# Appendix 1: ECCO 76 reporting table

#### Glyphosate (Hb)

# 1. Identity, Physical and chemical properties, Details of uses and further information, Methods of analysis

No	Subject	Discussion ECCO-Peer Review Meeting	Recommendations ECCO-Peer Review Meeting (Annex point)
<b>(3)</b>	Identity	There are 18 different sources of glyphosate.	•
	manufacturing process/sources of	Two main pathways to manufacture glyphosate : the glycine process and the IDA process.	
	glyphosate	Glyphosate is produced in 3 forms – the isopropyl salt, the sodium salt and the ammonium salt.	
		The Monsanto source was considered the definitive profile as it had the most comprehensive analytical suite, impurity profile and data package for the IDA process. For the IDA process, the other sources were compared to the Monsanto source.	
		Glycine process	
		For the glycine process, all sources were compared to the Agrichem source as it was the first source listed in the summary table produced by the glycine route for which data were provided.	

Sources that don't meet the FAO specification of specification of 950g/kg specification of 950g/kg because the company may not have presented their technical specification on Any weight basis: Sinon, Industrias Afrasa*, Calliope* (IDA process) and Nufarm.  * member of the Tulip Task Force – none of these companies analysed for Ninder in the following sources of the Sinon, Industrias analysed for Ninder in the following sources of glyphosate of they agreed to consider sources against the current FAO specification of 950g/kg agreed to consider sources against the current FAO specification of 950g/kg agreed to consider sources against the current FAO specification of 950g/kg agreed to consider sources against the current FAO specification of 950g/kg agreed to consider sources against the current FAO specification of 950g/kg agreed to consider sources against the current FAO specification of 950g/kg agreed to consider sources against the current FAO specification on a sources of glyphosate and Nustrias Afrasa* Calliope* (IDA process) and Nufarm.  * member of the Tulip Ta Force – none of these companies analysed for Nitrosoglyphosate.
Discussion ECCO-Peer Review Meeting  The meeting noted that the FAO specification is being updated at presen agreed to consider sources against the current FAO specification of 950g glyphosate. The meeting considered that the following sources of glyph did not meet the current FAO specification and noted in some cases this because the company may not have presented their technical specification dry weight basis: Sinon, Industrias Afrasa*, Calliope* (IDA process) an Nufarm.  * member of the Tulip Task Force – none of these companies analysed for nitrosoglyphosate.

* member of the Tulip Task Force – none of these companies analysed for N-nitrosoglyphosate, this analysis is required.	(iii) Sources for which a decision on comparability of sources is not possible un comparability of sources is not possible until further data submitted submitted Sundat* — Clarification of data are required. Sundat* — 5 batch analysi Pinus* — there is a potent More accurate characteris Alkaloida — (a) glycine puspecification, but it does us potent to be process, on avail 12 and additional batch and specification of specification of specification of specification, but it does us potent and additional batch and specification of s	No. Subject Discussion F
(b) IDA process, on available data there is a potential difference with MOD No 12 and additional batch analysis data are required.	The meeting noted that for the following sources a decision on comparability of sources is not possible until further data are submitted: Feinchemie, Herbex, Sundat, Pinus, Alkaloida.  Further data required are indicated below: Feinchemie – further validation data for the 5 batch analysis are required Herbex – clarification of method of manufacture is required and 5 batch analysis data are required.  Sundat* – 5 batch analysis are required.  Pinus* – there is a potential difference with MOD No 4, AGC Nos. 9 and 11.  More accurate characterisation or measurement of impurities is required.  Alkaloida – (a) glycine process: batch 3 doesn't meet Alkaloida's own specification, but it does meet the FAO specification, this requires clarification.	Discussion ECCO-Peer Review Meeting
NOD#A - DATI A Sal	IIA A statement on the 1.11 comparability of sources is not possible until further data are submitted as indicated below: Feinchemie – further validation data for the 5 batch analysis are required Herbex – 5 batch analysis are required. Sundat* – 5 batch analysis are required. Pinus* – more accurate characterisation or measurement of impurities	Recommendations ECCO-Peer Review Meeting (Annex point)

()::1 F)	the FAO specification and had acceptable 5 batch analysis data, could be considered comparable:  Monsanto	acceptable 5 batch analysis data and which are considered chemically comparable	
nitrosoglyphosate. npliance with	* member of the Tulip Task Force – none of these companies analysed for N-nitrosoglyphosate.  The meeting agreed that the following sources which showed compliance with	Sources with FAO compliance and	(v)
le data the main	Glycine process – compared to Agrichem source Calliope * - analysis by LC/MS but did not use any standards. On the available data the main difference is the impurity MOD No. 12.		
fference with  IIA Open point – ECCO  1.11 Mammalian Toxicology meeting to provide advice to the overview meeting about the impurities in the different sources of glyphosate – are they of toxicological significance?  vel in this source but so clarification needed. weight. On the available New 5 batch analysis data	Agrichem* – analysis by LC/MS but did not use any stand data required. On the available data there is a potential di impurities MOD No. 12, AGC Nos. 9, 11 and 12.  Aragonesas* - analysis by LC/MS but did not use any stand data required. On the available data this source is similar source.  Barclay – 3 batch analysis provided, needs more batch analysis. Similar to Monsanto source but there is a potential of impurities AGC No 5 and 11 which are present at a low lenot found in the Monsanto source.  Portman –5 batch analysis data required. There is a potential differen 5 and POR No 8.  Sanachem – water loss was very high, values given as for the IPA salt. The meeting were unsure if the data had been expressed as dry or wet data there is a potential difference with MOD No 12 and SAC No. 5. may be required.	Potential differences between sources, need advice as to the significance of the impurities listed in summary table attached.	(iv)
Review Meeting (Annex point)	Procession Population Venture Management	Subject	

