CONCLUSION ON PESTICIDE PEER REVIEW

Conclusion on the peer review of the pesticide risk assessment of the active substance 6-benzyladenine[1]

European Food Safety Authority[2]

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SUMMARY

6-benzyladenine is one of the 295 substances of the fourth stage of the review programme covered by Commission Regulation (EC) No 2229/2004[3], as amended by Commission Regulation (EC) No 1095/2007[4] . In accordance with the Regulation, at the request of the Commission of the European Communities (hereafter referred to as 'the Commission'), the EFSA organised a peer review of the initial evaluation, i.e. the Draft Assessment Report (DAR), provided by the United Kingdom being the designated rapporteur Member State (RMS). The peer review process was subsequently terminated following the applicant's decision, in accordance with Article 24e, to withdraw support for the inclusion of 6-benzyladenine in Annex I to Council Directive 91/414/EEC.

Following the Commission Decision of 6 December 2008 (2008/941/EC)[5] concerning the non-inclusion of 6-benzyladenine in Annex I to Council Directive 91/414/EEC and the withdrawal of authorisations for plant protection products containing that substance, the applicants Fine Agrochemicals Limited and Valent Biosciences Corporation, made a resubmission application for the inclusion of 6-benzyladenine in Annex I in accordance with the provisions laid down in Chapter III of Commission Regulation (EC) No. 33/2008[6]. The resubmission dossier included further data in response to the issues identified in the DAR.

In accordance with Article 18 of Commission Regulation (EC) No. 33/2008, the United Kingdom being the designated RMS, submitted an evaluation of the additional data in the format of an Additional Report. The Additional Report was received by the EFSA on 27 November 2009.

In accordance with Article 19 of Commission Regulation (EC) No. 33/2008, the EFSA distributed the Additional Report to Member States and the applicants for comments on 1 December 2009. . The EFSA collated and forwarded all comments received to the Commission on 20 January 2010.

In accordance with Article 20, following consideration of the Additional Report, the comments received, and where necessary the DAR, the Commission requested the EFSA to conduct a focused peer review in the area of mammalian toxicology and deliver its conclusions on 6-benzyladenine.

1 On request from the European Commission, Question No EFSA-Q-2010-00148, issued on 27 August 2010.
2 Correspondence: praper@efsa.europa.eu
3 OJ L 379, 24.12.2004, p.13
4 OJ L 246, 21.9.2007, p. 19
5 OJ L 335, 13.12.2008, p. 11
6 OJ L 15, 18.01.2008, p.5

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The conclusions laid down in this report were reached on the basis of the evaluation of the representative uses of 6-benzladenine as a plant growth regulator on maize and apples as proposed by the applicant. Full details of the representative uses can be found in Appendix A to this report.

No critical areas of concern were identified in the area of physical-chemical properties. One data gap for a plant method was identified.

No critical areas of concern or data gaps were identified in the area of mammalian toxicology. The risk assessment is finalised.

There were no critical areas of concern in the residues section, however a data gap was identified for quantitative evidence of the natural occurrence of 6-benzyladenine in edible crops, and the consumer risk assessment could not be finalised.

In soil, 6-benzyladenine exhibits very low persistence and did not show any metabolite needing further consideration. 6-benzyladenine is stable to hydrolysis; however, in water/sediment systems it is degraded relatively rapidly. According to the FOCUS GW models available (using worst case input parameters), it is not expected that 6-benzyladenine will contaminate groundwater above the limit of 0.1µg/L when used according to the representative uses proposed (FOCUS 2000, 2007).

No critical areas of concern were identified in the area of ecotoxicology; however a data gap was identified to address the effects of the formulation to aquatic plants and to the most sensitive algae species, for which the risk assessment could not be finalised.

KEY WORDS

6-benzyladenine, peer review, risk assessment, pesticide, plant growth regulator.

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BACKGROUND

Legislative framework

Commission Regulation (EC) No 2229/2004[7], as amended by Commission Regulation (EC) No 1095/2007[8] , lays down the detailed rules for the implementation of the fourth stage of the work programme referred to in Article 8(2) of Council Directive 91/414/EEC. This regulates for the European Food Safety Authority (EFSA) the procedure for organising, upon request of the Commission of the European Communities (hereafter referred to as 'the Commission'), a peer review of the initial evaluation, i.e. the Draft Assessment Report (DAR), provided by the designated rapporteur Member State.

Commission Regulation (EC) No 33/2008[9] lays down the detailed rules for the application of Council Directive 91/414/EEC for a regular and accelerated procedure for the assessment of active substances which were part of the programme of work referred to in Article 8(2) of Council Directive 91/414/EEC but which were not included in Annex I. This regulates for the EFSA the procedure for organising the consultation of Member States and the applicant(s) for comments on the Additional Report provided by the designated RMS, and upon request of the Commission the organisation of a peer review and/or delivery of its conclusions on the active substance.

Peer review conducted in accordance with Commission Regulation (EC) No 2229/2004

6-benzyladenine is one of the 295 substances of the fourth stage of the review programme covered by Commission Regulation (EC) No 2229/2004, as amended by Commission Regulation (EC) No 1095/2007. In accordance with the Regulation, at the request of the Commission, the EFSA organised a peer review of the DAR provided by the designated rapporteur Member State, France, which was received by the EFSA on 30 October 2007 (France 2007)

The peer review was initiated on 25 February 2008 by dispatching the DAR to Member States and the applicants Fine Agrochemicals Limited and Valent Biosciences Corporation, for consultation and comments. In addition, the EFSA conducted a public consultation on the DAR. The comments received were collated by the EFSA and forwarded to the RMS for compilation and evaluation in the format of a Reporting Table.

The peer review process was subsequently terminated following the applicants' decision, in accordance with Article 24e, to withdraw support for the inclusion of 6-benzyladenine in Annex I to Council Directive 91/414/EEC.

Peer review conducted in accordance with Commission Regulation (EC) No 33/2008

Following the Commission Decision of 6 December 2008 (2008/941/EC)[10] concerning the non-inclusion of 6-benzyladenine in Annex I to Council Directive 91/414/EEC and the withdrawal of authorisations for plant protection products containing that substance, the applicants Fine Agrochemicals Limited and Valent Biosciences Corporation, made a resubmission application for the inclusion of 6-benzyladenine in Annex I in accordance with the provisions laid down in Chapter III of Commission Regulation (EC) No. 33/2008. The resubmission dossier included further data in response to the issues identified in the DAR, in all sections

In accordance with Article 18, the United Kingdom, being the designated RMS, submitted an evaluation of the additional data in the format of an Additional Report (United Kingdom 2009). The Additional Report was received by the EFSA on 27 November 2009.

[7] OJ L 379, 24.12.2004, p.13
[8] OJ L 246, 21.9.2007, p.19
[9] OJ L 15, 18.01.2008, p.5
[10] OJ L 335, 13.12.2008, p. 11

In accordance with Article 19, the EFSA distributed the Additional Report to Member States and the applicant(s) for comments on 1 December 2009. In addition, the EFSA conducted a public consultation on the Additional Report. The EFSA collated and forwarded all comments received to the Commission on 20 January 2010. At the same time, the collated comments were forwarded to the RMS for compilation in the format of a Reporting Table. The applicants were invited to respond to the comments in column 3 of the Reporting Table. The comments and the applicants' response was evaluated by the RMS in column 3.

In accordance with Article 20, following consideration of the Additional Report, the comments received, and where necessary the DAR, the Commission decided to further consult the EFSA. By written request, received by the EFSA on 24 February 2010, the Commission requested the EFSA to arrange a consultation with Member State experts as appropriate and deliver its conclusions on 6-benzyladenine within 6 months of the date of receipt of the request, subject to an extension of a maximum of 90 days where further information were required to be submitted by the applicant(s) in accordance with Article 20(2).

The scope of the peer review and the necessity for additional information, not concerning new studies, to be submitted by the applicants in accordance with Article 20(2), was considered in a telephone conference between the EFSA, the RMS, and the Commission on 12 February 2010, the applicants were also invited to give their view on the need for additional information. On the basis of the comments received, the applicant's response to the comments, and the RMS's subsequent evaluation thereof, it was concluded that the EFSA should organise a consultation with Member State experts in the areas of mammalian toxicology and that further information should be requested from the applicants in the areas of physical-chemical properties and ecotoxicology.

The outcome of the telephone conference, together with EFSA's further consideration of the comments, is reflected in the conclusions set out in column 4 of the Reporting Table. All points that were identified as unresolved at the end of the comment evaluation phase and which required further consideration, including those issues to be considered in consultation with Member State experts, and the additional information to be submitted by the applicants, were compiled by the EFSA in the format of an Evaluation Table.

The conclusions arising from the consideration by the EFSA, and as appropriate by the RMS, of the points identified in the Evaluation Table, together with the outcome of the expert discussions where these took place, was reported in the final column of the Evaluation Table.

A final consultation on the conclusions arising from the peer review of the risk assessment took place with Member States via a written procedure in July 2010.

