



General literature search and literature review report (LRR)



Relevant guidelines used for the LRR



- **Article 8.5 of the 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.

*Scientific peer-reviewed open literature, as determined by the Authority, on the active substance and its relevant metabolites dealing with side-effects **on health, the environment and non-target species** and **published within the last 10 years before the date of submission** of the dossier shall be added by the applicant to the dossier.*

- **EFSA Journal 2011;9(2):2092 (EFSA GD 2092/2011)**- Submission of scientific peer-reviewed open literature for the approval of pesticide active substances under Regulation (EC) No 1107/2009.

Providing a definition of scientific peer-reviewed open literature and instructions on how to identify, select and include scientific peer-reviewed open literature as required by Article 8(5) of Regulation (EC) No 1107/2009, and how to report the literature search and selection process in a dossier.

*The search may be updated **within 6 months before the date of submission** of the dossier and the search dates should be reported.*

Databases used



Item	Databases information
Databases	CAB Abstracts, MEDLINE, Science Citation Index, BioMedSearch.com, Europe PubMed Central, NAL Catalog Agricola, PubMed, Toxicology Data Network, CAB Direct, SciFinder, Scopus, BIOSIS, FSTA, SciSearch.
Additional data sources not suggested by EFSA but covered by search	PQSCITECH, ESBIOWASE, TOXCENTER, HCAPLUS.

Publication period



The search:

- Part 0*: publication period **Jan 2010** – Dec 2011
- Part 1: publication period Jan 2012 – Dec 2017
- Part 2: publication period Jan 2018 – Jun 2019
- Part 3: publication period Jul 2019 – **Dec 2019**

**Feedback from AGG during the PSM Telco 04 July 2019*

Search



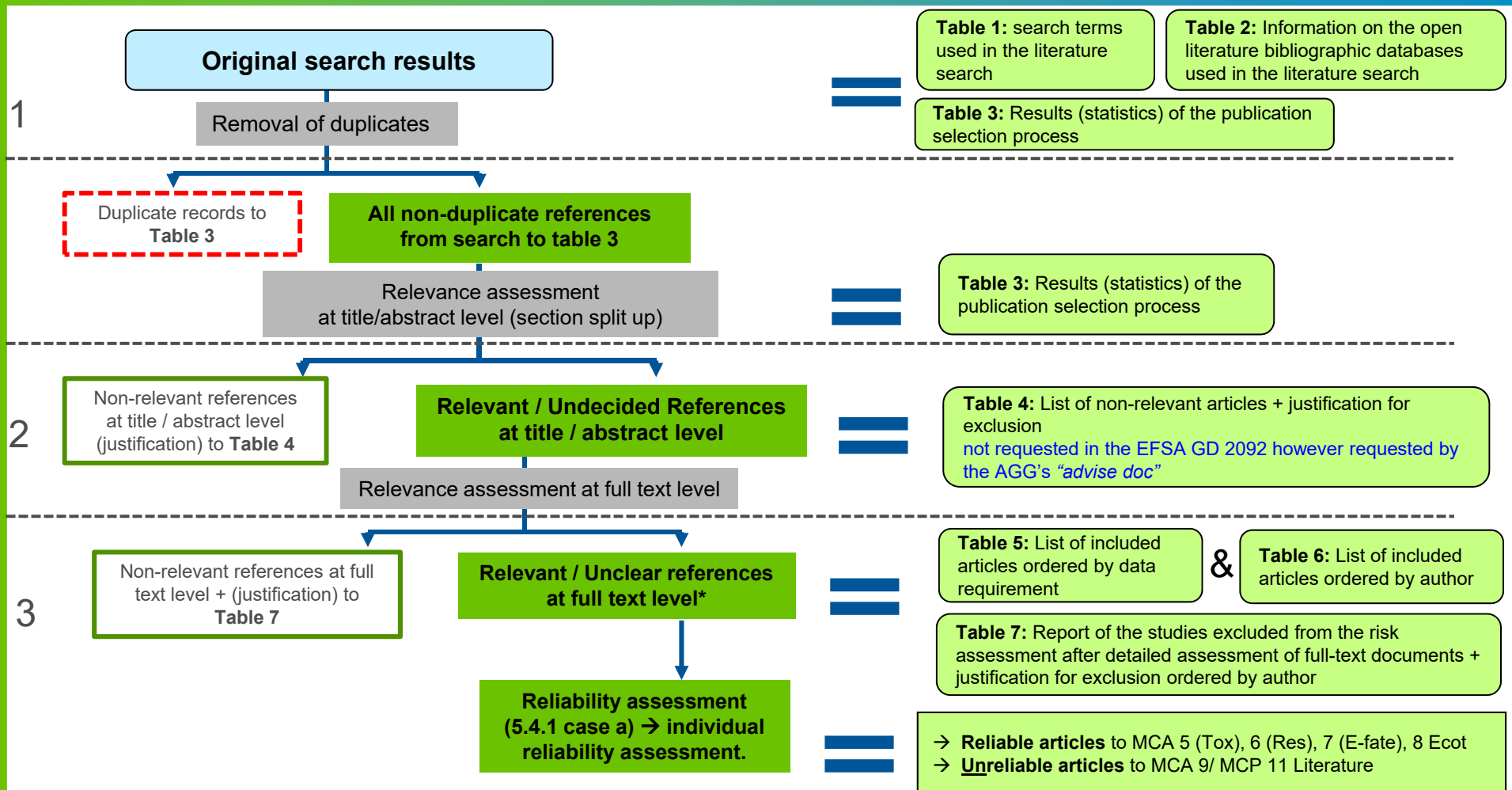
1. Used approach: Separate focused search strategy (Point 5.2.2 EFSA GD 2092/2011)