	(viii) Physical and chen properties for the active substance	·	(vii) changes to the contact details the notifier Sanachem Gm	(vi) changes to the contact details the notifier Su	No. Subject
melting point	nical		for	changes to the contact details for the notifier Sundat	
Data were provided for all three salts. The meeting noted that less pure active	The meeting agreed that to be consistent with the discussion on 2,4-D the end point sheets should be completed for all 4 forms of glyphosate i.e. the isopropyl salt, the ammonium salt, the sodium salt and the trimesium salt.	Person to contact : Dr R.E. Briant Tel. No. + 44 (0) 171 730 0502 Fax No. + 44 (0) 171 730 0702	The notifier Sanachem GmbH has been taken over by Dow AgroScience GmbH. The contact details in the Report, Level 1, page 5, No. 12 should now read: Dow AgroScience GmbH  Letcombe Regis  Wantage  Oxfordshire OX12 9JT  UK	The contact details for Dr T Searls in the Report, Level 1, page 3 (D) should be deleted. A new address for the notifier Sundat in Europe was provided, as follows:  Sundat (Europe) Ltd Leeghwaterweg 5  1951 NA Velsen-Noord The Netherlands	Discussion ECCO-Peer Review Meeting
IIA Open point - RMS to check			1		Recommendations ECCO-Peer Review Meeting (Annex point)
RMS to check					ECCO-Peer \unnex point)

No.	Subject	Discussion ECCO-Peer Review Meeting	Recom Review	Recommendations ECCO-Peer Review Meeting (Annex point)
(x)	appearance, odour, physical state	Data were provided for the technical material but data are required for the pure salts.	IIA T 2.4 p s	The appearance, odour and physical state of the pure salts are required.
(xi)	Spectra	Spectra are required for any impurities of significance	IIA C 2.5 N to	Open point -The ECCO Mammalian Toxiology, Fate and Ecotoxicology meetings to advise if any impurities
			S. v. a	are of significance – spectra will be required for those of significance.
(xii)	Solubility in water	The sodium salt appeared to be of very low purity and the meeting agreed that the company should check whether this was pure active substance or technical.	IIA T 2.6 si d	The purity of the sodium salt used in the determination of solubility in water to be checked.
(xiii)	Solubility in organic solvents	No data were provided for the ammonium salt or sodium salt.	IIA D 2.7 au ir	Data on solubility of the ammonium and sodium salts in organic solvents are required.

A Information on the efficiency of cleaning procedures is required	Information on the efficiency of cleaning procedures is required 4.2	Efficiency of cleaning procedures	(xxv)
	The meeting were content with the packaging.	Packaging	(xxiv)
A The temperature and residence time for controlled incineration are required	The temperature and residence time for controlled incineration are required.  4.6. 2	Controlled incineration	(xxiii)
1	A resistance management strategy was not considered necessary as resistance to glyphosate only appeared under extreme conditions (ref. Powles, 1998 in Weed Science 46, pp 604-607).	Further information Resistance	(xxii)
	A full data package was submitted and no further physical and chemical properties data were required for the product Tulip Task Force SL. If the other ECCO meetings are content with this formulation then the data requirements for Monsanto will be required at MS level.	Tulip Task Force SL	(xxi)
A Two years shelf life data for the product MON 44068 SG are required.	Two years shelf life data are required.  IIIA 2.7.	Shelf life	(xx)
A A statement on granule size is required for the product MON 44068 SG.	A statement on granule size is required.  2.8.	Granule size	(xix)
A A wet sieve test for the product MON 44068 SG – is required at MS level	A wet sieve test is to be required at MS level IIIA 2.8.	MON 44068 SG Wet sieve test	(xviii)
Recommendations ECCO-Peer Review Meeting (Annex point)	Discussion ECCO-Peer Review Meeting Re	Subject	No

Š	Subject	Discussion ECCO-Peer Review Meeting	Recommendations ECCO-Peer Review Meeting (Annex point)
(xxvi)	(xxvi) Re-entry periods	Re-entry periods are required.	IIIA Re-entry periods are 4.3 required.
(xxvii	Transport	The active substance may have explosive properties and the meeting noted this may have implications for the transportation of the material.	1
(xxviii	(xxviii   Methods of   analysis	Methods using chloroform were no longer acceptable but there was a published method available for surface water.	•
	Method for surface water		

# Appendix 1: ECCO 76 reporting table

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No	Subject	Discussion ECCO-Peer Review Meeting	Recommendations ECCO-Peer Review Meeting (Annex point)
(i)	Identity	There are 18 different sources of glyphosate.	1
	manufacturing process/sources of	Two main pathways to manufacture glyphosate: the glycine process and the IDA process.	
	glyphosate	Glyphosate is produced in 3 forms – the isopropyi salt, the sodium salt and the ammonium salt.	
		The Monsanto source was considered the definitive profile as it had the most comprehensive analytical suite, impurity profile and data package for the IDA process. For the IDA process, the other sources were compared to the Monsanto source.	
		Glycine process	
		was the first source listed in the summary table produced by the glycine route for which data were provided.	

(iii)	No
Sources for which a decision on comparability of sources is not possible until further data submitted	Subject
The meeting noted that for the following sources a decision on comparability of sources is not possible until further data are submitted: Feinchemie, Herbex, Sundat, Pinus, Alkaloida.  Further data required are indicated below: Feinchemie – further validation data for the 5 batch analysis are required. Herbex – clarification of method of manufacture is required and 5 batch analysis data are required. Sundat* – 5 batch analysis are required. Pinus* – there is a potential difference with MOD No 4, AGC Nos. 9 and 11. More accurate characterisation or measurement of impurities is required. Alkaloida – (a) glycine process: batch 3 doesn't meet Alkaloida's own specification, but it does meet the FAO specification, this requires clarification. (b) IDA process, on available data there is a potential difference with MOD No 12 and additional batch analysis data are required.  * member of the Tulip Task Force – none of these companies analysed for N-nitrosoglyphosate, this analysis is required.	Discussion ECCO-Peer Review Meeting
IIA A statement on the 1.11 comparability of sources is not possible until further data are submitted as indicated below: Feinchemie – further validation data for the 5 batch analysis are required Herbex – 5 batch analysis are required. Sundat* – 5 batch analysis are required. Pinus* – more accurate characterisation or measurement of impurities MOD#4 = PMIDA and nitroglyphosate. Alkaloida – (a) glycine process: batch 3 doesn't meet Alkaloida's own specification, but it does meet the FAO specification, this requires clarification. (b) IDA process: additional validation data are required. * member of the Tulip Task Force – none of these companies analysed for N-nitrosoglyphosate, this	Recommendations ECCO-Peer Review Meeting (Annex point)