This conclusion report summarises the outcome of the peer review of the risk assessment on the active substance and the representative formulation evaluated on the basis of the representative uses as a plant growth regulator on maize and apples, as proposed by the applicants. A list of the relevant end points for the active substance as well as the formulation is provided in Appendix A. In addition, a key supporting document to this conclusion is the Peer Review Report (EFSA 2010), which is a compilation of the documentation developed to evaluate and address all issues raised in the peer review, from the initial commenting phase to the conclusion. The Peer Review Report comprises the following documents:

- the comments received,
- the Reporting Table (revision 1-1, 09 February 2010),
- the Evaluation Table (27 August 2010)
- the reports of the scientific consultation with Member State experts (where relevant).

Given the importance of the DAR and the Additional Report including its addendum (compiled version of July 2010 containing all individually submitted addenda; United Kingdom 2010)) and the Peer Review Report, both documents are considered respectively as background documents A and B to this conclusion.

THE ACTIVE SUBSTANCE AND THE FORMULATED PRODUCT

6-benzyladenine is the common name for N^6-benzyladenine (IUPAC), this compound does not have an ISO common name.

The representative formulated product for the evaluation was 'MaxCel' a soluble concentrate formulation (SL) containing 20 g/l 6-benzyladenine.

The representative uses evaluated comprise outdoor foliar spraying as a plant growth regulator on apples and maize. The use on maize is for seed production only. Full details of the GAP can be found in the list of end points in Appendix A.

CONCLUSIONS OF THE EVALUATION

1. Identity, physical/chemical/technical properties and methods of analysis

The minimum purity of 6-benzyladenine as manufactured should be not less than 973 g/kg. No relevant impurities were identified. There is currently no FAO specification for this compound

The main data regarding the identity of 6-benzyladenine and its physical and chemical properties are given in Appendix A.

The submitted method of analysis for plants is not acceptable due to unexplained low recoveries and communications between the primary and ILV laboratories. Therefore a data gap has been identified for a method of analysis for apples with ILV. A method is not required for the maize use as no MRL is proposed (see section 3), although a LC-MS/MS method was provided without ILV. A method of analysis for animal products is not required as no MRLs are proposed. HPLC-MS/MS methods are available for soil, water and air. A method of analysis for body fluids and tissues is not required as the active substance is not classified as toxic or very toxic.

2. Mammalian toxicity

6-benzyladenine was discussed at the PRAPeR Expert's Meeting on mammalian toxicology (PRAPeR 76) in May-June 2010.

Overall, it was noted that the available database was rather limited with respect to repeated short-term and long term carcinogenicity exposure. Only a few original studies were submitted, the remaining information was collected from published papers or summaries from other authorities evaluations. In mammals 6-benzyladenine is shown to be harmful if swallowed (R22). The substance is of low acute toxicity after dermal and inhalation exposure, it is neither a skin or eye irritant nor a skin sensitizer.

Extensively and rapidly absorbed and excreted after oral administration; oral absorption is ~80%. The target organ in a valid 13-week rat study is the kidney (dilated renal pelvises, mineralised semifluid material within the pelvises and secondary inflammation) with a NOAEL of 41 mg/kg bw/day. The observed effects and the established NOAEL are supported in two additional limited rat studies (diet and gavage) however these are only regarded as supplementary information.

PRAPeR 76 concluded that 6-benzyladenine was of no genotoxic concern based on the results from *in vitro* and *in vivo* mutagenicity studies.

No acceptable long-term studies were submitted; only a short summary of the Japanese authority's evaluations of a 2 year rat study (purity not stated) is available. A full and valid evaluation of this study was not possible due to lack of raw data. PRAPeR76 concluded that no long term studies were needed in view of the proposed GAP which would not lead to a relevant consumer exposure or long term exposure of operators or workers. It was noted that a carcinogenic potential of the substance could not be dismissed due to the absence of appropriate data, but this was not a concern for these specific uses due to above mentioned reasons.

In the 2-generation study in rats, no adverse effects on fertility or reproductive parameters were observed, but lower body weight gain and a delay in sexual maturation for the offspring were seen in the presence of maternal toxicity leading to a maternal and offspring NOAEL of 30 mg/kg bw/day and a reproductive NOAEL of 115 mg/kg bw/day. In the rat developmental study lower foetal body weight, increased incidence of hydrocephalus, and skeletal effects (unossified sternebrae, incompletely ossified phalanges and misaligned sternebrae) were observed at a dose with maternal toxicity (reduced body weight gain and decreased food consumption). The hydrocephalus is a rare finding and was regarded as a congenital effect and the PRAPeR76 meeting proposed the risk phrase R63 "Possible risk of harm to the unborn child". The NOAEL for maternal and developmental effects in rats was 50 mg/kg bw/day. No teratogenic effects were seen in the rabbit study with a developmental NOAEL of 20 mg/kg bw/day based on lower foetal body weight and maternal NOAEL <10 mg/kg bw/day based on reduced body weight gain.

No Acceptable Daily Intake (ADI) or Acute Reference Dose (ARfD) values were considered necessary since no consumer exposure was expected for the representative uses, also based on the indication in the residue assessment that 6-benzyladenine was a naturally occurring compound. However, during the preparation of the EFSA conclusion, a data gap was identified by the residue experts for further quantitative evidence that 6-benzyladenine is a naturally occurring compound, hence the consumer risk assessment could not be finalised. It is noted that the setting of ADI and ARfD might be needed once the clarification on the natural occurrence of 6-benzyladenine is provided.

The Acceptable Operator Exposure Level (AOEL) is 0.03 mg/kg bw/day based on a LOAEL from developmental toxicity study in rabbits. A safety factor of 300 was applied to account for the use of a LOAEL value. The estimated operator exposure is below the AOEL without the use of personal protective equipment for all the representative uses (German model for field and orchard use, and UK POEM for field use only) as well as bystander exposure. Estimated worker exposure for re-entry in treated apple (orchards) is below the AOEL when gloves are worn (12%). For maize seed production (field use) the worker exposure is below the AOEL (2%) without PPE. Bystander exposure is below the AOEL.

3. Residues

The metabolism of 6-benzyladenine was investigated in a foliar applied metabolism study. The metabolites identified in this study were either conjugates of 6-benzyladenine or benzoic acid. At harvest no significant residues were present and the residue definition for risk assessment and monitoring is by default 6-benzyladenine. The maize use does not need to be considered for residues as it is only for seed production. There is no risk of significant residues of 6-benzyladenine in succeeding crops given the rapid degradation of this substance in soil. The DT50 range in soil is between 1 and 1.2 days. Therefore no studies on residues in succeeding crops are required for 6-benzyladenine. The need for animal studies and processing studies are not triggered because of the low residues. Six residue trials were available for the North of Europe and 4 for the South. The trials were overdosed and all gave residues of <0.005 mg/kg. The reduced data set can be accepted for this low residue situation.

It was initially proposed that 6-benzyladenine is a naturally occurring plant hormone. In view of this, and given that the available data indicated that residues would be expected to be low, it was proposed that consumer exposure would not be significant. However, during the writing of the conclusion it was questioned whether 6-benzyladenine is naturally occurring, at least in edible crops. The paper cited in the Additional Report (Malkawi, 2007) was examined, and it is clear that 6-benzyladenine itself was not found, but only similar compounds. Since this paper was the key information to support the proposal that 6-benzyladenine is naturally occurring a data gap is identified for further quantitative evidence that 6-benzyladenine is a naturally occurring compound, and the consumer risk assessment cannot be finalised at this stage.

4. Environmental fate and behaviour

Investigation of the route of degradation of 6-benzyladenine did not show any metabolite needing further consideration with respect to soil or groundwater contamination. Degradation rate experiments show that 6-benzyladenine exhibits very low persistence in soil under laboratory conditions. Mineralization reached a 67.8 – 86.6 % AR and non extractable residue 12 – 21 % AR after 120 d. Field studies are available in two Korea sites where 6-benzyladenine exhibited low persistence in soil. The available photolysis study in soil shows that photolysis is unlikely to be a significant route of dissipation compared with biotic degradation in the absence of light. PEC soil were calculated with worst case field half-lives.

6-benzyladenine may be considered to be medium to low mobile in soil on the basis of batch adsorption/desorption experiments.

6-benzyladenine is stable to hydrolysis (pH 5, 7 and 9). Photolysis may contribute only slightly to the degradation of 6-benzyladenine in water. Main metabolite resulting from aqueous photolysis identified as adenine. In water/sediment systems 6-benzyladenine is degraded relatively rapidly. Dissipation from the water phase is fast due to partitioning to the sediment. PEC_{SW} has been calculated with FOCUS SW models up to step 4 to consider the effect of mitigation from a 10 m no-spray buffer zone (FOCUS 2001).

According to the FOCUS GW models available (using worst case input parameters), it is not expected that 6-benzyladenine will contaminate groundwater above the limit of 0.1µg/L when used according the good agriculture practices proposed for the representative uses (FOCUS 2000, 2007).