→ Using separate focused search strategies for individual or grouped data requirements by searching for the active substance and its synonyms (or metabolites, or plant protection products and their synonyms) combined with one or more other concepts relating to the data requirement(s) in question. In this case the additional concepts will capture one or more components of the data requirements

2. “Search filter words” applied (specific for each technical section – ecotoxicology, toxicology, residues, environmental fate) within the result obtained in a first step (substance search). Follow **back up slides** for more details.

The process - WORKFLOW

References: EFSA GD 2092/2011 and Advice document AGG_Oct 2019



*All articles evaluated in full text to be submitted in the electronic dossier in Caddy XML (as PDF files) not requested in the EFSA GD 2092 however requested by the AGG's "advise doc"



Table 3 (acc. to EFSA GD 2092/2011)

The Table 3a presents the statistics (report) of the study selection. The format of the Table follows the EFSA GD 2092/2011

Table 3a: Results of the publication selection process for each data requirement or group of data requirement searched Part 1

Data requirement(s) captured in the search¹		
Total number of summary records retrieved after all searches of peer-reviewed literature	7031	
Number of summary records excluded from the search results after rapid assessment for relevance	2,610	→ to Table 4
Total numbers of full-text documents assessed in detail	860 (ongoing)	
Number of publications excluded from further consideration after detailed assessment for relevance	383 (ongoing)	→ to Table 7
Number of publications not excluded for relevance after detailed assessment (i.e. relevant publications and publications of unclear relevance)	477 (ongoing)	→ to Table 5 & → to table 6

¹after removal of duplicates



Table 3 (acc. to EFSA GD 2092/2011)

The Table 3b presents the statistics (report) of the study selection. The format of the Table follows the EFSA GD 2092/2011

Table 3b: Results of the publication selection process for Toxicology

Data requirement(s) captured in the search¹		
Total number of summary records retrieved after all searches of peer-reviewed literature	1113	
Number of summary records excluded from the search results after rapid assessment for relevance	820	→ to Table 4
Total numbers of full-text documents assessed in detail	293 (ongoing)	
Number of publications excluded from further consideration after detailed assessment for relevance	98 (ongoing)	→ to Table 7
Number of publications not excluded for relevance after detailed assessment (i.e. relevant publications and publications of unclear relevance)	195 (ongoing)	→ to Table 5 & → to table 6

¹after removal of duplicates

Table 4 (following the “Advice document AGG_Oct 2019”) List of articles identified as “non-relevant articles” after title/abstract assessment + justification for exclusion: not requested in the EFSA GD 2092



Table 4: Report of the studies excluded after title/abstract assessment, ordered by author

Author(s)	Year	Title	Source	Reason(s) for not including this study in the dossier
Jurado-Sanchez, B., et al	2014	Occurrence of carboxylic acids in different steps of two drinking-water treatment plants	Water Research, Vol 31, pag 146-157.	The study does not fulfil any of the relevance criteria listed in Table X
De Preter, V.; Machiels, K.; Joossens, M.; et al.	2010	Faecal metabolite profiling identifies medium-chain fatty acids as discriminating compounds in IBD.	Int J Toxicol.; 31(4 Suppl), pp. 112S- 136S	No relevant toxicology endpoint useful for hazard assessment of glyphosate and no relevant test substance.
Johnson, W.Jr.; Heldreth, B.; Bergfeld, W.F.; et al.	2013	Fish consumption as a source of human exposure to chemicals substances in Poland	Chemosphere; 76(6), pp. 799-804	Other test substances were used in the procedure of the experiments. No extrapolation to glyphosate is feasible.

