R1 / pond	0.129	1627.91	294.57	558.14	100.78	620.16	**1.32**	**2.64**	1.295	**0.078**
R1 / stream	0.678	309.73	56.05	106.19	19.17	117.99	**0.25**	**0.5**	**0.246**	**0.015**
R2 / stream	0.793	264.82	47.92	**90.79**	16.39	100.88	**0.21**	**0.43**	**0.211**	**0.013**
R3 / stream	0.827	253.93	45.95	**87.06**	15.72	96.74	**0.21**	**0.41**	**0.202**	**0.012**
R4 / stream	0.592	354.73	64.19	121.62	21.96	135.14	**0.29**	**0.57**	**0.282**	**0.017**
Annex VI Trigger		**100**	**10**	**100**	**10**	**10**	**10**	**10**	**1**	**1**

Tier 1: Maximum PECsw and TER values for oxyfluorfen - vines 1.44 kg a.s./ha, banded applications

Scenario	PEC global max (µg/L)	fish acute	Fish prolonged	Daphnia acute	Daphnia prolonged	Sed. dweller prolonged	Algae acute	Aquatic plants	Mesocosm	
		Bluegill sunfish	*P. promelas*	*Daphnia magna*	*Daphnia magna*	*C. riparius*	*S. subcapitata*	*L. gibba*	NOEAEC/AF= 0.5/3=0.167 Initial RMS proposal	NOEC/AF= 0.02/2=0.01 Agreement at PPR meeting 130
		LC_{50}	NOEC	EC_{50}	NOEC	NOEC	E_bC_{50}	E_bC_{50}		
		210	38	72	13	80	0.17	0.32		
FOCUS Step 1	32.18	**6.5**	**1.2**	**2.2**	**0.4**	**2.5**	**0**	**0**	**0.005**	**0.000**
FOCUS Step 2										
North Europe	11.45	**18.34**	**3.32**	**0.2**	**1.14**	**6.99**	**0.01**	**0.03**	**0.015**	**0.001**
South Europe	9.61	**21.9**	**4**	**7.5**	**1.4**	**8.3**	**0**	**0**	**0.017**	**0.001**
FOCUS Step 3										
D6 / ditch	9.134	**23.~~2~~ 0**	**4.2**	**7.9~~6~~**	**1.44**	**8.84**	**0.02**	**0.04**	**0.018**	**0.001**
R1 / pond	0.311	675.24	122.19	231.51	41.8	257.23	**0.55**	**1.09**	**0.537**	**0.032**
R1 / stream	5.95	**35.29**	**6.39**	**12.1**	**2.18**	13.45	**0.03**	**0.06**	**0.028**	**0.002**
R2 / stream	7.896	**26.6**	**4.81**	**9.12**	**1.65**	10.13	**0.02**	**0.04**	**0.021**	**0.001**
R3 / stream	8.232	**25.51**	**4.62**	**8.75**	**1.58**	**9.72**	**0.02**	**0.04**	**0.020**	**0.001**
R4 / stream	5.889	**35.66**	**6.45**	**12.23**	**2.21**	13.58	**0.03**	**0.06**	**0.028**	**0.002**
Annex VI Trigger		**100**	**10**	**100**	**10**	**10**	**10**	**10**	**1**	**1**

Refinement 1: Maximum PECsw and TER values for oxyfluorfen - vines 1.44 kg a.s./ha, banded applications