5. Ecotoxicology

The acute, short-term and long-term risk to birds via dietary exposure was assessed as low at tier 1 for the representative uses. The acute and long-term risk to mammals via dietary exposure was assessed as low at tier 1 for the representative uses. The risk assessment to earthworm-eating birds and mammals was not required since the $logP_{ow}$ was 2.16. The risk to birds and mammals from consumption of contaminated drinking water was assessed as low.

6-benzyladenine is very toxic to aquatic organisms and the most sensitive species was *Lemna gibba*. The toxicity of the formulation is 2-order of magnitude higher than expected from the content of the active substance for fish, aquatic invertebrates and algae. Therefore, the endpoints for the formulation were used for the risk assessment. The study to assess the effects of the formulation on *Lemna gibba* was not considered valid. In addition, the algae species tested with the formulation was not the most sensitive species tested in the studies with the active substance, and some uncertainty regarding the toxicity of the formulation to algae remains. Therefore a data gap was identified during the peer review for the applicant to submit studies with the formulation MaxCel on aquatic plants and the most sensitive algae species. Overall, the risk assessment for aquatic organisms could not be finalised.

For the non-target arthropods the in-field and off-field risk for the two standard test species *Aphidius rhopaloshipi* and *Typhlodromus pyri* was assessed as low for the use in maize. For the use in apples the off-field risk was assessed as low for both *A. rhopaloshipi* and *T. Pyri*, The in-field risk was assessed as low for *T. pyri*. However, the in field HQ for *A. rhopalosiphi* exceeded the trigger of 2 recommended in the ESCORT-2 guidance (Candolfi *et al*., 2001). Overall, considering the short foliar half-life and the single application, it is reasonable to assume that the recolonisation will occur within 1 year.

The risk to bees, earthworms, non-target soil micro-organisms, non-target plants and the function of waste water treatment plants was assessed as low for all representative uses.

6. Overview of the risk assessment of compounds listed in residue definitions triggering assessment of effects data for the environmental compartments

6.1. Soil

Compound (name and/or code)	Persistence	Ecotoxicology
6-benzyladenine	Very low to low persistent (DT_{50lab} = 1.0 1.3 d; $DT5_{0field}$ = 7-8 d)	The risk of 6-benzyladenine to earthworms was assessed as low.

6.2. Ground water

Compound (name and/or code)	Mobility in soil	>0.1 µg/L 1m depth for the representative uses (at least one FOCUS scenario or relevant lysimeter)	Pesticidal activity	Toxicological relevance	Ecotoxicological activity
6-benzyladenine	medium to low mobile (K_{Foc} = 282 – 1945 mL/g)	FOCUS GW = no scenarios exceed 0.1µg/L limit.	Yes		6-benzyladenine is very toxic to aquatic organisms. The risk assessment for the aquatic organisms could not be finalised.

6.3. Surface water and sediment

Compound (name and/or code)	Ecotoxicology

6-benzyladenine	6-benzyladenine is very toxic to aquatic organisms. The risk assessment for aquatic organisms could not be finalised.

6.4. Air

Compound (name and/or code)	**Toxicology**
6-benzyladenine	Rat LC_{50} inhalation > 5.0 mg/L air, 4 h. whole body exposure – no classification proposed

LIST OF STUDIES TO BE GENERATED, STILL ONGOING OR AVAILABLE BUT NOT PEER REVIEWED

- Method of analysis for apples with ILV (relevant for the apple use only; submission date proposed by the applicants: unknown; see section 1).
- Further quantitative evidence to demonstrate that 6-benzyladenine is naturally occurring in edible crops. If this is not clearly demonstrated then the need for toxicological reference values will need to be reconsidered (relevant for all representative uses evaluated; submission date proposed by the applicants: unknown, see section 1).
- Data gap was identified for applicant to provide a study to assess the effects of formulation 'MaxCel' on aquatic plants (relevant for all representative uses evaluated; submission date proposed by the applicants: unknown, see section 5).
- Data gap was identified for applicant to provide a study to assess the effects of formulation 'MaxCel' on the most sensitive algae species (relevant for all representative uses evaluated; submission date proposed by the applicants: unknown, see section 5).

PARTICULAR CONDITIONS PROPOSED TO BE TAKEN INTO ACCOUNT TO MANAGE THE RISK(S) IDENTIFIED

None proposed

ISSUES THAT COULD NOT BE FINALISED

- The consumer risk assessment cannot be finalised because it is not yet clear whether 6-benzyladenine occurs naturally in edible crops.
- The risk assessment for the aquatic organisms could not be finalised.

CRITICAL AREAS OF CONCERN

None proposed.

REFERENCES

France 2007,. Draft Assessment Report (DAR) on the active substance 6-benzyladenine. prepared by the rapporteur Member State France in the framework of Directive 91/414/EEC, October 2007

United Kingdom 2009. Additional Report to the Draft Assessment Report on the active substance 6-benzyladenine prepared by the rapporteur Member State the United Kingdom in the framework of Commission Regulation (EC) No 33/2008, November 2009

United Kingdom 2010. Final Addendum to the Additional Report on 6-benzyladenine, compiled by EFSA, July 2010

EFSA (European Food Safety Authority), 2010 Peer Review Report to the conclusion regarding the peer review of the pesticide risk assessment of the active substance 6-benzyladenine EFSA Scientific Report.

Guidance documents[11]:

FOCUS (2001). "FOCUS Surface Water Scenarios in the EU Evaluation Process under 91/414/EEC". Report of the FOCUS Working Group on Surface Water Scenarios, EC Document Reference SANCO/4802/2001-rev.2. 245 pp.

FOCUS (2007). "Landscape And Mitigation Factors In Aquatic Risk Assessment. Volume 1. Extended Summary and Recommendations". Report of the FOCUS Working Group on Landscape and Mitigation Factors in Ecological Risk Assessment, EC Document Reference SANCO/10422/2005 v2.0. 169 pp.

FOCUS (2000). "FOCUS Groundwater Scenarios in the EU review of active substances". Report of the FOCUS Groundwater Scenarios Workgroup, EC Document Reference SANCO/321/2000-rev.2. 202 pp, as updated by the Generic Guidance for FOCUS groundwater scenarios, version 1.1 dated April 2002

Malkawi 2007: Malkawi A, Jensen B, Langille A, Plant Hormones Isolated from "Katahdin" Potato Plant Tissues and the Influence of Photoperiod and Temperature on Their Levels in Relation to Tuber Induction, J Plant Growth Regul (207) 26: 308-317

Candolfi MP, Barrett KL, Campbell PJ, Forster R, Grandy N, Huet M-C, Lewis G, Oomen PA, Schmuck R and Vogt H, 2001. Guidance document on regulatory testing and risk assessment procedures for plant protection products with non-target arthropods. Proceedings from the ESCORT-2 workshop, Wageningen, 21-23 March 2000. SETAC Office, Pensacola, Florida, USA, 46 pp.

[11] For further guidance documents see http://ec.europa.eu/food/plant/protection/resources/publications_en.htm#council (EC) or http://www.oecd.org/document/59/0,3343,en_2649_34383_1916347_1_1_1_1,00.html (OECD)

APPENDICES

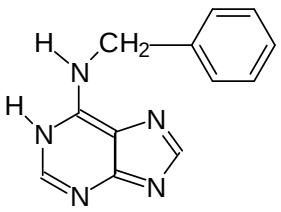
APPENDIX A – LIST OF END POINTS FOR THE ACTIVE SUBSTANCE AND THE REPRESENTATIVE FORMULATION

Identity, Physical and Chemical Properties, Details of Uses, Further Information

Active substance (ISO Common Name) ‡	N^6-benzyladenine Note: There is no ISO common name for this substance; the name "6-benzyladenine" has been used in the literature but has no official status
Function (*e.g.* fungicide)	Fruit thinning Plant growth regulator

Rapporteur Member State	France/UK
Co-rapporteur Member State	/

Identity (Annex IIA, point 1)

Chemical name (IUPAC) ‡	N^6-benzyladenine
Chemical name (CA) ‡	N-(phenylmethyl)-1H-purin-6-amino
CIPAC No ‡	829
CAS No ‡	1214-39-7
EC No (EINECS or ELINCS) ‡	214-92-7-5
FAO Specification (including year of publication) ‡	None
Minimum purity of the active substance as manufactured ‡	973 g/kg (combined task force specification)
Identity of relevant impurities (of toxicological, ecotoxicological and/or environmental concern) in the active substance as manufactured	None
Molecular formula ‡	$C_{12}H_{11}N_5$
Molecular mass ‡	225.26
Structural formula ‡	

Physical and chemical properties (Annex IIA, point 2)