Table 5 (acc. to EFSA GD 2092/2011)

Report of all RELEVANT publications that are included in the dossier after detailed assessment of full text document for relevance: ordered by data requirements



N°	Data requirement (indicated by the corresponding OECD data point number)	Author(s)	Year	Title	Source	Classification according EFSA GD 2092 5.4.1
Environmental Fate						
1	KCA 7.XY	Jurado-Sanchez, Beatriz; Ballesteros, Evaristo; Gallego, Mercedes	2014	Occurrence of carboxylic acids in different steps of two drinking-water treatment plants using different disinfectants	Water Research, Vol 51, pp. 186-197.	EFSA 5.4.1 case b) The publication is considered supplemental because...
2	KCA 7.XY	Jurado-Sanchez, Beatriz; Ballesteros, Evaristo; Gallego, Mercedes	2014	Occurrence of carboxylic acids in different steps of two drinking-water treatment plants using different disinfectants	Water Research, Vol 51, pp. 186-197.	EFSA 5.4.1 case a) The publication is considered relevant, a summary and the reliability assessment are provided in MCA...
3	KCA 7.XY	Jurado-Sanchez, Beatriz; Ballesteros, Evaristo; Gallego, Mercedes	2014	Occurrence of carboxylic acids in different steps of two drinking-water treatment plants using different disinfectants	Water Research, Vol 51, pp. 186-197.	EFSA 5.4.1 case c) The relevance of the publication for the risk assessment could not be fully determined because...

Table 6 (acc. to EFSA GD 2092/2011)

Report of all RELEVANT publications that are included in the dossier after detailed assessment of full text document for relevance: ordered by author(s) name



N°	Author(s)	Data requirement (indicated by the corresponding OECD data point number)	Year	Title	Source	Classification according EFSA GD 2092 5.4.1
Environmental Fate						
1	Jurado-Sanchez, Beatriz; Ballesteros, Evaristo; Gallego, Mercedes	KCA 7.XY	2014	Occurrence of carboxylic acids in different steps of two drinking-water treatment plants using different disinfectants	Water Research, Vol 51, pp. 186-197.	EFSA 5.4.1 case b) The publication is considered supplemental because...
2	Jurado-Sanchez, Beatriz; Ballesteros, Evaristo; Gallego, Mercedes	KCA 7.XY	2014	Occurrence of carboxylic acids in different steps of two drinking-water treatment plants using different disinfectants	Water Research, Vol 51, pp. 186-197.	EFSA 5.4.1 case a) The publication is considered relevant, a summary and the reliability assessment are provided in MCA...
3	Jurado-Sanchez, Beatriz; Ballesteros, Evaristo; Gallego, Mercedes	KCA 7.XY	2014	Occurrence of carboxylic acids in different steps of two drinking-water treatment plants using different disinfectants	Water Research, Vol 51, pp. 186-197.	EFSA 5.4.1 case c) The relevance of the publication for the risk assessment could not be fully determined because...

Table 7 (acc. to EFSA GD 2092/2011)

Report of publications EXCLUDED from the risk assessment after full text level assessment*



Nr.	Author(s)	Year	Title	Source	Reason(s) for exclusion
1	Jurado-Sanchez, Beatriz; Ballesteros, Evaristo; Gallego, Mercedes	2013	Occurrence of carboxylic acids in different steps of two drinking-water treatment plants using different disinfectants	Water Research, Vol 51, pp. 186-197.	Supplementary information that does not have an influence on existing risk assessment. No detailed study information/results are available in the report for a detailed assessment.
2	Jírová, D.; Basketter, D.; Liebsch, M.; <i>et al.</i>	2010	Comparison of human skin irritation patch test data with in vitro skin irritation assays and animal data.	Contact Dermatitis; 62(2), pp. 109-116	Supplementary information that does not have an influence on existing risk assessment. No detailed study information/results are available in the report for a detailed assessment.
3	Asturiol, D.; Casati, S.; Worth, A.	2016	Consensus of classification trees for skin sensitization hazard prediction.	Toxicol In Vitro; 36, pp. 197-209	Model development. No information on compound was available.