Scenario	PEC global max (µg/L)	fish acute	Fish prolonged	Daphnia acute	Daphnia prolonged	Sed. dweller prolonged	Algae acute	Aquatic plants	Mesocosm	
		Bluegill sunfish	***P. promelas***	***Daphnia magna***	***Daphnia magna***	***C. riparius***	***S. subcapitata***	***L. gibba***	**NOEAEC/AF= 0.5/3=0.167 Initial RMS proposal**	**NOEC/AF= 0.02/2=0.01 Agreement at PPR meeting 130**
		LC_{50}	NOEC	EC_{50}	NOEC	NOEC	E_bC_{50}	E_bC_{50}		
		210	38	72	13	80	0.17	0.32		
Refinement 1: 20 m non-spray buffer zone										
FOCUS Step 4										
D6 / ditch	0.68	311.57	56.38	106.82	19.29	118.69	**0.25**	**0.5**	**0.248**	**0.015**
R1 / pond	0.129	1627.91	294.57	558.14	100.78	620.16	**1.32**	**2.64**	1.295	**0.078**
R1 / stream	0.658	319.15	57.75	109.42	19.76	121.58	**0.26**	**0.52**	**0.254**	**0.015**
R2 / stream	0.792	265.15	47.98	**90.91**	16.41	101.01	**0.21**	**0.43**	**0.211**	**0.013**
R3 / stream	0.826	254.24	46	**87.17**	15.74	96.85	**0.21**	**0.41**	**0.202**	**0.012**
R4 / stream	0.591	355.33	64.3	121.83	22	135.36	**0.29**	**0.58**	**0.283**	**0.017**
Annex VI Trigger		**100**	**10**	**100**	**10**	**10**	**10**	**10**	**1**	**1**

Tier I: Maximum PECsw and TER values for oxyfluorfen - sunflowers 0.24 kg a.s./ha

Scenario	PEC global max (µg L)	fish acute	Fish prolonged	Daphnia acute	Daphnia prolonged	Sed. dweller prolonged	Algae acute	Aquatic plants	Mesocosm	
		Bluegill sunfish	*P. promelas*	*Daphnia magna*	*Daphnia magna*	*C. riparius*	*S. S. subcapitata*	*L. gibba*	NOEAEC/AF= 0.5/3=0.167 Initial RMS proposal	NOEC/AF= 0.02/2=0.01 Agreement at PPR meeting 130
		LC_{50}	NOEC	EC_{50}	NOEC	NOEC	E_bC_{50}	E_bC50		
		210	38	72	13	80	0.17	0.32		
FOCUS Step 1	11.57	**18.2**	**3.3**	**6.2**	**1.1**	**6.9**	**0**	**0**	**0.014**	**0.001**
FOCUS Step 2										
North Europe	2.21	**51.85**	**9.38**	**1.54**	**3.21**	19.75	**0.04**	**0.08**	**0.041**	**0.002**
South Europe	4.05	**95**	17.2	**32.6**	**5.9**	36.2	**0.1**	**0.2**	**0.076**	**0.005**
FOCUS Step 3										
D5 / pond	0.0501	4191.62	758.48	1437.13	259.48	1596.81	**3.39**	**6.79**	3.333	**0.200**
D5 / stream	1.024	205.08	37.11	**70.31**	12.7	78.13	**0.17**	**0.33**	**0.163**	**0.010**
R1 / pond	0.0759	2766.8	500.66	948.62	171.28	1054.02	**2.24**	**4.48**	2.200	**0.132**
R1 / stream	0.863	243.34	44.03	**83.43**	15.06	92.7	**0.2**	**0.39**	**0.194**	**0.012**
R3 / stream	1.211	173.41	31.38	**59.45**	10.73	66.06	**0.14**	**0.28**	**0.138**	**0.008**
R4 / stream	0.86	244.19	44.19	**83.72**	15.12	93.02	**0.2**	**0.4**	**0.194**	**0.012**
Annex VI Trigger		**100**	**10**	**100**	**10**	**10**	**10**	**10**	**1**	**1**

FOCUS$_{sw}$ step 4

Refinement 1: Maximum PECsw and TER values for oxyfluorfen - sunflowers 0.24 kg a.s./ha