Melting point (state purity) ‡	229°C to 230.5°C (*99%*)
Boiling point (state purity) ‡	No boiling point observed up to a temperature of 360°C (98.6%)
Temperature of decomposition (state purity)	Decomposition observed following melting, at temperatures above ~ 245°C (98.6%)
Appearance (state purity) ‡	white powder with no detectable odour (99.9%)
Vapour pressure (state temperature, state purity) ‡	6 x 10^{-7} Pa (98.5%) at 25°C
Henry's law constant ‡	1.77 x 10^{-6} $Pa.m^3.mol^{-1}$ at 25 °C (QSAR) Calculated to be 2.98 x 10^{-6} $Pa.m^3.mol^{-1}$ at 20 °C
Solubility in water (state temperature, state purity and pH) ‡	at 20°C (99%) **pH** / **Solubility (g/L)** Pure water / 65.7 mg/L pH 4.0 Buffer / 116 mg/L pH 7.0 Buffer / 64.5 mg/L pH 9.0 Buffer / 77.8 mg/L
Solubility in organic solvents ‡ (state temperature, state purity)	at 20°C (99%) **Solvent** / **Solubility (mg/L)** n-heptan / 0.15 mg/L xylene / 9.78 mg/L 1,2-dichloro-ethane / 96.9 mg/L methanol / 5820 mg/L acetone / 1130 mg/L Ethyl acetate / 493 mg/L
Surface tension ‡ (state concentration and temperature, state purity)	at 90% saturated solution and at 20°C : 70.0 mN/m (Not surface active)
Partition co-efficient ‡ (state temperature, pH and purity)	at 20°C (99%). Tested solution / Log Pow PH 4.0 buffer solution : / 1.86 PH 7.0 buffer solution : / 2.16 PH 9.0 buffer solution : / 2.13
Dissociation constant (state purity) ‡	pKa_1 = 9.4 (99%) pKa_2 = 7.3 (99%)

UV/VIS absorption (max.) incl. ε ‡ (state purity, pH)	Purity 99 % The molar extinction coefficients were determined to be: In methanol/water 9/1 λ / ε (dm^3/mol/cm): 207 (maximum) 20800; 270 (maximum) 18800; 290 10800 * In methanol/ HCl 1M 9/1 λ max / ε (dm^3/mol/cm): 209 (maximum) 24900; 270 (maximum) 19000; 290 1000 * In methanol/ NaOH 1M 9/1 λ max / ε (dm^3/mol/cm): 220 (maximum) 21600; 276 (maximum) 18600; 284 (shoulder) 14000; 290 2000 *
Flammability ‡ (state purity)	not highly flammable (99%)
Explosive properties ‡ (state purity)	no explosive properties (99%)
Oxidising properties ‡ (state purity)	no oxidising properties (99%)

*Graphically estimated by RMS

Summary of representative uses evaluated (*6-Benzyladenine*)

Crop and/ or situation (a)	Member State or Country	Product name	F G or I (b)	Pests or Group of pests controlled (c)	Preparation		Application				Application rate per treatment (for explanation see the text in front of this section)			PHI (days) (m)	Remarks
					Type (d-f)	Conc. of as (i)	method kind (f-h)	growth stage & season (j)	number min/ max (k)	interval between applications (min)	g as/hL min – max (l)	water L/ha min – max	g as/ha min – max (l)		
Maize (seed production)	-	MaxCel	F	Anti stress and anti freezing (growth regulator)	SL	20 g/L	Spraying	6 leaves (BBCH 16) Spring/ Summer	1	Not relevant	6	300 L	18	Not relevant	(1), (2)
Apples	-	MaxCel	F	Fruit thinning	SL	20 g/L	Spraying	Fruit between 7 and 15 mm (BBCH 71-74) Spring/ Summer	1	Not relevant	7.5 – 15	1000 L	75 – 150	90	(1), (2)

(1) Consumer risk assessment could not finalised
(2) The risk assessment for aquatic organisms could not be finalized.

* For uses where the column "Remarks" is marked in grey further consideration is necessary. Uses should be crossed out when the notifier no longer supports this use(s).
(a) For crops, the EU and Codex classifications (both) should be taken into account; where relevant, the use situation should be described (e.g. fumigation of a structure)
(b) Outdoor or field use (F), greenhouse 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) All abbreviations used must be explained
(g) Method, e.g. high volume spraying, low volume spraying, spreading, dusting, drench
(h) Kind, *e.g.* overall, broadcast, aerial spraying, row, individual plant, between the plant- type of equipment used must be indicated
(i) g/kg or g/L. Normally the rate should be given for the active substance (according to ISO) and not for the variant in order to compare the rate for same active substances used in different variants (e.g. fluoroxypyr). **In certain cases, where only one variant is synthesised, it is more appropriate to give the rate for the variant (e.g. benthiavalicarb-isopropyl).**
(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) Indicate the minimum and maximum number of application possible under practical conditions of use
(l) The values should be given in g or kg whatever gives the more manageable number (e.g. 200 kg/ha instead of 200 000 g/ha or 12.5 g/ha instead of 0.0125 kg/ha
(m) PHI - minimum pre-harvest interval

Analytical methods for the active substance (Annex IIA, point 4.1)

Technical as (analytical technique)	**Fine Agrochemical** : HPLC-UV (validated) **Valent :** HPLC-UV (validated)
Impurities in technical as (analytical technique)	**Fine Agrochemical** : - HPLC-UV (fully validated). No other data required - CIPAC MT 17.4, loss in weight (validated) **Valent :** - - HPLC-UV (fully validated). No other data required - ion chromatography (fully validated). No other data required - method (STM 0328200) similar to CIPAC MT17.2 (loss in weight) (validated)
Plant protection product (analytical technique)	**MaxCel :** HPLC-UV (validated, recoveries within acceptable range)

Analytical methods for residues (Annex IIA, point 4.2)

Residue definitions for monitoring purposes

Food of plant origin		6-Benzyladenine
Food of animal origin		Not relevant
Soil		6-Benzyladenine
Water	surface	6-Benzyladenine
	drinking/ground	6-Benzyladenine
Air		6-Benzyladenine

Monitoring/Enforcement methods

Food/feed of plant origin (analytical technique and LOQ for methods for monitoring purposes)	Open for apples In maize : no MRL LC-MS/MS (fully validated). LOQ : 0.01 mg/kg in maize No ILV required as no MRL has been set on Maize Due to the nature of the compound the suitability of a multi-residue method has not been assessed
Food/feed of animal origin (analytical technique and LOQ for methods for monitoring purposes)	No MRL. No method required
Soil (analytical technique and LOQ)	HPLC-MS/MS (validated) LOQ : 0.01 mg/kg in soil

Water (analytical technique and LOQ)	HPLC-MS/MS (validated) LOQ : 0.05 µg/L in drinking and surface water
Air (analytical technique and LOQ)	HPLC-MS/MS (validated) LOQ : 22.5 ng/m^3 in air
Body fluids and tissues (analytical technique and LOQ)	No method required as 6-BA is not classified as toxic or very toxic.

Classification and proposed labelling with regard to physical and chemical data (Annex IIA, point 10)

	RMS/peer review proposal
Active substance	None

Impact on Human and Animal Health

Absorption, distribution, excretion and metabolism (toxicokinetics) (Annex IIA, point 5.1)

Rate and extent of oral absorption ‡	~80 % (based urine + bile + residual carcass)
Distribution ‡	Rats Highest concentration was found in stomach wall. Greater levels than that associated with whole blood were intestine wall, liver kidneys, lungs and ovaries.
Potential for accumulation ‡	No potential for accumulation
Rate and extent of excretion ‡	80-95% within 24 h mainly via urine (60%)
Metabolism in animals ‡	The major component found in urine was hippuric acid; the monohydroxylated metabolite of 6BA was also present as a major component in urine. Other minor components identified in urine were the hydrated adduct of monohydroxylated 6BA, dihydroxylated 6BA, and the glucuronide conjugates of both the mono and dihydroxylated 6BA. Parent 6BA was also detected in urine, but was very close to the limit of quantification. The major identified components in the faecal extracts were hippuric acid and isomers of both mono and dihydroxylated 6BA. **The major identified component in bile was the glutathione conjugate of monohydroxylated 6BA.**
Toxicologically relevant compounds ‡ (animals and plants)	6-Benzyladenine
Toxicologically relevant compounds ‡ (environment)	6-Benzyladenine

Acute toxicity (Annex IIA, point 5.2)

Rat LD_{50} oral ‡	2094 and 814 mg/kg bw in males and females respectively and 1584 mg/kg bw (combined)	R22
Rat LD_{50} dermal ‡	>2000 mg/kg bw in both sexes	
Rat LC_{50} inhalation ‡	>5.0 mg/L in both sexes	
Skin irritation ‡	Non-irritant	
Eye irritation ‡	Non-irritant	
Skin sensitisation ‡	Not sensitizing	

Short term toxicity (Annex IIA, point 5.3)

Target / critical effect ‡	Rat: Lower body weight, lower blood glucose level, kidney changes: dilated renal pelvises, mineralised semifluid material within the pelvises and secondary inflammation. Limited information on other species (mice and dogs)

Relevant oral NOAEL ‡	13-week rat: 41 mg/kg bw/day (F)	
Relevant dermal NOAEL ‡	No data/ not required	
Relevant inhalation NOAEL ‡	No data/ not required	

Genotoxicity ‡ (Annex IIA, point 5.4)

No genotoxic potential.	

Long term toxicity and carcinogenicity (Annex IIA, point 5.5)

Target/critical effect ‡	No valid data, not required because of the representative uses	
Relevant NOAEL ‡	Not available	
Carcinogenicity ‡	No valid data/ not required because of the representative uses.	