*All articles evaluated in full text to be submitted in the electronic dossier in Caddy XML (as PDF files) not requested in the EFSA GD 2092 however requested by the AGG's "advise doc"

Search P1: Jan 2012 – Dec 2017

Status: 02 Dec 2019



a	Section	Total number of articles found Number / %	3 Outcome after abstract / title level assessment		4 Outcome after Full text level assessment		5 Reliability assessment of relevant articles <i>Ongoing</i>
			<u>Not relevant articles</u> → Table 4	<u>Relevant Articles</u>	<u>Not relevant articles</u> → Table 7	<u>Relevant Articles</u> → to Tables 5 & 6	→ <u>Reliable</u> articles to be included in MCA Tox, Residues, E-fate, Ecotox → <u>Unreliable</u> articles to MCA 9/ MCP 11 Lit.
b	Total search	7,031 [100%]					
c	Duplicates ^a	662 [9.4%]					
d	Efficacy	2,253 [32.0%]					
e	Others ^b	646 [9.1%]					
f	Relevant articles	3,470 [49.3%]	2,610	860	383	477	234 ^c
g	Toxicology	1,113 [15.8%]	820	293	98	195	67
h	Residues	529 [7.5%]	487	42	12	30	12
i	E-fate	813 [11.6%]	436	377	212	165	107
j	Ecotoxicology	1,015 [14.4%]	867	148	61	87	48

^a Removed manually

^b Examples: analytical method development, new uses of glyphosate, new way of synthesis, socio-economic analysis

^c For these articles an Appendix E summary to be compiled and reliability assessment performed

Example criteria for IRRELEVANCE for the evaluation at TITLE/ABSTRACT LEVEL



1. Efficacy related articles
2. Resistance related articles
3. New uses of control of pest/crops
4. Analytical method development
5. New ways of synthesis (discovery/development of new actives)
6. Patents
7. Abstract refers to a conference contribution that does not contain data, or information not available
8. Studies with focus on genetically modified organisms/transgenic crops; no data directly relevant to glyphosate evaluation (e.g. crop compositional analysis; gene flow; protein characterization)
9. Test substance was not the active ingredient glyphosate or a relevant metabolite
10. Publicly available regulatory reviews or assessments (e. g. EFSA publications)
11. Articles dealing with political/socio/economic analysis of the renewal/authorization of glyphosate products

Example “RELEVANCE CRITERIA” for the rapid assessment at TITLE / ABSTRACT LEVEL



1. Glyphosate is the test material identified in the summary record (regardless the purity/impurity profile).
2. A relevant route of exposure is reported.
3. Related to effects /findings on plant material, not target organism, or environmental compartments.
4. The test system or species are described in the EC Regulation (EU) No 283/2013.
5. The endpoint reported is expressed for glyphosate (or glyphosate metabolite).
6. Test species are relevant for regulatory purposes (validated specie) or related to European species.
7. Reported effects related not to a deliberate poisoning (e.g. suicide).
8. Indication of residues in consumer relevant commodities, including drinking water and honey (including pollen, nectar, etc.).
9. Findings are related to metabolism patterns in plant, animals and/or environmental compartments.
10. Article contains information about the effects on the biodiversity of the substance glyphosate.

Example “RELEVANCE CRITERIA” for the detailed assessment at FULL-TEXT LEVEL



1. Glyphosate is the test item tested.
2. Relevant test guidelines (TG)reported (where available): OECD, OPPTS, ISO, and others, including deviations during the study are described.
3. Target substance is Glyphosate and/or its metabolites, and or products (solo formulations), containing glyphosate as active substance.
4. The study is adequate for addressing the formulated regulatory questions (e.g. hazard identification, hazard characterization, derivation of reference values, mechanistic aspects, interspecies differences, etc.
5. Glyphosate, when the test substance, is sufficiently documented - identity of the test material
6. The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite).
7. Relevant route of administration in terms of risk assessment (oral, dermal or by inhalation).
8. Study design / test system is described.
9. Is the route of exposure suitable to sufficiently characterize a potential effect?
10. Is the duration of exposure appropriate for the endpoint(s) being investigated?
11. Data does deliver a relevant endpoint, and/or is useful as supporting information: Are the methods adequate for the investigation of the endpoint(s)?
12. There is include a sufficient number of animals per group to facilitate statistical analysis.
13. Several dose levels tested (at least 3), preferably including a negative control, to establish a dose-response.
14. Reported effects not being a consequence of a deliberate poisoning (e.g. suicide).
15. Description of findings is reported.

Example “RELEVANCE CRITERIA” for the detailed assessment at FULL-TEXT LEVEL contin.