(viii) Physic prope active		_		(vii) chang conta the no Sanao		(vi) change contact the n	No Subject
Physical and chemical properties for the active substance				changes to the contact details for the notifier Sanachem GmbH		changes to the contact details for the notifier Sundat	
many the manner of the postibility the file the thirty that sale.	The meeting agreed that to be consistent with the discussion on 2,4-D the end point sheets should be completed for all 4 forms of glyphosate i.e. the isopropyl salt the ammonium salt the sodium salt and the trimesium salt	Person to contact: Dr R.E. Briant Tel. No. + 44 (0) 171 730 0502 Fax No. + 44 (0) 171 730 0702	Wantage Oxfordshire OX12 9JT UK	The notifier Sanachem GmbH has been taken over by Dow AgroScience GmbH. The contact details in the Report, Level 1, page 5, No.12 should now read: Dow AgroScience GmbH Letcombe Regis	Sundat (Europe) Ltd Leeghwaterweg 5 1951 NA Velsen-Noord The Netherlands	The contact details for Dr T Searls in the Report, Level 1, page 3 (D) should be deleted. A new address for the notifier Sundat in Europe was provided, as follows:	Discussion ECCO-Peer Review Meeting
IIA Onen point - RMS to check	1			l l		-	Recommendations ECCO-Peer Review Meeting (Annex point)

No	Subject	Discussion ECCO-Peer Review Meeting	Reco Revi	Recommendations ECCO-Peer Review Meeting (Annex point)
(x)	appearance, odour, physical state	Data were provided for the technical material but data are required for the pure salts.	IIA 2.4	The appearance, odour and physical state of the pure salts are required.
(xi)	Spectra	Spectra are required for any impurities of significance.	IIA 2.5	Open point -The ECCO Mammalian Toxiology, Fate and Ecotoxicology meetings to advise if any impurities are of significance - spectra will be required for those of significance.
(xii)	Solubility in water	The sodium salt appeared to be of very low purity and the meeting agreed that the company should check whether this was pure active substance or technical.	IIA 2.6	The purity of the sodium salt used in the determination of solubility in water to be checked.
(xiii)	Solubility in organic solvents	No data were provided for the ammonium salt or sodium salt.	IIA 2.7	Data on solubility of the ammonium and sodium salts in organic solvents are required.

ı	1	Of the eight products containing glyphosate, the data package supporting two formulations MON 44068 SG and Tulip Task Force SL were examined by the meeting.	Physical and chemical properties for the plant protection products	(xvii)
A Differential Thermal Analysis (DTA) up to 1000 °C of glyphosate and its salts of all sources is required.	IIA 2.13	The glyphosate acid and IPA salt were both classified as explosive in a GLP test, but the meeting were unsure as to the exact identity of the material tested. Although the data submitter do not believe glyphosate is explosive, they had not submitted any data to counteract the results of the test. Given the physical characteristics of glyphosate and that the test material was not fully characterised, further studies on the acid and IPA salt are required.	Explosive properties	(xvi)
The purity of the material used in the determination of flammability and autoflammability to be checked.	IIA 2.11	The purity of the material tested required clarification.	Flammability and autoflammability	(xv)
The ionic species must be reported when dissociation occurs.				
Open point – ECCO Fate meeting to confirm if the methods used in determining the stability in water are comparable	11A 2.9	Ine EPA and BBA methods were thought to be comparable with the OECD/EC methods but clarification was required from the ECCO Fate meeting.  It was noted that when dissociation occurs, the ionic species must be reported.	Stability in water	(XIX)
Recommendations ECCO-Peer Review Meeting (Annex point)	Reco	Discussion ECCO-Peer Review Meeting	Subject	<u> </u>

L	L. 0.0000.00.00000000000000000000000000			
			procedures	
	IA Information on the	Information on the efficiency of cleaning procedures is required  4 2	Efficiency of 1	(vxv)
L		The meeting were content with the packaging.	Packaging	(xxiv)
<u> </u>	required.	2		
		The temperature and residence time for controlled incineration are required.  4.6.	Controlled incineration	(xxiii)
	•	A resistance management strategy was not considered necessary as resistance to glyphosate only appeared under extreme conditions (ref. Powles, 1998 in Weed Science 46, pp 604-607).	Further information grant Resistance	(xxii)
	i i	A full data package was submitted and no further physical and chemical properties data were required for the product Tulip Task Force SL. If the other ECCO meetings are content with this formulation then the data requirements for Monsanto will be required at MS level.	Tulip Task Force	(xxi)
4, 4	<ul><li>IIIA Two years shelf life data for</li><li>2.7 the product MON 44068 SG</li><li>3 are required.</li></ul>	Two years shelf life data are required.  2.7.	Shelf life	(xx)
	IIIA A statement on granule size 2.8. is required for the product 6 MON 44068 SG.	A statement on granule size is required.  2.8.	Granule size	(xix)
	IIIA A wet sieve test for the 2.8. product MON 44068 SG – is required at MS level	A wet sieve test is to be required at MS level  2.8.	MON 44068 SG Wet sieve test	(xviii)
	Recommendations ECCO-Peer Review Meeting (Annex point)	Discussion ECCO-Peer Review Meeting Re	Subject	No.