Reproductive toxicity (Annex IIA, point 5.6)

Reproduction toxicity

Reproduction target / critical effect ‡	Rat: Lower body weight and food consumption (F0 and F1 parents). Lower weight gain in pup and delay in sexual maturation	
Relevant parental NOAEL ‡	M/F: 30/45 mg/kg bw/day	
Relevant reproductive NOAEL ‡	M/F: > 115/170 mg/kg bw /day	
Relevant offspring NOAEL ‡	M/F: 30/45 mg/kg bw /day	

Developmental toxicity

Developmental target / critical effect ‡	Rat: Lower body weight and food consumption in dams. Lower body weight in foetuses, increased incidence of hydrocephalus and skeletal effects. Rabbit Lower mean foetal body weights.	**R63**
Relevant maternal NOAEL ‡	Rat: 50 mg/kg bw/day Rabbit <10 mg/kg bw/day	
Relevant developmental NOAEL ‡	Rat: 50 mg/kg bw/day Rabbit 20 mg/kg bw/day	

Neurotoxicity (Annex IIA, point 5.7)

Acute neurotoxicity ‡	No data/ not required	

Repeated neurotoxicity ‡	No data/ not required	
Delayed neurotoxicity ‡	No data/ not required	

Other toxicological studies (Annex IIA, point 5.8)

Mechanism studies ‡	No data/ not required
Studies performed on metabolites or impurities ‡	No data/ not required

Medical data ‡ (Annex IIA, point 5.9)

No evidence of toxicological concern from medical surveillance of manufacturing plant personnel

Summary (Annex IIA, point 5.10)	Value	Study	Safety factor
ADI ‡	Not allocate, not necessary°		
AOEL ‡	0.03 mg/kg bw/day	Developmental toxicity study in rabbit	300*
ARfD ‡	Not allocate, not necessary°		

* an additional safety factor of 3 to account for the **LOAE**L

°During the preparation of the EFSA conclusion, a data gap was identified by the residue experts for further quantitative evidence that 6-benzyladenine is a naturally occurring compound, hence the consumer risk assessment could not be finalised. It is noted that the setting of ADI and ARfD might be needed once the clarification on the natural occurrence of 6-benzyladenine is provided

Dermal absorption ‡ (Annex IIIA, point 7.3)

MAXCEL formulation (SL, 20 g/L 6-benzyladenine)	Concentrate:13 % Spray dilutions:7 % *In vivo* dermal absorption study in rats.

Exposure scenarios (Annex IIIA, point 7.2) To be recalculated

Operator	German model – maize 8% of AOEL without PPE, 3% with gloves for mix/load apples 65% of AOEL without PPE, 47% with gloves for mix load

	UK POEM maize 23% of AOEL without PPE, 11% with gloves for mix/load apples 106% of AOEL without PPE, 77% with gloves for mix/load
Workers	Crop inspection in maize (no PPE) 2% of AOEL. Harvesting apples (no PPE) 117% of AOEL (with PPE) 12% of AOEL
Bystanders	Maize <1% of AOEL. Apples 2% of AOEL. Exposure to vapour for orchard sprayers 28% of AOEL. Exposure to drift fallout (apples) 3% of AOEL

Classification and proposed labelling with regard to toxicological data (Annex IIA, point 10)

	RMS/peer review proposal
Substance classified (6-Benzyladenine)	Xn; (Harmful) R22: Harmful if swallowed Repr. Cat3; R63: Possible risk of harm to the unborn child

Metabolism in plants (Annex IIA, point 6.1 and 6.7, Annex IIIA, point 8.1 and 8.6)

Plant groups covered	Metabolism study in apple submitted together with scientific review reports on roots vegetables, cereals and pulses and oilseeds
Rotational crops	No data available, not required.
Metabolism in rotational crops similar to metabolism in primary crops?	Not applicable
Processed commodities	Not required although a processing study has been evaluated for apple pomace.
Residue pattern in processed commodities similar to residue pattern in raw commodities?	No concentration of residues during processing
Plant residue definition for monitoring	6-Benzyladenine
Plant residue definition for risk assessment	6-Benzyladenine
Conversion factor (monitoring to risk assessment)	None

Metabolism in livestock (Annex IIA, point 6.2 and 6.7, Annex IIIA, point 8.1 and 8.6)

Animals covered	No data available, not required.
Time needed to reach a plateau concentration in milk and eggs	Not applicable
Animal residue definition for monitoring	Not applicable
Animal residue definition for risk assessment	Not applicable
Conversion factor (monitoring to risk assessment)	None
Metabolism in rat and ruminant similar (yes/no)	Not applicable
Fat soluble residue: (yes/no)	Not applicable

Residues in succeeding crops (Annex IIA, point 6.6, Annex IIIA, point 8.5)

No study available. Not required, because only uses in seed production and permanent crops are intended. Furthermore 6-BA rapidly degrades in soil (DT_{50} 1 - 1.2 days).

Stability of residues (Annex IIA, point 6 introduction, Annex IIIA, point 8 Introduction)

Apples at – 18°C: 12 months at 0.025 mg/kg level 18 months at 0.25 mg/kg level

Residues from livestock feeding studies (Annex IIA, point 6.4, Annex IIIA, point 8.3)

	Ruminant:	Poultry:	Pig:
	Conditions of requirement of feeding studies		
Expected intakes by livestock ≥ 0.1 mg/kg diet (dry weight basis) (yes/no - If yes, specify the level)	No	No	No
Potential for accumulation (yes/no):	N/A	N/A	N/A
Metabolism studies indicate potential level of residues ≥ 0.01 mg/kg in edible tissues (yes/no)	N/A	N/A	N/A
	Feeding studies (Specify the feeding rate in cattle and poultry studies considered as relevant) Residue levels in matrices : Mean (max) mg/kg		
Muscle	N/A	N/A	N/A
Liver	N/A	N/A	N/A
Kidney	N/A	N/A	N/A
Fat	N/A	N/A	N/A
Milk	N/A		
Eggs		N/A	

Summary of residues data according to the representative uses on raw agricultural commodities and feedingstuffs (Annex IIA, point 6.3, Annex IIIA, point 8.2)

Crop	Northern or Mediterranean Region, field or glasshouse, and any other useful information	Trials results relevant to the representative uses (10)	Recommendation/comments	MRL estimated from trials according to the representative use	HR (c)	STMR (b)
apple	N S	6 x <0.005 4 x <0.005	No trials conformed to the GAP ± 25 % but residues were all <LOQ	0.01	0.005 (LOQ)	0.005 (LOQ)

(a) Numbers of trials in which particular residue levels were reported
(b) Supervised Trials Median Residue *i.e.* the median residue level estimated on the basis of supervised trials relating to the representative use
(c) Highest residue

Consumer risk assessment (Annex IIA, point 6.9, Annex IIIA, point 8.8)

The applicant proposed that this compound is a naturally occurring plant hormone. However, full evidence for this was not available and a data gap has been identified. The mammalian toxicology expert meeting agreed that given the use and low residue situation it was not necessary to set an ADI or ARfD.

ADI	–
NEDI (% ADI) according to EFSA Primo model	–
NEDI (% ADI) according to UK diet	–
Factors included in IEDI and NEDI	–
ARfD	–
IESTI (% ARfD)	–
NESTI (% ARfD) according to national (to be specified) large portion consumption data	–
Factors included in IESTI and NESTI	–

Processing factors (Annex IIA, point 6.5, Annex IIIA, point 8.4)

Crop/ process/ processed product	Number of studies	Processing factors		Amount transferred (%) (Optional)
		Transfer factor	Yield factor	
Apple pomace	1	Not determined as residues <LOQ		

Proposed MRLs (Annex IIA, point 6.7, Annex IIIA, point 8.6)

6-BA is proposed as a naturally-occurring compound and therefore the origin of residues may not be conclusively attributed to the authorised use of 6-BA as a plant growth regulator and fruit thinner. 6-BA is not currently listed in Regulation 396/2005 and therefore the default 0.01 mg/kg value on apple applies Consideration should be given to inclusion of 6-BA in Annex IV of Directive 396/2005, in which case the compound would be exempt from MRLs. This is subject to the data gap identified in the EFSA conclusion.

Route of degradation (aerobic) in soil (Annex IIA, point 7.1.1.1.1)

Mineralization after 100 days ‡	67.81-86.61 % after 120 d, [^{14}C-benzyl] and [^{14}C-purine] label mixed (n= 4)
Non-extractable residues after 100 days ‡	11.98-20.96 % after 120 d, [^{14}C-benzyl] and [^{14}C-purine] label mixed (n= 4)
Metabolites requiring further consideration ‡ - name and/or code, % of applied (range and maximum)	None

Route of degradation in soil - Supplemental studies (Annex IIA, point 7.1.1.1.2)

Anaerobic degradation ‡

Mineralization after 100 days	Not required.
Non-extractable residues after 100 days	Not required.
Metabolites that may require further consideration for risk assessment - name and/or code, % of applied (range and maximum)	Not required.