16. Number of animals per group sufficient to establish a statistical significance.
17. Field locations relevant/comparable to European conditions.
18. Properties of soils tested are described.
19. Not previous exposure to other chemicals is documented.
20. Articles dealing with analytical methods cover analytical targets that are part of EU residue definition and/or reports measurements of residues in matrices relevant for risk assessment.
21. The residue data can be linked to a clearly described GAP Table appropriate in the context of the renewal of approval of Glyphosate (crop, application method, doses, intervals, PHI).
22. The data do allow calculation of a transfer factor (e.g. processing studies).
23. Evaluation is based on EU data and EU intake figures.
24. Publications on MRLs outside the EU are not relevant.
25. Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate.
26. The presence of glyphosate identified in samples collected from groundwater, soil, surface waters, sediments or air from European areas.
27. Suitable information about the toxicity of glyphosate to non-target organisms living in the environment.
28. Environmental exposure is well described, quantified, and relevant for one e-fate compartment.
29. Specific endpoint can be related to a data requirements.
30. Glyphosate was applied for crop protection purposes to a crop.

E-fate: Example of RELIABILITY CRITERIA for the detailed assessment at FULL TEXT level



1. For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines met.
2. Previous exposure to other chemicals is documented (where relevant).
3. The test substance is dissolved in water or non-toxic solvent
4. Glyphosate, when the test substance, is sufficiently documented - identity of the test material reported (i.e. purity, source, content, storage conditions)
5. Only glyphosate is the tested substance (excluding mixture), and information on application of glyphosate is described
6. The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite)
7. Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
8. Analytical verifications performed in test media (concentration)/ collected samples, stability of glyphosate in test media documented
9. An endpoint can be derived. Findings do deliver a regulatory endpoint, and/or is useful as supporting information
10. Assessment of the statistical power of the assay is possible with reported data.
11. If statistical methodology was applied for findings reported, then the data analysis applied is clearly reported (e.g., checking the plots and confidence intervals)
12. Field locations relevant/comparable to European conditions. Soils not completely matching the OECD criteria but from Europe or to some extent representative for the European Agriculture.
13. Characterization of soil: texture (sandy loam, silty loam, loam, loamy sand), pH (5.5-8.0), cation exchange capacity, organic carbon (0.5-2-5%), bulk density, water retention, microbial biomass (~1% of organic carbon)
14. Other soils where information on characterization by the parameters: pH, texture, CEC, organic carbon, bulk density, water holding capacity, microbial biomass
15. For tests including agricultural soils, they should not have been treated with test substance or similar substances for a minimum of 1 year
16. For soil samples, sampling from A-horizon, top 20 cm layers; soils freshly from field preferred (storage max 3 months at 4 +/- 2°C).
17. Data on precipitation is recorded
18. The temperature was in the range between 20-25°C and the moisture was reported
19. The presence of glyphosate identified in samples collected from groundwater, soil, surface waters, sediments or air from European areas
20. Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate
21. Analytical methods clearly described and adequate Statement of specificity and sensitivity of the analytical methods is included
22. Radiolabel characterization: purity, specific activity, location of label
23. If degradation kinetics are included: expect to see data tables provided, model description. Statistical parameters for kinetic fit.
24. Glyphosate monitoring data: description of matrix analysed, and analytical methods fully described as above.
25. For environmental fate studies: clear description of application rate and relevance to approved uses.



Back up slides General literature search and literature review report (LRR)



Substance search - keywords



Gly1: Glyphosate and AMPA

glyphosat? OR glifosat? OR glyfosat? OR 1071-83-6 OR 38641-94-0 OR 70901-12-1 OR 39600-42-5 OR 69200-57-3 OR 34494-04-7 OR 114370-14-8 OR 40465-66-5 OR 69254-40-6 OR aminomethyl phosphonic OR aminomethylphosphonic OR 1066-51-9

Gly2: N-ac Gly and N-ac AMPA:

2 acetyl phosphonomethyl amino acetic acid OR n acetyl glyphosate OR n acetylglyphosate OR n acetyl n phosphonomethyl glycine OR 129660-96-4 OR n acetyl ampa OR acetylamino methyl phosphonic acid OR acetylaminomethyl phosphonic acid OR 57637-97-5

These two set of words were combined with each of the key words identified for the technical sections (Search filter words related to the technical section: Toxicology, Residues, E-Fate, Ecotoxicology)

Classification of the studies in the dossier

References: EFSA GD 2092/2011



5.4.1. Classification of the studies in the dossier

- a) Studies that provide data for establishing or refining risk assessment parameters. These studies should be **summarized in detail** (Appendix E of the EFSA admin GD 2019) following the subsequent steps of the OECD Guidance documents (OECD, 2005; 2006) **and should be considered for reliability** (See Point 6)
- b) Studies that are relevant to the data requirement, but in the opinion of the applicant provide only **supplementary** information that does not alter existing risk assessment parameters. **A justification for such a decision should be provided.**
- c) Studies for which relevance cannot be clearly determined. For each of these studies the applicants **should provide an explanation of why the relevance of such studies could not be definitively determined**