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No	Subject	Discussion ECCO-Peer Review Meeting	Recommendations ECCO-Peer Review Meeting (Annex point)
(xxvi)	(xxvi) Re-entry periods	Re-entry periods are required.	IIIA Re-entry periods are 4.3 required.
(xxvii	(xxvii Transport	The active substance may have explosive properties and the meeting noted this may have implications for the transportation of the material.	1
(xxviii	(xxviii   Methods of analysis	Methods using chloroform were no longer acceptable but there was a published method available for surface water.	1
	Method for surface		
	water		

# Appendix 1: ECCO 80 reporting table

## Glyphosate (Hb)

## 2. Environmental Fate and Behaviour

(iii) Rour in sc		(ii) Rou in so	(i) Route in soil	No. Subject
Route of degradation in soil (photolysis)		Route of degradation in soil (anaerobic)	Route of degradation in soil	ject
From the available data, soil photolysis was not a major route of degradation. The group noted that the first results for soil photolysis in the End point sheet were not consistent with the results in the monograph and should be amended (illuminated 90 d: dark 96 d).	Although there were insufficient information to obtain a $DT_{50}$ from the existing anaerobic study, the group considered that the study demonstrated that the degradation rate for aerobic and anaerobic conditions were comparable. The RMS should reassess the study.	The group noted that an anaerobic study had been presented, however it was considered unacceptable by the RMS as the study had been conducted at 30°C and not the required 20°C, and the conditions of the study had not been fully reported. As a reliable study was not available, and there were autumn uses and an application for use on rice, the group agreed that a reliable anaerobic study was required.	The group agreed that the End point sheet for mineralisation and non-extractable residues should be amended to reflect the full range of data available. It was only necessary to give details of the soil properties where there was a clear correlation between soil biomass and mineralisation.  The group noted that there was an apparent relationship between the degradation rate of glyphosate, correlated to the adsorption.	Discussion ECCO-Peer Review Meeting
ph Er	O re pr	2.1 A de an 7.	th th ar re da	Recomi Review
Open point: RMS to amend End point sheet to correct the results for soil photolysis.	Open point: RMS to reassess the anaerobic study presented.	Address the route of degradation in soil in anaerobic conditions. (IIA, 7.1.1.2.1)	Open point: RMS to amend the End point sheet so that the range for mineralisation and bound residues is reported for all the available data.	Recommendations ECCO-Peer Review Meeting (Annex point)

No	No. Subject	Discussion ECCO-Peer Review Meeting	Recor Revie	Recommendations ECCO-Peer Review Meeting (Annex point)
(iv)	Rate of degradation in soil	The group considered that when reporting $DT_{50}$ values, the range and mean values should be reported.		Open point: RMS to amend End point sheet to reflect
		There was a comment regarding the footnotes to the table on page 26 of the monograph (section B-7, vol 3, 3 of 4). Regarding the reference to (***), it was		the range and mean $DT_{50}$ values.
		not clear what was meant by first order dissipation equation and first order		RMS to provide an
		degradation equation. Therefore the RMS should provide an explanation to the		explanation to the reference
		reference from the footnote and check the DT values.		from the footnote to the
		The group considered that although it was not possible to state a DT <sub>50</sub> value for		table on p 26 (sec B-7, vol
		anaerobic conditions, it was possible to compare the results from the aerobic		3, 3 of 4) and check the DT
				calculations.
		sheets should be amended to state 'comparable to aerobic'.		RMS to amend the
				anaerobic results in the End
				point sheets to state
				'comparable to aerobic'
(v)	Rate of degradation	From the available data, AMPA appeared to be persistent, with high DT50	2.2	Accumulation potential
	in soil (metabolites)	values. The group considered that there were no reliable data on the degradation		(persistence) of AMPA and
		rate of AMPA. As there was a potential for accumulation of AMPA, the group		glyphosate must be
		agreed that this was an area which needed further addressing. In addition, the		addressed further. (IIA,
		potential for the accumulation of glyphosate should also be considered		7.1.1.2.2)

Open point: RMS to report results for mineralisation and non-extractable residues from the 2 water/sediment studies separately in the End point sheet.	Regarding degradation in water/sediment systems, the results for mineralisation and non-extractable residues from the two available studies should be reported separately in the End point sheets.	Route and rate of degradation in water	(viii
Open point: RMS to recalculate PEC <sub>s</sub> , assuming 50% plant cover and amend End point sheet.	As soil PEC values had been calculated assuming 20% plant cover, they must be recalculated using the default 50% plant cover as agreed.  The DT <sub>50soil</sub> of 150 days was considered to represent the realistic worst case scenario.	(vii) PEC <sub>s</sub>	(vii)
Open point: RMS to reassess the importance of the aged column leaching study.  K <sub>d</sub> values must be calculated and reported in the End point sheets for glyphosate and AMPA; the range and median to be included.	The $K_{oc}$ values for glyphosate and AMPA were relatively high, and there was a large range (884 to 60000 for glyphosate). It was considered that as the $K_{oc}$ values were high, it would be useful in addition to state the $K_d$ values in the End points. The RMS should reassess the data and consider the importance and relevance of the aged column leaching study reported on p 76 of the monograph (section B-7, vol 3, 3 of 4).	Adsorption/ desorption in soil	(vi)
Recommendations ECCO-Peer Review Meeting (Annex point)	Discussion ECCO-Peer Review Meeting	No Subject	No

(xi)	<u>×</u>	(ix)	ž
$\mathrm{PEC}_{\mathrm{sed}}$	PECsw	Route and rate of degradation in water (metabolites)	No Subject
For long term single applications, the highest concentration was reported to be 55% on day 56. The meeting considered that it was more appropriate to state concentrations rather than percentages when reporting PEC values. Therefore the table should be amended.	The group agreed that the End point sheet should reflect the worst case scenarios for the proposed uses of glyphosate. They considered that PEC <sub>sw</sub> should be calculated for overspray (rice use) and I metre spray drift for other uses.	The group noted the unusual finding that AMPA was apparently only found in the water phase from the water/sediment study. The group considered that it was possible that AMPA did move to the sediment, however, extraction techniques were unable to extract AMPA from the sediment. It was also noted that if AMPA was persistent, there would be high amounts of AMPA detected in the study. The fact that AMPA was found in low amounts suggested that it was fast degraded. Therefore the group concluded that these apparent discrepancies should be addressed.	Discussion ECCO-Peer Review Meeting
Open point: RMS to amend the End point sheet so that results for PEC <sub>sed</sub> are expressed as concentrations and not %.	Open point: RMS to calculate PEC <sub>sw</sub> overspray for rice and 1 m spray drift for other uses, and amend End point sheet accordingly.	2.3 Address the apparent discrepancies with the water/sediment studies as there appears to be no movement of AMPA to sediment. (IIA, 7.2.1.3.2)	Recommendations ECCO-Peer Review Meeting (Annex point)