Soil photolysis ‡

Metabolites that may require further consideration for risk assessment - name and/or code, % of applied (range and maximum)	Unidentified metabolite code 'component 1a', 5.1% at 10 d; assumed degradation product of adenine, unlikely to be toxicologically relevant Component 1b, 3.5% at 10 d, identified as adenine

Rate of degradation in soil (Annex IIA, point 7.1.1.2, Annex IIIA, point 9.1.1)

Laboratory studies ‡

Parent	Aerobic conditions						
Soil type	X[1]	pH ($CaCl_2$)	t. °C / % MWHC	DT_{50} /DT_{90} (d)	DT_{50} (d) 20 °C pF2/10kPa	St. (r^2)	Method of calculation
Sandy loam		4.4	20°C/50% MWHC	1.0/3.3	1.0	0.999	Non linear SFO
Silty clay loam		5.7	20°C/50% MWHC	1.0/3.3	1.0	0.998	Non linear SFO
Sandy loam		7.4	20°C/50% MWHC	1.2/3.9	1.2	0.999	Non linear SFO
Clay loam		7.4	20°C/50% MWHC	1.1/3.6	1.1	0.997	Non linear SFO
Sandy loam		4.4	10°C/50% MWHC	2.9/9.6	1.3	0.993	Non linear SFO
Geometric mean				1.1*/3.5*	1.1	-	Non linear SFO

* Geometric mean based on the four values at 20°C.

Field studies ‡

Submitted by applicant although not required since lab DT50 is < 60 days. Study conducted on Korean soils with low moisture content (microbial activity not provided). Considered as indicative only by the RMS (France) in original DAR. Longest field DT50 (8 d) used in PECsoil calculations since it is more conservative than lab data.

Parent	Aerobic conditions								
Soil type (indicate if bare or cropped soil was used).	Location (country).	X[1]	pH	Depth (cm)	DT_{50} (d) actual	DT_{90}(d) actual	St. (r^2)	DT_{50}[b] (d) Norm.	Method of calculation
Soil K / Loam	Korea		5.6	0-10	7	n/a	n/a	n/a	SFO
Soil P / Loam	Korea		5.1	0-10	8	n/a	n/a	n/a	SFO
Arithmetic mean/median					n/a				

n/a not available.

pH dependence ‡ (yes / no) (if yes type of dependence)	No
Soil accumulation and plateau concentration ‡	Not required

[1] X This column is reserved for any other property that is considered to have a particular impact on the degradation rate.

Laboratory studies ‡

Anaerobic conditions – Not studied						
X[2]	pH	t. °C / % MWHC	DT_{50} /DT_{90} (d)	DT_{50} (d) 20°C pF2/10kPa	St. (r^2)	Method of calculation
-	-	-	-	-	-	-
Geometric mean/median			-	-	-	-

Soil adsorption/desorption (Annex IIA, point 7.1.2)

Parent ‡							
Soil Type	OC %	Soil pH	Kd (mL/g)	Koc (mL/g)	Kf (mL/g)	Kfoc (mL/g)	1/n
SK961089, clay loam	4.8	7.5			21.62	451	0.7897
SK104691, silty clay loam	2.7	6.1			24.43	905	0.7615
SK179618, clay loam	3.8	5.5			10.73	282	0.7927
SK566696, loamy sand	0.8	4.2			15.56	1945	0.8178
Arithmetic mean/median					18.0/18.6	896/678	0.79/0.79
pH dependence, Yes or No			No.				

Mobility in soil (Annex IIA, point 7.1.3, Annex IIIA, point 9.1.2)

Column leaching ‡	Not required.
Aged residues leaching ‡	Not required.
Lysimeter/ field leaching studies ‡	Not required.

PEC (soil) (Annex IIIA, point 9.1.3)

Parent Method of calculation	DT_{50} (d): 8 days Kinetics: SFO Field or Lab: worst case from an indicative field study.

[2] X This column is reserved for any other property that is considered to have a particular impact on the degradation rate.

Application data	Crop: maize and apples Depth of soil layer: 5cm Soil bulk density: 1.5g/cm^3 % plant interception: 25% for maize, 80% for apples Number of applications: 1 Interval (d): - Application rate(s): 18 g as/ha for maize, 150 g as/ha for apples

PEC$_{(s)}$ (µg/kg)		Maize		Apples	
		Single application Actual	Single application Time weighted average	Single application Actual	Single application Time weighted average
Initial		18.000		40.000	
Short term	24h	16.506	17.253	36.680	38.340
	2d	15.136	16.547	33.636	36.772
	4d	12.728	15.250	28.284	33.889
Long term	7d	9.815	13.555	21.810	30.122
	28d	1.591	6.872	3.536	15.272
	50d	0.237	4.201	0.526	9.336
	100d	0.003	2.147	0.007	4.771
Plateau concentration		-			

Route and rate of degradation in water (Annex IIA, point 7.2.1)

Hydrolytic degradation of the active substance and metabolites > 10 % ‡	pH 5: Stable: no degradation at 50°C during 5 days
	pH 7: Stable: no degradation at 50°C during 5 days
	pH 9: Stable: no degradation at 50°C during 5 days
Photolytic degradation of active substance and metabolites above 10 % ‡	Direct photolysis: Artificial light (Xenon arc lamp), cycle 12 hours light / 12 hours dark pH 5: DT50 = 50.6 days (extrapolated) pH 7: DT50 = 19.2 days pH 9: DT50 = 244 days (extrapolated)
	Indirect photolysis: no data. Not required.
Quantum yield of direct phototransformation in water at Σ > 290 nm	6-benzyladenine: pH 5: 0.00195 pH7: 0.7337 pH 9: 0.8899

Readily biodegradable ‡ (yes/no)	Yes

Degradation in water / sediment

Parent	Distribution (max in water 96.6-97.9 % after 0 d. Max. sed 34.6-51.5 % after 6-13 d)									
Water / sediment system	pH water phase	pH sed (KCl)	t. °C	DT_{50}-DT_{90} whole sys.	St. (r^2)	$DissT_{50}$-DT_{90} water	St. (r^2)	DT_{50}-DT_{90} sed	St. (r^2)	Method of calculation
Sandy clay loam	7.6	7.5	20±2	17.1	0.95	2.4	0.99	-	-	Non linear SFO
Clay loam	7.7	7.4	20±2	8.6	0.97	4.1	1.00	-	-	Non linear SFO
Geometric mean				12.1		3.1		-		Non linear SFO

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

Parent Parameters used in FOCUSsw step 1 and 2	Version control no. of FOCUS calculator: 1.1 Molecular weight (g/mol): 225.26 Water solubility (mg/L): 64.5 K_{OC} (L/kg): 896 (mean value obtained on 4 soils) 1/n: 0.79 DT_{50} soil (d): 1.1 days (Lab geometric mean SFO) DT_{50} water/sediment system (d): 17.1 DT_{50} water (d): 17.1 DT_{50} sediment (d): 17.1 Crop interception (%): Maize, minimal crop cover; Apples, full canopy
Parameters used in FOCUSsw step 3 (if performed)	Vapour pressure (Pa): 6×10^{-7} DT50 sediment: 1000 d (FOCUS default)
Application rate	Crop: Maize and apples Crop interception: calculated by the model Number of applications: 1 Interval (d): - Application rate(s): 18 g as/ha for maize, 150 g as/ha for apples Application window (for Step 3): - Maize: March-May for southern Europe, June September for northern Europe - Apples: 1 May – 31 May for northern Europe and 1 April – 1 May for southern Europe

FOCUS STEP 1 Scenario	Day after overall maximum	Maize				Apples			
		PECsw (µg/l)		PECsed (µg/kg)		PECsw (µg/l)		PECsed (µg/kg)	
		Actual	TWA	Actual	TWA	Actual	TWA	Actual	TWA
	0	2.8994	-	24.4957	-	30.6450	-	204.1312	-
	1	2.6977	2.7986	24.1717	24.3337	25.3177	27.9814	226.8467	215.4890
	2	2.5906	2.7212	23.2115	24.0110	24.3120	26.3964	217.8354	218.8998
	4	2.3888	2.6048	21.4040	23.1533	22.4188	24.8745	200.8724	214.0696
	7	2.1153	2.4524	18.9532	21.8677	19.8518	23.2608	177.8722	203.3851
	14	1.5927	2.1471	14.2710	19.1846	14.9476	20.2724	133.9305	179.1244
	21	1.1993	1.8936	10.7454	16.9314	11.2549	17.8529	100.8441	158.2849
	28	0.9030	1.6812	8.0909	15.0374	8.4745	15.8395	75.9315	140.6636
	42	0.5120	1.3505	4.5871	12.0830	4.8046	12.7153	43.0492	113.0903
	50	0.3702	1.2044	3.3167	10.7765	3.4740	11.3374	31.1266	100.8784
	100	0.0488	0.6815	0.4370	6.0987	0.4577	6.4128	4.1014	57.1064