Scenario	PEC global max (µg/L)	Daphnia acute	Algae acute	Aquatic plants	Mesocosm	
		Daphnia magna	***S. subcapitata***	***L. gibba***	**NOEAEC/AF= 0.5/3=0.167 Initial RMS proposal**	**NOEC/AF= 0.02/2=0.01 Agreement at PPR meeting 130**
		EC_{50}	EbC_{50}	E_bC_{50}		
		72	0.17	0.32		
Refinement 1: 20 m non-spray buffer zone						
FOCUS Step 4						
D5 / pond	0.021	3429	**8.1**	15.2	7.952	**0.476**
D5 / stream	0.118	610	**1.4**	**2.7**	1.415	**0.085**
R1 / pond	0.021	3364	**7.9**	15.0	7.804	**0.467**
R1 / stream	0.099	727	**1.7**	**3.2**	1.687	**0.101**
R3 / stream	0.14	514	**1.2**	**2.3**	1.193	**0.071**
R4 / stream	0.14	514	**1.2**	**2.3**	1.193	**0.071**
Annex VI Trigger		**100**	**10**	**10**	**1**	**1**

Tier I TER values for metabolites RH-34670, RH-35451 and RH-123394 (pome,vines, 1.44 kg a.s./ha band applications; sunflowers 0.240 kg as/ha).

Species	EC 50 (µg a.s./L)	FOCUS STEP	PECsw (µg a.s./L)	TER
Pome and vines				
RH-123394				
Algae	64	Step 1	5.15	12.4
Aquatic plants	> 610	Step 1	5.15	> 118
RH-35451				
Algae	210	Step 1	6.79	30.9
Aquatic plants	370	Step 1	6.79	54
RH-34670				
Algae	6	Step 1	2.97	**2.0**
		Step 2	1.06	**5.6**
		Step 3	0.84	**7.1**
		Step 4-20 m	0.08	25
Aquatic plants	14	Step 1	2.97	**4.7**
		Step 2	1.06	13.2
Sunflowers				
RH-123394				
Algae	64	Step 1	1.85	34
Aquatic plants	> 610	Step 1	1.85	> 32
RH-35451				
Algae	210	Step 1	2.44	86
Aquatic plants	370	Step 1	2.44	152
RH-34670				
Algae	6	Step 1	1.07	**5.6**
		Step 2	0.37	16
Aquatic plants	14	Step 1	1.07	13
Annex VI				**10**

Trigger				

Tier I TER values for metabolites RH-45469, MW274 and MW306 (pome, vines, 1.44 kg a.s./ha band applications; sunflowers 0.240 kg as/ha)

Species	**EC 50 (mg a.s./L)**	**FOCUS STEP**	**PECsw (mg a.s./L)**	**TER**
Sunflowers				
RH-45469				
Algae	886.7	Step 1	1.161	764
		Step 2	0.406	2184
Aquatic plants	3800	Step 1	1.161	3273
		Step 2	0.406	9360
MW 274				
Algae	12000	Step 1	1.168	10274
		Step 2	0.409	29340
Aquatic plants	100000	Step 1	1.168	85616
		Step 2	0.409	244499
MW 306				
Algae	11000	Step 1	2.648	4154
		Step 2	0.927	11866
Aquatic plants	16000	Step 1	2.648	6042
		Step 2	0.927	17260
Pome and vines				
RH-45469				
Algae	886.7	Step 1	3.229	275
		Step 2	1.149	772
Aquatic plants	3800	Step 1	3.229	1177
		Step 2	1.149	3307
MW 274				
Algae	12000	Step 1	3.248	3695
		Step 2	1.156	10381
Aquatic plants	100000	Step 1	3.248	30788
		Step 2	1.156	86505
MW 306				
Algae	11000	Step 1	7.365	1494
		Step 2	2.62	4198
Aquatic plants	16000	Step 1	7.365	2172
		Step 2	2.62	6107
Annex VI Trigger				**10**

FOCUS$_{sw}$ step 4

Refinement 1: Maximum PECsw and TER values for deg 27 - sunflowers 0.24 kg a.s./ha