(xiv   1	(xiii )	(xii)	N <sub>o</sub>
Fate and behaviour in air	PEC <sub>gw</sub> (metabolites)	PECgw	Subject
An amendment to the End point sheet was required, where 'direct photolysis in air' should read 'direct photolysis in water'.  The group noted that there were no data to address photolysis in air, however, an Atkinson calculation was available.	The RMS stated that there were new data available on leaching to ground water which had not been available in time to be considered at the meeting. Given the apparent variability of the degradation rate and mobility of AMPA, the meeting agreed that this must be further addressed.	The group considered that it was more appropriate for the method of calculation for PEC <sub>gw</sub> to state PEC <sub>gw</sub> was 'negligible' or '< LOD', rather than 'zero', as was currently reported.  As glyphosate was unlikely to leach to ground water, the following phrase, as agreed by the meeting, should be included in the End point sheet: 'On the basis of current knowledge it is considered unlikely that glyphosate will leach to ground water. Therefore contamination of ground water in excess of 0.1µg/l is not expected'.  The meeting noted that glyphosate and AMPA may bi-pass other environmental compartments, in addition to soil.	Discussion ECCO-Peer Review Meeting
	2.4		Reco
Open point: RMS to amend End point sheet to state 'direct photolysis in water' and not 'air'.	Address the possibility of ground water contamination, given the apparent variability in degradation rate and mobility of AMPA. (IIIA, 9.2.1)	Open point: RMS to amend PECgw to state 'negligible' or '< LOD', rather than 'zero' in the End point sheets.  The standardised phrase should be included in the End point sheet to indicate that leaching to ground water was unlikely.	Recommendations ECCO-Peer Review Meeting (Annex point)

(xvi N	(xv) D	No Subject
(xvi   Monitoring data	(xv) Definition of the residue	
Regarding ground water monitoring data and number of determinations, the group agreed that the RMS should check the UK results.	The End point sheet must be amended so that the residue definition refers to both soil and water.	Discussion ECCO-Peer Review Meeting
Open point: RMS to check the ground water monitoring data results (UK).	Open point: RMS to include soil and water in the section covering definition of the residue in the End point sheet.	Recommendations ECCO-Peer Review Meeting (Annex point)

# Appendix 1: ECCO 84 reporting table

Ecotoxicology

No	Subject	Discussion ECC	Discussion ECCO-Peer Review Meeting	Meeting		Recomm Meeting	Recommendations ECCO-Peer Review Meeting (Annex point)
(i)	Intended uses	Rice cultivation glyphosate was different risk. I specialised situs Use in or near v Working Group	It was not clean usually applied pusually applied pusually applied pusually applied of the lack of attion, it was agreen atter. The group level regarding to	whether water would bre-sowing and post-har-information on how glyed that this use should be noted the potential risk his type of use agreed the	Rice cultivation: It was not clear whether water would be present at the time of application since glyphosate was usually applied pre-sowing and post-harvest. Dry paddy fields presented a very different risk. Due to the lack of information on how glyphosate would be used in such a specialised situation, it was agreed that this use should be dealt with at MS level.  Use in or near water: The group noted the potential risk but in line with decisions taken at Working Group level regarding this type of use agreed that this should be dealt with at MS level		
(ii)	General risk assessment	The rapporteur	provided details	of the PECs used to calc	The rapporteur provided details of the PECs used to calculate the TERs as follows:		
		Distance (m)	Drift (%)	PECi Glyphosate (μg/l)	μg/l) PECi Glyphosate SL, 360 g as/l (μg/l)		
		0	100	1440	4000		
			4	57	160		
		5	0.6	8.6	24		
		10	0.4	5.8	16		
		15	0.2	2.9	*		
		20	0.1	1.4	4		
(iii)	Birds	The acute and sl and >20 (insecti TER (lt) was be	ont-term risk way	The acute and short-term risk was considered to be acceptable with Tl and >20 (insectivorous bird) and TER (st) >12 (grazing bird) and >37 TER (lt) was below the Annex VI trigger of 5 but it cannot be assume		3.1 Ac	Address the risk to breeding birds from the consumption of treated crops. (IIIA, 10.1)
		exclusively on c and insects had a on genetically in present after trea	ow the Annex vontaminated food ontaminated food not been taken in the modified crops to the talent and the modified crops to the talent and the modified crops to the talent crops to the	to trigger of 5 but it cannot be over several weeks. In to account. The group in control non-tolerant weeketing questioned the relations.	exclusively on contaminated food over several weeks. In addition residue decline on vegetation and insects had not been taken into account. The group noted that glyphosate could also be used on genetically modified crops to control non-tolerant weeds. Crop plants would therefore be present after treatment and the meeting questioned the relevance of the refinement step used. A	Ş	ops. (1118, 10.1)
		be addressed.	birds was identin	led from the consumption	risk to breeding birds was identified from the consumption of treated GM crops which needs to be addressed.		
		THE HISK TO DICE	mignishing Sum	THE HAN TO DESCRIBE OFFICE HOLD USE OFFI CONVENIENCE CLOSS WAS CONST	ops was considered acceptable.		