FOCUS STEP 2 Scenario	Day after overall maximum	Maize				Apples			
		PECsw (µg/l)		PECsed (µg/kg)		PECsw (µg/l)		PECsed (µg/kg)	
		Actual	TWA	Actual	TWA	Actual	TWA	Actual	TWA
Northern EU	0	0.1655	---	0.9302	---	7.8625	---	29.3634	---
	1	0.1013	0.1334	0.8932	0.9117	4.8102	6.3364	28.1970	28.7802
	2	0.0872	0.1138	0.8577	0.8936	4.1417	5.4062	27.0769	28.2086
	4	0.1224	0.1036	0.7909	0.8588	4.0912	4.7057	24.9684	27.1103
	7	0.0957	0.1039	0.7004	0.8100	3.0220	4.1148	22.1095	25.5687
	14	0.0721	0.0936	0.5274	0.7099	2.2754	3.3731	16.6475	22.4104
	21	0.0543	0.0833	0.3971	0.6263	1.7133	2.9092	12.5349	19.7723
	28	0.0409	0.0743	0.2990	0.5562	1.2900	2.5549	9.4383	17.5580
	42	0.0232	0.0599	0.1695	0.4469	0.7314	2.0314	5.3510	14.1064
	50	0.0168	0.0535	0.1226	0.3985	0.5288	1.8064	3.8690	12.5807
	100	0.0022	0.0303	0.0161	0.2255	0.0697	1.0165	0.5098	7.1192
Southern EU	0	0.1664	---	1.3085	---	7.8625	---	27.6295	---
	1	0.1460	0.1562	1.2565	1.2825	4.8102	6.3364	26.5319	27.0807
	2	0.1402	0.1497	1.2066	1.2570	4.1417	5.4062	25.4779	26.5428
	4	0.1293	0.1422	1.1126	1.2081	3.8897	4.6805	23.4940	25.5094
	7	0.1145	0.1334	0.9852	1.1394	2.8435	4.0191	20.8039	24.0588
	14	0.0862	0.1166	0.7418	0.9987	2.1411	3.2476	15.6645	21.0870
	21	0.0649	0.1027	0.5586	0.8811	1.6121	2.7865	11.7947	18.6047
	28	0.0489	0.0912	0.4206	0.7824	1.2139	2.4408	8.8809	16.5211
	42	0.0277	0.0732	0.2385	0.6286	0.6882	1.9360	5.0350	13.2734
	50	0.0200	0.0653	0.1724	0.5606	0.4976	1.7203	3.6406	11.8378
	100	0.0026	0.0369	0.0227	0.3172	0.0656	0.9668	0.4797	6.6988

FOCUS Step 3 and Step 4 Apples

Crop	Water-body	Application dates	Initial PECsw (µg/l)		Initial PECsed (µg/kg)	
			Step 3	Step 4: 10 m Buffer	Step 3	Step 4: 10 m Buffer
Apple	D3 Ditch	4 May	5.486	1.653	3.647	1.150
	D4 Pond	30 May	0.246	-	1.161	-
	D4 Stream	30 May	5.309	1.851	0.466	0.163
	D5 Pond	8 April	0.246	-	1.282	-
	D5 Stream	8 April	5.022	1.751	0.134	0.047
	R1 pond	2 May	0.246	-	1.187	-
	R1 stream	2 May	4.144	1.445	0.410	0.144
	R2 stream	22 April	5.561	1.939	0.352	0.123
	R3 stream	4 April	5.930	2.068	1.361	0.481
	R4 stream	15 April	4.215	1.470	0.627	0.220

PEC (ground water) (Annex IIIA, point 9.2.1)

PECgw was originally calculated (RMS France) based on a worst case Koc 20 L/kg, 1/n 0.9. A new adsorption/desorption study has been provided (Kfoc 896 L/kg, 1/n 0.79). However since acceptable concentrations in groundwater were originally achieved using a worst case default Koc, further groundwater calculations were not considered necessary and not performed by the Notifer.

Method of calculation and type of study (*e.g.* modelling, field leaching, lysimeter)	For FOCUS gw modelling, values used – Modelling using FOCUS model(s), with appropriate FOCUSgw scenarios, according to FOCUS guidance. Model(s) used: PELMO 3.3.2 Scenarios (list of names): Châteaudun, Hamburg, Jokioinen, Kremsmünster, Okehampton, Piacenza, Porto, Sevilla, Thiva Crop: Maize and apples Geometric mean parent DT50lab 1.1 d (normalisation to pF2, 20 °C with Q10 of 2.2). K_{OC}: 20 ml/g (worst case default), $^1/_n$= 0.9.
Application rate	Application rate: 13.5 g/ha for maize (25% interception), 30 g/ha for apples (80% interception). No. of applications: 1 Time of application (month or season): - maize: 30 days after emergence - apples: 4 months after emergence

PEC(gw) - FOCUS modelling results (80th percentile annual average concentration at 1m)

Model /Crop	Scenario	Parent (µg/L)	Metabolite (µg/L)		
			1	2	3
	Chateaudun	<0.001	-	-	-
	Hamburg	<0.001	-	-	-
	Jokioinen	<0.001	-	-	-
	Kremsmunster	<0.001	-	-	-
	Okehampton	<0.001	-	-	-
	Piacenza	<0.001	-	-	-
	Porto	<0.001	-	-	-
	Sevilla	<0.001	-	-	-
	Thiva	<0.001	-	-	-

Fate and behaviour in air (Annex IIA, point 7.2.2, Annex III, point 9.3)

Direct photolysis in air ‡	No data, not required
Quantum yield of direct phototransformation	No data. Not required.
Photochemical oxidative degradation in air ‡	DT_{50} of 28 minutes derived by the Atkinson model. OH concentration assumed = 1.5 10^6 cm^3
Volatilisation ‡	No data, not required
Metabolites	-

PEC (air)

Method of calculation	Based on the vapour pressure < 6 10^{-7} Pa at 25°C and the DT50 of 28 minutes (Atkinson), 6-BA is not expected to partition to air. PEC not required.

$PEC_{(a)}$

Maximum concentration	-

Residues requiring further assessment

Environmental occurring metabolite requiring further assessment by other disciplines (toxicology and ecotoxicology).	Soil: 6-benzyladenine Surface Water: 6-benzyladenine Sediment: 6-benzyladenine Ground water: 6-benzyladenine Air: 6-benzyladenine

Monitoring data, if available (Annex IIA, point 7.4)

Soil (indicate location and type of study)	No data, not required
Surface water (indicate location and type of study)	No data, not required
Ground water (indicate location and type of study)	No data, not required
Air (indicate location and type of study)	No data, not required

Points pertinent to the classification and proposed labelling with regard to fate and behaviour data

-

Effects on terrestrial vertebrates (Annex IIA, point 8.1, Annex IIIA, points 10.1 and 10.3)

Species	Test substance	Time scale	End point (mg/kg bw/day)	End point (mg/kg feed)
Birds ‡				
Bobwhite quail.	6-benzyladenine	Acute	1 599	
	Preparation	Acute	No data required	
	Metabolite	Acute	No metabolite	
	6-benzyladenine	Short-term	> 2875	> 5620
	6-benzyladenine.	Long-term	41.3	500
Mammals ‡				
Rat.	6-benzyladenine	Acute	1584	
	MAXCEL	Acute	> 5000 mg prep./kg bw	
	Metabolite	Acute	No metabolite	
	6-benzyladenine	Long-term	30	400
Additional higher tier studies ‡				
No data required				

Toxicity/exposure ratios for terrestrial vertebrates (Annex IIIA, points 10.1 and 10.3)

Maize (18 g a.s./ha)

Indicator species/Category	Time scale	ETE	TER	Annex VI Trigger
Tier 1 (Herbivorous bird)				
	Acute	1.19	1344	10
	Short-term	0.55	> 5254	10
	Long-term	0.29	142	5
Tier 1 (Insectivorous bird)				
	Acute	0.97	1643	10
	Short-term	0.54	> 5296	10
	Long-term	0.54	76.5	5
Tier 1 (Medium herbivorous mammal)				
	Acute	0.438	3616	10
	Long-term	0.107	280	5
Higher tier refinement				
No refinements necessary				

Apple orchard (150 g a.s./ha)

Indicator species/Category	Time scale	ETE	TER	Annex VI Trigger
Tier 1 (Insectivorous bird)				
	Acute	8.11	197	10
	Short-term	4.52	> 636	10
	Long-term	4.52	9.14	5
Tier 1 (Small herbivorous mammal)				
	Acute	17.7	89.5	10
	Long-term	5.08	5.91	5
Higher tier refinement				
No refinements necessary				

No risk to terrestrial vertebrates was identified from other routes of exposure, such as consumption of contaminated drinking water (lowest acute TER for birds = 193 from apple use).