Scenario	PEC global max (µg/L)	Algae RMS proposal	Aquatic plants RMS proposal	Algae ~~acute~~ After PPR meeting 130	Aquatic plants After PPR meeting 130	Mesocosm
		S. subcapitata	***L. gibba***	***S. subcapitata***	***L. gibba***	**NOEAEC/AF= 0.5/3=0.167 RMS proposal**
		EbC_{50}	E_bC_{50}	EbC_{50}	E_bC_{50}	
		0.17	0.32	0.017	0.032	
20 m runoff + drift						
FOCUS Step 4						
D5 / pond	0.002	86.0	160	**8.60**	16.00	83.50
D5 / stream	0.013	13.2	24.6	**1.32**	**2.46**	12.85
R1 / pond	0.002	86.0	160	**8.60**	16.00	83.50
R1 / stream	0.011	15.6	29.1	**1.56**	**2.91**	15.18
R3 / stream	0.015	11.5	21.3	**1.15**	**2.13**	11.13
R4 / stream	0.015	11.5	21.3	**1.15**	**2.13**	11.13
Annex VI Trigger		**10**	**10**	**10**	**10**	**10**

Refinement 1: Maximum PECsw and TER values for deg 27 - pomes 1.44 kg a.s./ha, banded applications

Scenario	PEC global max (µg/L)	Algae acute RMS proposal	Aquatic plants RMS proposal	Algae acute After PPR meeting 130	Aquatic plants After PPR meeting 130	Mesocosm
		S. subcapitata	***L. gibba***	***S. subcapitata***	***L. gibba***	**NOEAEC/AF= 0.5/3=0.167 RMS proposal**
		EbC_{50}	E_bC_{50}	EbC_{50}	E_bC_{50}	
		0.17	0.32	0.017	0.032	
20 m runoff + drift						
FOCUS Step 4						
D3 / ditch	0.074	**2.32**	**4.32**	**0.23**	**0.43**	2.26
D4 / pond	0.014	12.12	22.85	**1.23**	**2.29**	11.93
D4 / stream	0.084	**2.04**	**3.79**	**0.20**	**0.38**	1.99
D5 / pond	0.014	12.12	22.85	**1.23**	**2.29**	11.93
D5 /	0.093	**1.84**	**3.43**	**0.18**	**0.34**	1.80

stream						
R1 / pond	0.014	12.12	22.85	**1.23**	**2.29**	11.93
R1 / stream	0.075	**2.31**	**4.29**	**0.23**	**0.43**	2.23
R2 / stream	0.087	**1.97**	**3.67**	**0.20**	**0.37**	1.92
R3 / stream	0.091	**1.89**	**3.52**	**0.19**	**0.35**	1.84
R4 / stream	0.065	**2.57**	**4.91**	**0.26**	**0.49**	2.57
Annex VI Trigger		**10**	**10**	**10**	**10**	**1**

Refinement 1: Maximum PECsw and TER values for deg 27 - vines 1.44 kg a.s./ha, banded applications

Scenario	**PEC global max (µg/L)**	**Algae acute RMS proposal**	**Aquatic plants RMS proposal**	**Algae acute After PPR meeting 130**	**Aquatic plants After PPR meeting 130**	**Mesocosm**
		S. subcapitata	***L. gibba***	***S. subcapitata***	***L. gibba***	**NOEAEC/AF= 0.5/3=0.167 RMS proposal**
		EbC_{50}	E_bC_{50}	EbC_{50}	E_bC_{50}	
		0.17	0.32	0.017	0.032	
FOCUS Step 4						
D6 / ditch	0.075	**2.30**	**4.28**	**0.23**	**0.43**	2.23
R1 / pond	0.014	12.12	22.55	**1.23**	**2.29**	11.93
R1 / stream	0.072	**2.38**	**4.42**	**0.24**	**0.44**	2.32
R2 / stream	0.087	**1.97**	**3.67**	**0.20**	**0.37**	1.92
R3 / stream	0.091	**1.89**	**3.52**	**0.19**	**0.35**	1.84
R4 / stream	0.065	**2.65**	**4.92**	**0.26**	**0.49**	2.57
Annex VI Trigger		**10**	**10**	**10**	**10**	**1**