(xi) Metabolites	(x) Sediment dwelling organisms	(ix) Higher aquatic plants		(viii) Algae		(vii)   Toxicity to aquatic life			(vi) Aquatic risk assessment	
The metabolit metabolite TF			sensitivity. To costatum is on tested. This a by the group formulation a Risk mitigation.	Skeletonema EC <sub>50</sub> of 0.6 m	The plant pro substance and		Rapporteur N The meeting formulation,	שמטווווייי שיי		
The metabolite AMPA is of low toxicity to fish, <i>Daphnia</i> and algae. Rapporteur MS to add the metabolite TERs to the end point sheet.	No table had been provided in the end point sheet. Although 44% of the active substance partitions to sediment its low chronic toxicity to <i>Daphnia</i> mean that no further data are required.	The group noted that <i>Lemna</i> appeared to be less sensitive to glyphosate. Due to the mode of action of glyphosate, via leaves rather than roots, the group questioned whether the standard <i>Lemna</i> study was infact appropriate. It was concluded that further data were required to address the risk from spray drift to <i>Lemna</i> at different concentrations using the plant protection product.	sensitivity. The main data submitter has argued that the EC <sub>50</sub> of 0.6 mg/l is an outlier as S. costatum is one to several orders of magnitude more sensitive than all the other algal species tested. This argument was not supported because the sensitivity of the other species considered by the group was in the same range. It was noted that the risk assessment had been based on the formulation and not the active substance.  Risk mitigation measures (buffer zone of 5m) will be required at MS level.	Skeletonema costatum was shown to be most sensitive to the active substance with a chronic EC <sub>50</sub> of 0.6 mg/l. Although a marine algae it had been used as the basis for the TER. The group agreed that this was accordable because marine and freshwater alone were usually of some	The plant protection products pose a higher acute risk to aquatic life than just the active substance and hence formulation data should be provided at re-registration.	The toxicity data showed that the metabolite AMPA and the IPA salt were less toxic to aquatic life than the active substance and the formulations.	Rapporteur MS to add details on <i>Lemna</i> to the end point sheet.  The meeting agreed that the risk assessment should concentrate on the active substance and one formulation, the IPA salt would be covered by the active substance.	submitter and on validated data published in the IPCS report 159 for glyphosate.	The group noted that the risk assessment had been based both on data submitted by the main data	No data were provided on the toxicity of the metabolite AMPA to birds and mammals. The group noted that the metabolite occurred in the mammalian toxicology package and agreed that the risk had been addressed.  The group noted that the risk assessment had been based both on data submitted by the main data
Open point: rapporteur MS to add aquatic life TERs for the metabolite AMPA to the end point sheet.		3.2 Address the risk from overspray to <i>Lemna</i> at different concentrations using the plant protection product. (IIA, 8.2.8)					sheet.	details on <i>Lemna</i> to the end point	Oman maint: manager and NC to add	Ones point: passed at MC to add

If there is a concern this may lead to a request for further data.			
Open point: rapporteur MS to clarify whether there is a concern regarding possible endocrine disruption.	Various literature references suggest that glyphosate is an endocrine disruptor. The group recognised that there was no guidance available regarding how such information should be used so it was agreed that the rapporteur should consult the Chairperson of the mammalian toxicology meeting at the BBA to see if this is a concern.	Endocrine disruption	(xvi)
	Data are available. Glyphosate represents a high risk to non-target plants off-crop. This issue should be dealt with at MS level.	Non-target flora and fauna	(xv)
3.5 Address the effects of metabolite AMPA on leaf litter decomposition. (IIIA, 10.6.2)	The group was unable to draw a conclusion from the risk assessment for soil macro-organisms which is dependent on the earthworm data requirement at 3.4. However there was concern over potential exposure to the metabolite AMPA, which is highly persistent in soil (DT $_{50}$ 958d), and further data are required on the effects of the metabolite on leaf litter decomposition.	Soil Macro-organisms	(xiv)
3.4 Address the long-term toxicity of the active substance and metabolite AMPA to earthworms. (IIA, 8.4.2)	No acute toxic effects are expected since the TERs are all above the Annex VI trigger of 10. The active substance and metabolite AMPA are both persistent in soil (glyphosate = $DT_{90}$ up to 208d with 3 applications, and metabolite = $DT_{50}$ 958d and $DT_{90}$ 100d). Therefore, further information is therefore required regarding long-term toxicity of the active substance and metabolite to earthworms.	Earthworms	(iiix)
3.3 Address the risk to 2 sensitive crop specific species and foliar dwelling predators and spiders using appropriate application rates. (IIA, 8.2.3)	A high risk has been identified for a range of species from the use of the plant protection product. Studies with <i>Aphidius rhopalosiphi</i> and <i>Typhlodromus pyri</i> caused 100% mortality, and data on 2 crop relevant species <i>Chrysoperla carnea</i> and <i>Aleochara bilineata</i> indicated a medium risk but this was not at the maximum application rate. The main data submitter recently submitted new data which the rapporteur has not yet evaluated. A brief assessment indicated mortality at 25% and 88% for <i>A. rhopalosiphi</i> and <i>T. pyri</i> respectively. Therefore there is currently no change in the risk assessment for non-target arthropods.  Due to the risk to non-target arthropods, further data are required to refine the initial assessment. These data will be dependent upon the use (e.g. GM vs non-GM) as well as the mode of application (e.g. spray vs weed wipe). However, the main data submitter should address the risk to non-target arthropods from the proposed GAP.	Non-target arthropods	(xii)
Recommendations ECCO-Peer Review Meeting (Annex point)	Discussion ECCO-Peer Review Meeting	Subject	No.