Search filter words related to the technical section – Toxicology



[[Gly1]* OR [Gly2]]* AND (tox? OR hazard? OR adverse OR health OR NOAEL OR NOEL OR LOAEL OR LOEL OR BMD? OR in vivo OR in vitro OR invivo OR invitro OR mode of action OR skin? OR eye? OR irrit? OR sensi? OR allerg? OR rat OR rats OR dog? OR rabbit? OR guinea pig? OR mouse OR mice OR metabolism OR metabolite? OR metabolic OR distribution OR adsorption OR excretion OR elimination OR kinetic OR cytochrome OR enzym? OR) (gen? OR muta? OR chromos? OR clastogen? OR DNA OR carcino? OR cancer? OR tumor? OR tumour? OR oncog? OR oncol? OR malign? OR immun? OR neur? OR endocrin? OR hormon? OR gonad? OR disrupt? OR reproduct? OR development? OR malform? OR anomal? OR fertil? OR foet? OR fet? OR matern? OR pregnan? OR embryo? OR epidem? OR medical? OR poison? OR exposure OR operator? OR bystander? OR resident? OR worker? OR occupat? OR biomonitoring OR human exposure OR microbiome OR oxidative stress OR apoptosis OR necrosis OR cytotoxicity OR Polyoxyethyleneamine OR POEA OR surfactant OR risk assessment?)

Search filter words related to the technical section – Residues



[Gly1]* OR [Gly2]]* AND (uptake OR translocation OR rumen OR storage stability OR storage OR stability OR metabolic OR metabolism OR OR breakdown OR nature of residues OR residue? OR magnitude of residues OR process? OR effects of processing OR dessicant OR preharvest OR preemerg? OR *resistant* OR *toleran* OR transgenic OR hydroly? OR rotation? OR succeed? OR plant? OR crop? OR feed? OR animal? OR livestock? OR hen OR cattle OR ruminant? OR goat? OR cow? OR pig? OR dietary OR assessment OR risk assessment OR consum*? OR exposure).

Search filter words related to the technical section – Environmental Fate



[[Gly1]]* AND (soil OR water OR sediment OR degradat? OR photo? OR soil residues OR soil accumulat? OR soil contaminat? OR mobility OR sorption OR column leaching OR aged residue OR leach? OR lysimeter OR groundwater OR contaminat? OR microb? OR exudation OR rhizosphere OR dissipation OR saturated zone OR hydrolysis OR drift OR run-off OR runoff OR drainage OR volat? OR atmosphere OR long-range transport OR short-range transport OR contaminat? OR microb? OR exudation OR rhizosphere OR dissipation OR saturated zone OR hydrolysis OR drift OR run-off OR runoff OR drainage OR volat? OR atmosphere OR long-range transport OR short-range transport OR transport OR micronutrient OR phosphate OR iron OR manganese OR half-life OR halflife OR half-lives OR halflives OR DT50 OR kinetics OR off-site movement OR removal OR drinking water OR water treatment processes OR atmospheric deposition OR tile-drains OR surface water OR monitoring data OR disinfectant OR ozone OR tillage OR infiltration OR hard surface OR rainwater OR rain water OR chelat? OR complex? OR mineralization OR persistence OR ligand OR tox? OR ecotox? OR ?toxic OR ?toxicity OR hazard OR adverse OR endocrine disrupt? OR bioaccumulate? OR biomagnifi? OR bioconcentration OR poison OR effect OR indirect effect? OR direct effect? OR biodivers? OR protection goals OR eco? OR impact OR population OR community OR wildlife OR incident OR wildlife OR incident OR pest OR bird? OR acute OR chronic OR long-term OR mallard OR duck OR quail OR bobwhite OR Anas? OR Colinus? OR wild OR dietary OR aquatic OR fish OR daphni? OR alg? OR chiron? OR sediment dwell? OR benthic OR lemna OR marin? OR estuarine OR crusta? OR gastropod? OR insect OR mollusc OR reptile OR amphib? OR bee? OR apis OR apidae OR bumble? OR colony OR hive OR pollinator).