Refinement 1: Maximum PECsw and TER values for MW 347 - sunflowers 0.24 kg a.s./ha

Scenario	**PEC global max (µg/L)**	**Algae acute**	**Aquatic plants**	**Mesocosm**
		S. subcapitata	***L. gibba***	**NOEAEC/AF= 0.5/3=0.167 Initial RMS proposal**
		EbC_{50}	E_bC_{50}	
		0.19	0.46	
20 m runoff + drift				
FOCUS Step 4				
D5 / pond	0.006	31.67	76.67	27.8
D5 / stream	0.031	**6.13**	14.84	5.38
R1 / pond	0.006	31.67	76.67	27.8
R1 / stream	0.0276	**7.04**	17.04	6.18
R3 / stream	0.0386	**5.00**	12.11	4.4
R4 / stream	0.0386	**5.00**	12.11	4.4

Annex VI Trigger	**10**	**10**	**1**

Refinement 1: Maximum PECsw and TER values for MW 347 - pomes 1.44 kg a.s./ha, banded applications

Scenario	**PEC global max (µg/L)**	**Algae acute**	**Aquatic plants**	**Mesocosm**	
		S. subcapitata	***L. gibba***	**NOEAEC/AF= 0.5/3=0.167 Initial RMS proposal**	
		EbC_{50}	E_bC_{50}		
		0.19	0.46		
20 m runoff + drift					
FOCUS Step 4					
D3 / ditch	0.175	**1.09**	**2.63**	**0.95**	
D4 / pond	0.033	**5.76**	13.94	5.06	
D4 / stream	0.199	**0.95**	**2.31**	**0.84**	
D5 / pond	0.033	**5.76**	13.94	5.06	
D5 / stream	0.22	**0.86**	**2.09**	**0.76**	
R1 / pond	0.033	**5.76**	13.94	5.06	
R1 / stream	0.176	**1.08**	**2.61**	**0.95**	
R2 / stream	0.206	**0.92**	**2.23**	**0.81**	
R3 / stream	0.215	**0.88**	**2.14**	**0.78**	
R4 / stream	0.154	**1.23**	**2.99**	1.08	
Annex VI Trigger		**10**	**10**	**1**	

Refinement 1: Maximum PECsw and TER values for MW 347 - vines 1.44 kg a.s./ha, banded applications

Scenario	**PEC global max (µg/L)**	**Algae acute**	**Aquatic plants**	**Mesocosm**
		S. subcapitata	***L. gibba***	**NOEAEC/AF= 0.5/3=0.167 Initial RMS proposal**
		EbC_{50}	E_bC_{50}	
		0.19	0.46	
20 m runoff + 20 m drift				
FOCUS Step 4				
D6 / ditch	0.176	**1.08**	**2.61**	**0.95**
R1 / pond	0.033	**5.76**	13.94	5.06
R1 / stream	0.171	**1.11**	**2.69**	**0.98**
R2 / stream	0.206	**0.92**	**2.23**	**0.81**
R3 / stream	0.214	**0.89**	**2.15**	**0.78**
R4 / stream	0.153	**1.24**	**3.01**	1.09
Annex VI Trigger		**10**	**10**	**1**

Bioaccumulation and Biomagnification

Bioaccumulation with *Lumbriculus variegatus*

Derived Kinetics [B)]	**Results**
K1 (uptake rate constant)	0.588 (g wet sediment)/(g wet worm*day)
K2 (depuration rate constant)	0.167 day $^{-1}$
Derived Bioaccumulation Factor (BAFk) [c)]	3.5 g wet sediment/g wet worm 2.4 g dry sediment/g wet worm
Half life of depuration [d)]	4.15 days
Time to 95% SS [e)]	18.0 days
Biota sediment accumulation factor (BSAF) [f)]	2.06 g organic carbon/g lipid

[a)] BAF=measured ^{14}C in organism at end of exposure/ measured exposure sediment concentration
[b)] Derived kinetics: data generated from ACSLX modelling: based on wet sediment and wet worm data
[c)] Derived BAFk= K1/k2
[d)] Depuration half life=Ln (2)/k2
[e)] Time to 95% steady state= Ln(0.05)/k2
[f)] BSAF=BAFk*(f_{oc}/f_{lip})