Report from ECCO 84 - famoxadone / CGA 245 704 / thiram / ziram / amitraz / lindane / glyphosate / glyphosate-trimesium

(xvii)	N o
(xvii) Data protection	Subject
The rapporteur MS did not provide a list containing only those studies for which the main data submitter has claimed data protection. This information will be provided before the Overview meeting.	
Open point:-Rapporteur to provide list of studies for which the main data submitter has claimed data protection.	Recommendations ECCO-Peer Review Meeting (Annex point)

# Appendix 1: ECCO 78 reporting table

4. Mammalian toxicology

N <sub>o</sub>	No Subject	Discussion ECCO-Peer Review Meeting	Recommendations ECCO-Peer Review Meeting (Annex point)
Ξ	Sources of glyphosate	Consistent with previous situations involving multiple sources of active substance, the meeting considered the toxicology package for the source with the most comprehensive dossier, in this case Monsanto.	
(ii)	ADME	After a single intra-venous application, 72% of the radioactivity was recovered in the first 4 hours, indicating that elimination is more rapid than oral absorption. Given the complexities of the data it was difficult to give a numerical value for rate and extent of excretion.	
(iii)	Toxicologically significant	In response to a question from ECCO 76 (physical/chemical properties) regarding the toxicological significance of the different impurity profiles	4.1 Toxicity of impurities in other sources to be
	compounds	Monsanto source only. Therefore, it was concluded that where the impurity profile of a source differed to that of the Monsanto source (i.e. different	addressed at Member State level (IIA 5.8)
		impurities, or higher concentrations) then further information would be required to address the significance of these differences.	
(iv)	Short term toxicity:	Histological effects were observed in salivary glands in the 6 and 12 month dog	
	target/critical effects	study, however, since these lesions were without functional consequence or long term effects they were not considered to be adverse.	
<b>€</b>	Short term toxicity:	The meeting agreed an NOAEL of 300mg/kg bw/day based on the 90 day rat	
	Lowest relevant oral	and 6 and 12 month dog studies.	
	NOAEL/NOEL		

Rapporteur to provide list of studies for which data	Rapporteur to provide list of studies for which data protection has been claimed.   ope   npo   int	Data protection	(xi)
	It was noted that the dermal absorption in the in vivo monkey study was 2.2%, however, given that the recovery was 75 – 80% it was considered appropriate to round up to 3% to account for the remaining unrecovered 20%.	Dermal absorption	×
	The meeting agreed with the Rapporteur's proposal for an AOEL of 0.2 mg/kg bw/day based on the NOEL for maternal toxicity in the rabbit developmental study, applying a correction factor of 30% for absorption and a safety factor of 100	AOEL	(ix)
	The meeting agreed with the Rapporteur's proposal for an ADI of 0.3mg./kg bw/day based on the NOAEL in the long term rat studies and applying a safety factor of 100.	ADI	(viii
	The meeting agreed an NOAEL of 150 mg/kg bw/day from the rabbit developmental study based on the incidence of heart malformations, although it was acknowledged that the incidence of these effects was within the range of the historical control data. Other effects were observed to be occurring at levels which were both foetotoxic and maternally toxic.	Reproductive toxicity: Lowest relevant developmental NOAEL / NOEL	(vii)
	It was noted that a study had been submitted, however, it was considered that this was supporting information only as it was not necessary for the risk assessment.	Short term toxicity: Lowest relevant inhalation NOAEL/NOEL	(vi)
Recommendations ECCO-Peer Review Meeting (Annex point)	Discussion ECCO-Peer Review Meeting Re	Subject	No

# Appendix 1: ECCO 82 reporting table

5. Residues

(v) N	(iv)	(iii) N	(ii) N	(i) N	5
Metabolism – plants	Metabolism – tolerant sugar beet	Methods of analysis	Metabolism – plants and animals	Metabolism - plants	omjeet
It was noted that the metabolic pathway and residue definition may change as a result of future development of glyphosate tolerant crops	It was noted that a metabolism study for tolerant sugar beet had not been submitted. The metabolism of glyphosate in genetically modified sugar beet must be addressed.	The meeting asked the RMS to check whether there were validated methods for AMPA.	It was noted that during monitoring analysis, it would not be known whether crops were genetically altered. Therefore, although AMPA is not of toxicological significance, AMPA should be included in the residue definition to monitor for compliance with GAP. Thus the meeting agreed to set a residue definition for monitoring and risk assessment purposes of glyphosate plus AMPA expressed as glyphosate equivalents.	The meeting noted that glyphosate takes 7-10 days to take effect yet PHIs lower than 7 days were stated in the intended uses.	Surrent London to a to Contract to the surrent to the surrent transferrent transferrent transferrent to the surrent to the sur
	5.1	. 1	•	1	Review
	The metabolism of glyphosate in genetically modified sugar beet must be addressed. (IIA 6.1)	Open point:  RMS to check whether there were validated methods for AMPA.		-	Review Meeting (Annex point)

				1	_	<del>-</del>		Т			<u> </u>	- 1	
	×		(ix)		(viii)					(vii)		(vi)	No.
	MRLs – cultivated berries and small fruits		MRLs – pome fruits	ITUITS	MRLs – stone					MRLs – citrus	animals	Metabolism -	Subject
	Clarification of the GAP is required for cultivated berries and small fruits.		Clarification of the GAP for apple and pear in the southern region is required as the PHI in the residues trials differs from that stated in the intended uses.	crop group were not submitted. 4 intriner trials on chemies are required.	ing the stone fruit				sampled. Based on the data submitted, residues are expected to be low. However, 4 further trials are required on small citrus fruit with continuous harvesting and random sampling. Clarification of the GAP for citrus is required, as the number of applications and PHI in the residues trials differ from the intended uses.	Only US residues data were submitted, yet there was no request for import tolerance. It was noted that only the lower branches of the citrus trees were	definition of 'glyphosate plus AMPA expressed as glyphosate equivalents' for monitoring and risk assessment purposes for animal products.	Based on the metabolism data submitted, the meeting agreed to set a residue	Discussion ECCO-Peer Review Meeting
	5.6	i	5.5		5.4			5.3		5.2		-	Reco Revii
(IIIA 3.3)	Clarification of the GAP is required for cultivated berries and small fruits.	southern region is required. (IIIA 3.3)	Clarification of the GAP for apple and pear in the	(IIA 6.3)	4 residues trials on cherries	(IIIA 3.3)	citrus is required.	Clarification of the GAP for	continuous harvesting and random sampling. (IIA 6.3)	4 residues trials are required on small citrus fruit with			Recommendations ECCO-Peer Review Meeting (Annex point)