Search filter words related to the technical section – Ecotoxicology



[[Gly1]]* AND (tox? OR ecotox? OR ?toxic OR ?toxicity OR hazard OR adverse OR endocrine disrupt? OR bioaccumulate? OR biomagnifi? OR bioconcentration OR poison OR effect OR indirect effect? OR direct effect? OR biodivers? OR protection goals OR eco? OR impact OR population OR OR community OR wildlife OR incident OR wildlife OR incident OR pest OR bird? OR acute OR chronic OR long-term OR mallard OR duck OR quail OR bobwhite OR Anas? OR Colinus? OR wild OR dietary OR aquatic OR fish OR daphni? OR alg? OR chiron? OR sediment dwell? OR benthic OR lemna OR marin? OR estuarine OR crusta? OR gastropod? OR insect OR mollusc OR reptile OR amphib? OR plant AND submerge? OR emerge? OR bee? OR apis OR apidae OR bumble? OR colony OR hive OR pollinator OR solitary OR alg? OR aquatic OR freshwater OR vertebrat? OR mammal? OR rat OR mouse OR mice OR rabbit OR hare OR protection OR model? OR vole OR pest OR arthropod? OR beneficials OR typhlodromus OR aphidius OR parasitoid OR predator OR chrysoperla OR Orius OR spider OR worm? OR ?worm OR Eisenia OR soil OR collembol? OR macro organism OR folsomia OR springtail OR decompos? OR micro organisms OR microorganisms OR microbial OR carbon OR nitrogen OR plant? OR vegetative vigo? OR seedling OR germination OR monocot? OR dicot? OR sewage OR activated sludge OR biodegrad? OR bioaccumulation? OR amphib? OR reptile? OR aquatic plant OR beneficial

Toxicology: Example of Reliability criteria for the detailed assessment at full text level



1. Studies were generated according to valid internationally accepted testing guidelines (preferably according to GLP). For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines are met.
2. The validity criteria from relevant test guidelines can be extrapolated across different species and different study designs
3. For tests including vertebrates, compliance of the batches used in toxicity studies compared to the technical specification Test substance
4. Identity of the test material (Glyphosate) is sufficiently documented and reported (i.e. purity, source, content, storage conditions)
5. The test substance is dissolved in water or non-toxic solvent
6. Species used in the experimental clearly reported, including experimental conditions (where relevant): strain, adequate age/life stage, body weight, acclimatization, temperature, pH, oxygen content, housing, light conditions, incubation conditions, feeding.
7. Only glyphosate is the tested substance (excluding mixture), and information on application of glyphosate is described Study Design
8. Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
9. Analytical verifications performed in test media (concentration)/ collected samples, stability of glyphosate in test media documented
10. The test has been tested in several dose levels (at least 3) including a positive/negative control where relevant
11. Suitable exposure throughout the whole exposure period was demonstrated and reported
12. There is included a sufficient number of animals per group to facilitate statistical analysis: mortality in control groups reported, observations/findings in positive/negative control clearly reported (where relevant).
13. Assessment of the statistical power of the assay is possible with reported data.
14. If statistical methodology was applied for findings reported, then the data analysis applied is clearly reported (e.g., checking the plots and confidence intervals)
15. Description of the observations (including time-points), examinations, analyses performed, or necropsy is well documented Endpoint
16. The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite)
17. An endpoint can be derived. Findings do deliver a regulatory endpoint, and/or is useful as supporting information
18. A clearly concentration response relationship is reported
19. Not previous exposure to other chemicals is documented (where relevant).

Residues: Example of Reliability criteria for the detailed assessment at full text level



1. For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines met.
2. Previous exposure to other chemicals is documented (where relevant).
3. The test substance is dissolved in water or non-toxic solvent
4. Glyphosate, when the test substance, is sufficiently documented - identity of the test material reported (i.e. purity, source, content, storage conditions)
5. Only glyphosate is the tested substance (excluding mixture), and information on application of glyphosate is described
6. The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite)
7. Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
8. Analytical verifications performed in test media (concentration)/ collected samples, stability of glyphosate in test media documented
9. An endpoint can be derived. Findings do deliver a regulatory endpoint, and/or is useful as supporting information
10. Assessment of the statistical power of the assay is possible with reported data.
11. If statistical methodology was applied for findings reported, then the data analysis applied is clearly reported (e.g., checking the plots and confidence intervals)
12. Field locations relevant/comparable to European conditions. Soils not completely matching the OECD criteria but from Europe or to some extent representative for the European Agriculture.
13. Characterization of soil: texture (sandy loam, silty loam, loam, loamy sand), pH (5.5-8.0), cation exchange capacity, organic carbon (0.5-2-5%), bulk density, water retention, microbial biomass (~1% of organic carbon)
14. For tests including agricultural soils, they should not have been treated with test substance or similar substances for a minimum of 1 year
15. Data on precipitation is recorded
16. Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate
17. Analytical methods clearly described and adequate Statement of specificity and sensitivity of the analytical methods is included
18. The residue data can be linked to a clearly described GAP Table appropriate in the context of the renewal of approval of Glyphosate (crop, application method, doses, intervals, PHI).
19. Glyphosate monitoring data: description of matrix analysed, and analytical methods fully described as above.