Biomagnification with *Lepomis macrochirus*

Derived Kinetics	**Results**
K1 (uptake rate constant) [B)]	0.00501 g food/g fish tissue/day
K2 (depuration rate constant)	0.2636 day $^{-1}$
Chemical Assimilation Efficiency	0.334
Kinetically-derived Biomagnification Factor [c)]	0.0190 g food/g fish tissue
Half life of depuration [d)]	2.63 days
Time to 95% SS [e)]	11.4 days

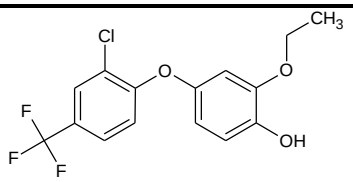
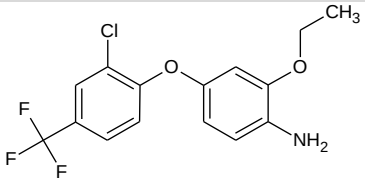
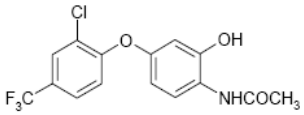
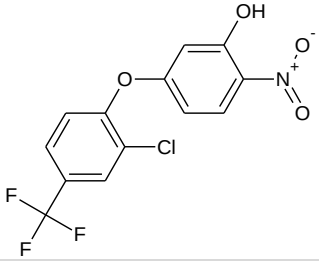
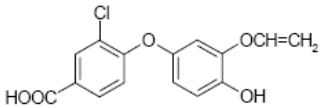
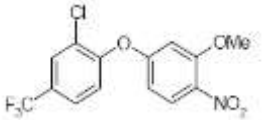
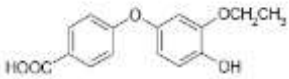
[a)] Based on measured data
[b)] K1=feeding rate* chemical assimilation efficiency
[c)] BMF=K1/k2
[d)] Depuration half life=Ln (2)/k2
[e)] Time to 95% steady state= Ln(0.05)/k2

Bioconcentration with *Daphnia magna*

Derived Kinetics	**Results**
K1 (uptake rate constant)	782 ml water/g wet daphnid*day
K2 (depuration rate constant)	5.24 day^{-1}
Derived Bioconcentration Factor (BCF) [c)]	149 ml water/g wet daphnid
Half life of depuration [d)]	0.13 days
Time to 95% SS [e)]	0.57 days

[a)] Measured concentration at 24hours of the uptake phase (higher measured concentration in the daphnid over the course of the study)
[b)] BCF (based on measured data)= measured ^{14}C in organism at end of exposure/ measured exposure water concentration
[c)] Derived BCF= K1/k2
[d)] Depuration half life=Ln (2)/k2
[e)] Time to 95% steady state= Ln(0.05)/k2

Appendix B – Used compound code(s)

Code/Trivial name*	Chemical name/SMILES notation**	Structural formula**
RH-123394	4-[2-chloro-4-(trifluoromethyl)phenoxy]-2-ethoxyphenol	
RH-35451	4-[2-chloro-4-(trifluoromethyl)phenoxy]-2-ethoxyaniline	
RH-45469	**5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-[(methoxymethyl)amino]phenol	
RH-34670	5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrophenol	
MW 306	**3-chloro-4-[3-(ethenyloxy)-4-hydroxyphenoxy]benzoic acid	
MW 347	**2-chloro-1-(3-methoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene	
MW 274	**4-(3-ethoxy-4-hydroxyphenoxy)benzoic acid	
Deg 27	Not identified	Not identified

*The metabolite name in bold is the name used in the conclusion.
**ACD/ChemSketch, Advanced Chemistry Development, Inc. ACD/Labs Release: 12.00. Product version: 12.00 (Build 29305, 25 Nov 2008)