	of 0.1 mg/kg for table offices and 20 mg/kg for offices processed into off.		
	enforcement purposes, crops are not usually split, the meeting proposed MRLs		
	for table use and oil use affects residue levels. Although it was noted that for		
	The meeting noted that the difference between harvesting and processing olives	MRLs - olives	(xiv)
(IIA 6.3)			
requested.			
import tolerance has been			
on miscellaneous fruit if an	miscellaneous fruit.	miscellaneous fruit	
5.9 Further data will be required	If an import tolerance has been requested then further data will be required on	MRLs -	(xiii)
	MRL of 0.5 mg/kg excluding the data from the ground lying grapes.		
	degradation, no further data are required. The meeting agreed to propose an		
	which does cover GAP, and that glyphosate is not subject to photolytic		
	southern region. However, given the amount of data from the northern region		
ř	The residues data submitted for grapes does not support critical GAP for the	MRLs – grapes	(xii)
(IIIA 3.3)			
GAP) must be clarified.			
5.8 The GAP in Austria (critical			
fruiting of berries.			
cannot be applied during the			
amended so that glyphosate			<u>,                                      </u>
raspberries must be	fruiting of berries. The GAP in Austria (critical GAP) must be clarified.		
glyphosate on wild	raspberries must be amended so that glyphosate cannot be applied during the	raspberries	
5.7 GAP for the forestry use of	The meeting agreed that the GAP for the forestry use of glyphosate on wild	MRLs - wild	(xi)
Review Meeting (Annex point)		1	
Recommendations ECCO-Page	Discussion ECCO-Peer Review Meeting	Subject	Z.

Clarification of the GAP is required. If the time of application is stated as preemergence or post-harvest then further data are not required and an MRL of 0.1 mg/kg can be proposed. However, if time of application is specified as close to harvest, then further data are required.  MRLs – wild  Clarification of the GAP for the use of glyphosate to clear ground for harvesting wild mushrooms wild mushrooms is required.  5.10  MRLs – wild  Clarification of the GAP for the use of glyphosate to clear ground for harvesting wild mushrooms wild mush	No	Subject	Discussion ECCO-Peer Review Meeting	Recommendations ECCO-Peer Review Meeting (Annex point)
MRLs – wild Clarification of the GAP for the use of glyphosate to clear ground for harvesting mushrooms wild mushrooms is required.	(xv)	MRLs – asparagus	Clarification of the GAP is required. If the time of application is stated as preemergence or post-harvest then further data are not required and an MRL of 0.1 mg/kg can be proposed. However, if time of application is specified as close to harvest, then further data are required.	5.10 Clarification of the GAP for non-tolerant asparagus is required. If the time of application is stated as preemergence or post-harvest then further data are not required and an MRL of 0.1 mg/kg can be proposed. However, if time of application is specified as close to harvest, then further data are required.  (IIA 6.3, IIIA 3.3)
	(xvi)	MRLs – wild mushrooms	the use of glyphosate to clear ground for harvesting	<u></u> [

	(xvii)	No.
	MRLs – wheat and rye	Subject
	Residue levels occurring above the proposed MRL of 5 mg/kg were discussed by the meeting. The RMS must assess the outliers and recalculate the proposed MRL.	Discussion ECCO-Peer Review Meeting
Open point:  RMS must assess the outliers and recalculate the proposed MRL for rye.  (Submitted by the RMS after the meeting and	Open point:  RMS must assess the outliers and recalculate the proposed MRL for wheat. (Submitted by the RMS after the meeting and referred to the Overview meeting for consideration (ECCO 6589/PSD/99).)	Recommendations ECCO-Peer Review Meeting (Annex point)

1	An import tolerance of 20mg/kg was proposed based on the US data submitted.	MRLs - sorghum	(xxiii)
1	proposed.	soya beans	(XXII)
(1111 1 5:5)	An import toloron of 20 and to first out on VMI of 5 and to the interest of th	MDI a talamant	?!!
for US tolerant maize uses.			
tolerance to be considered	allow an import tolerance to be considered for US uses.		
required to allow an import	too short for the intended use pattern. Clarification of the GAP is required to	maize	
5.13 Clarification of the GAP is	In the residues data submitted, the rate of application was too high and the PHI	MRLs – tolerant	(xxi)
(IIIA 3.3)			
tolerant cotton is required.	too short for the intended use pattern. Clarification of the GAP is required.	cotton	
5.12 Clarification of the GAP for	PHI	MRLs – tolerant	(xx)
import tolerance is required.			
country had requested the			
Clarification of which			
Open point:		-	
(ECCO 6591/PSD/99).)			
meeting for consideration			
referred to the Overview			
after the meeting and			
(Submitted by the RMS			
proposed MRL for tea.	which country had requested the import tolerance.		
outliers and recalculate the	the MRL recalculated by the RMS. The meeting also sought clarification of		
The RMS must assess the	by the meeting. The meeting concluded that the outliers must be assessed and		
Open point:	Residue levels occurring above the proposed MRL of 1 mg/kg were discussed	MRLs – tea	(xviii)
Review Meeting (Annex point)		ı	
Recommendations FCOL Page	Discussion ECCO-Peer Review Meeting	Subject	3

No. Subject	Discussion ECCO-Peer Review Meeting	Recommendations ECCO-Peer Review Meeting (Annex point)
(xxiv) Processing factors -tolerant cotton	ors The meeting agreed that despite only one study being submitted, no further data on cotton were required as there is no consumption of cotton products.	1
(xxv) Dietary intakes		Open point:
	are referred to the Overview meeting for consideration.	Revised TMDI calculations   were submitted by the RMS
		after the meeting and are
		referred to the Overview
		meeting for consideration.
		(ECCO 6592/PSD/99)
		(ECCO 6593/PSD/99)
(xxvi) End points	RMS to update the end points to fully reflect the outcome of the meeting.	Open point:
		RMS to update the end
		points to fully reflect the
		outcome of the meeting.