Ecotoxicology: Example of Reliability criteria for the detailed assessment at full text level



1. For guideline-compliant studies (GLP studies): OECD, OPPTS, ISO, and others. The validity/quality criteria listed in the corresponding guidelines met.
2. Not previous exposure to other chemicals is documented (where relevant).
3. For aquatic studies, the test substance is dissolved in water or where a carrier is required, it is appropriate (non-toxic) and a carrier control / positive control is considered in the test design.
4. Glyphosate or its metabolites (AMPA and HMPA), is sufficiently documented, and reported (i.e. purity, source, content, storage conditions)
5. For tests including vertebrates, compliance of the batches used in toxicity studies compared to the technical specification
6. Species used in the experimental clearly reported, including source, experimental conditions (where relevant): strain, adequate age/life stage, body weight, acclimatization, temperature, pH, oxygen (dissolved oxygen for aquatic tests) content, housing, light conditions, humidity (terrestrial species) incubation conditions, feeding.
7. The validity criteria from relevant test guidelines can be extrapolated across different species but not necessarily across different test designs. If different, then the nature of the difference and impact should ideally be discussed.
8. Only glyphosate or its metabolites is the test substance (excluding mixture), and information on application of the test substance is described.
9. The endpoint measured can be considered a consequence of glyphosate (or a glyphosate metabolite)
10. Study design / test system is well described, including when relevant: concentration in exposure media (dose rates, volume applied, etc.), dilution/mixture of test item (solvent, vehicle) where relevant.
11. Analytical verifications performed in test media (concentration)/ collected samples, stability of the test substance in test medium should be documented
12. An endpoint can be derived. Findings do deliver a regulatory endpoint, and/or is useful as supporting information
13. The test has been tested in several dose levels (at least 3) including a positive/negative control where relevant
14. Suitable exposure throughout the whole exposure period was demonstrated and reported
15. A clearly concentration response relationship is reported – in studies where the dose response test design is employed.
16. There is included a sufficient number of animals per group to facilitate statistical analysis: mortality in control groups reported, observations/findings in positive/negative control clearly reported (where relevant).
17. Assessment of the statistical power of the assay is possible with reported data.
18. If statistical methodology was applied for findings reported, then the data analysis applied is clearly reported (e.g., checking the plots and confidence intervals)
19. Description of the observations (including time-points), examinations, and analyses performed, with (where relevant) dissections being well documented.

Ecotoxicology (contd.): Example of Reliability criteria for the detailed assessment at full text level



20. For terrestrial ecotox studies in the lab or the field, the substrates used should be adequately described e.g. nature of substrate i.e. species of leaf or soil type.
 - 20.1. Field locations relevant/comparable to European conditions. Soils not completely matching the OECD criteria but from Europe or to some extent representative for the European Agriculture.
 - 20.2. Characterization of soil: texture (sandy loam, silty loam, loam, loamy sand), pH (5.5-8.0), cation exchange capacity, organic carbon (0.5-2-5%), bulk density, water retention, microbial biomass (~1% of organic carbon).
 - 20.3. Other soils where information on characterization by the parameters: pH, texture, CEC, organic carbon, bulk density, water holding capacity, microbial biomass.
 - 20.4. For tests including agricultural soils, they should not have been treated with test substance or similar substances for a minimum of 1 year.
 - 20.5. For soil samples, sampling from A-horizon, top 20 cm layers; soils freshly from field preferred (storage max 3 months at 4 +/- 2°C).
 - 20.6. Data on precipitation is recorded.
21. For lab terrestrial studies, the temperature was appropriate to the species being tested and generally should fall within the range between 20-25°C and soil moisture / relative humidity was reported.
22. For bee studies, temperature of the study should be appropriate to species.
23. For lab aquatic studies
 - 23.1. The source and / or composition of the media used should be described.
 - 23.2. The temperature of the water should be appropriate to the species being tested and generally fall within the 15-25°C.
24. The residue data can be linked to a clearly described GAP Table appropriate in the context of the renewal of approval of Glyphosate (crop, application method, doses, intervals, PHI).
25. Analytical results present residues measurements which can be correlated with the existing residues definition of glyphosate, and where relevant its metabolites.
26. Analytical methods clearly described and adequate Statement of specificity and sensitivity of the analytical methods is included.
27. Assessment of the ECX for the width of the confidence interval around the median value; and the certainty on the level of protection offered by the median ECX.