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 (mg/L)
Laboratory tests ‡				
Fish				
Brachydanio rerio	6-benzyladenine	96 hr (semi-static)	Mortality, LC_{50}	32-56 (nom)
Oncorhynchus mykiss	MAXCEL	96 hr (static)	Mortality, LC_{50}	28 mg form.n/L (≡ 0.53 mg a.s./L) (mm)
Aquatic invertebrate				
Daphnia magna	6-benzyladenine	48 h (semi-static)	Mortality, EC_{50}	13.4-22.1 (mm)
	6-benzyladenine	21 d (static)	Reproduction, NOEC	4.0 (mm)
	MAXCEL	48 h (semi-static)	Mortality, EC_{50}	17 mg form.n/L (≡ 0.32 mg a.s./L) (mm)
Sediment dwelling organisms				
Chironomus riparius.	6-benzyladenine	28 d (static)	NOEC, Emergence	4.52 (mm, water phase)
Algae				
Pseudokirchneriella subcapitata (syn. *Selenastrum capricornutum*)	6-benzyladenine	72 h (static)	Biomass: E_bC_{50} Growth rate: E_rC_{50}	36 (nom) 45.1 (nom)
Navicula pelliculosa	6-benzyladenine	72 h (static)	Biomass: E_bC_{50} Growth rate: E_rC_{50}	7.6 (nom) 15 (nom)

Group	Test substance	Time-scale (Test type)	End point	Toxicity (mg/L)
Pseudokirchneriella subcapitata (syn. *Selenastrum capricornutum*)	MAXCEL	72 h (static)	Biomass: E_bC_{50} Growth rate: E_rC_{50}	9.32 mg form.n/L (≡ 0.18 mg a.s./L) 9.76 mg form.n/L (≡ 0.19 mg a.s./L) (nom)
Higher plant				
Lemna gibba	6-benzyladenine	7 d (static)	Fronds, EC_{50}	0.31 (mm)
Lemna gibba[1]	MAXCEL	7 d (static)	Fronds, EC	ca 30 mg form/L (0.57 mg a.s./L)
Microcosm or mesocosm tests				
Not required				

[1] Non-GLP study but endpoint included for comparison with that for technical a.s. (which is used for risk assessment)

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

FOCUS Step 2

Maize (18 g a.s./ha) N & S EU

Test substance	Organism	Toxicity end point (µg a.s./L)	Time scale	Maximum PEC_i (µg a.s./L)	TER	Annex VI Trigger
6-benzyladenine	Fish	530[1]	Acute	0.1664	3185	100
6-benzyladenine	Aquatic invertebrates	320[1]	Acute	0.1664	1923	100
6-benzyladenine	Aquatic invertebrates	4000	Chronic	0.1664	24038	100
6-benzyladenine	Sediment-dwelling invertebrates	4520[2]	Chronic	0.1664	27163	100
6-benzyladenine	Algae	180[1]	Short-term	0.1664	1082	10
6-benzyladenine	Higher plants	310	Short-term	0.1664	1863	10

[1] Active substance endpoints derived from studies on the 'MaxCel' formulation.

[2] Sediment-dweller endpoint based on exposure through water phase therefore compared with PEC_{sw}.

Apple orchards (150 g a.s./ha) N & S EU

Test substance	Organism	Toxicity end point (µg a.s./L)	Time scale	Maximum PEC_i (µg a.s./L)	TER	Annex VI Trigger
6-benzyladenine	Fish	530[1]	Acute	7.8625	**67.4**	100
6-benzyladenine	Aquatic invertebrates	320[1]	Acute	7.8625	**40.7**	100
6-benzyladenine	Aquatic invertebrates	4000	Chronic	7.8625	509	100
6-benzyladenine	Sediment-dwelling invertebrates	4520	Chronic	7.8625	575	100

Test substance	Organism	Toxicity end point (µg a.s./L)	Time scale	Maximum PEC_i (µg a.s./L)	TER	Annex VI Trigger
6-benzyladenine	Algae	180[1]	Short-term	7.8625	22.9	10
6-benzyladenine	Higher plants	310	Short-term	7.8625	39.4	10

[1] Active substance endpoints derived from studies on the 'MaxCel' formulation.

[2] Sediment-dweller endpoint based on exposure through water phase therefore compared with PEC_{sw}.

FOCUS Step 3

Apple orchards (150 g a.s./ha)

Test substance	Organism	Toxicity end point (µg a.s./L)	Time scale	Scenario & water body	Maximum PEC_i (µg a.s./L)	TER	Annex VI Trigger
6-benzyladenine	Fish	530[1]	Acute	D3 ditch	5.486	**96.6**	100
				D4 pond	0.246	2154	
				D4 stream	5.309	**99.8**	
				D5 pond	0.246	2154	
				D5 stream	5.022	106	
				R1 pond	0.246	2154	
				R1 stream	4.144	128	
				R2 stream	5.561	**95.3**	
				R3 stream	5.930	**89.4**	
				R4 stream	4.215	126	
6-benzyladenine	Aquatic invertebrates	320[1]	Acute	D3 ditch	5.486	**58.3**	100
				D4 pond	0.246	1301	
				D4 stream	5.309	**60.3**	
				D5 pond	0.246	1301	
				D5 stream	5.022	**63.7**	
				R1 pond	0.246	1301	
				R1 stream	4.144	**77.2**	
				R2 stream	5.561	**57.5**	
				R3 stream	5.930	**54**	
				R4 stream	4.215	**75.9**	

[1] Active substance endpoints derived from studies on the 'MaxCel' formulation.

FOCUS Step 4

Apple orchards (150 g a.s./ha) with 10 m buffer zone

Test substance	Organism	Toxicity end point (µg a.s./L)	Time scale	Scenario & water body	Maximum PEC_i (µg a.s./L)	TER	Annex VI Trigger
6-benzyladenine	Fish	530[1]	Acute	D3 ditch	1.653	321	100
				D4 stream	1.851	286	

Test substance	Organism	Toxicity end point (µg a.s./L)	Time scale	Scenario & water body	Maximum PEC_i (µg a.s./L)	TER	Annex VI Trigger
				R2 stream	1.939	273	
				R3 stream	2.068	256	
6-benzyladenine	Aquatic invertebrates	320[1]	Acute	D3 ditch	1.653	194	100
				D4 stream	1.851	173	
				D5 stream	1.751	183	
				R1 stream	1.445	221	
				R2 stream	1.939	165	
				R3 stream	2.068	155	
				R4 stream	1.470	218	

[1] Active substance endpoints derived from studies on the 'MaxCel' formulation.

Bioconcentration				
	Active substance	Metabolite1	Metabolite2	Metabolite3
$logP_{O/W}$	2.16	No relevant metabolites		
Bioconcentration factor (BCF)[1] ‡	-			

[1] only required if log $P_{O/W}$ >3.

Effects on honeybees (Annex IIA, point 8.3.1, Annex IIIA, point 10.4)

Test substance	Acute oral toxicity (LD_{50} µg a.s./bee)	Acute contact toxicity (LD_{50} µg a.s./bee)
6-benzyladenine ‡	> 58.73	> 100
MAXCEL	> 7.3[1]	> 7.3[1]
Field or semi-field tests		
Not required		

[1] Formulation endpoints are expressed in terms of µg a.s./bee

Hazard quotients for honey bees (Annex IIIA, point 10.4)

Maize use: 18 g a.s./ha; apple orchard use: 150 g a.s/ha

Test substance	Route	Maize Hazard quotient	Apples Hazard quotient	Annex VI Trigger
6-benzyladenine	Contact	< 0.18	< 1.50	50
	oral	< 0.31	< 2.55	50
MAXCEL	Contact	< 2.47	< 20.5	50
	oral	< 2.47	< 20.5	50

Effects on other arthropod species (Annex IIA, point 8.3.2, Annex IIIA, point 10.5)

Laboratory tests

Species	Test Substance	End point	Effect (LR_{50}: g a.s./ha[1])
Typhlodromus pyri ‡			
	MAXCEL	Mortality	> 80
Aphidius rhopalosiphi ‡			
	MAXCEL	Mortality	36.2
Chrysoperla carnea	MAXCEL	Mortality	> 80

[1] Formulation endpoints are expressed in terms of g a.s./ha

Maize (18 g a.s./ha)

Test substance	Species	Effect LR_{50} (g a.s./ha)	HQ in-field	HQ off-field[1]	Trigger
MAXCEL	*Typhlodromus pyri*	> 80	< 0.23	< 0.0062	2
MAXCEL	*Aphidius rhopalosiphi*	36.2	0.5	0.014	2

[1] Initial distance of 1 m used to calculate the off-field drift rate

Apple orchard (150 g a.s./ha)

Test substance	Species	Effect (LR_{50} g/ha)	HQ in-field	HQ off-field[1]	Trigger
MAXCEL	*Typhlodromus pyri*	> 80	< 1.88	< 0.29	2
MAXCEL	*Aphidius rhopalosiphi*	36.2	**4.14**[2]	0.65	2

[1] Initial distance of 3 m used to calculate the off-field drift rate

[2] Reduced to 3.3 based on 80% deposition at late growth stage. This HQ considered acceptable based on case relating to toxicological effects of 6-BA, its single application and short foliar half life and likelihood of recovery within 1 year (see DAR Vol.3, B.9.5.3.4).

Extended laboratory studies, semi-field or field tests
Not required

Effects on earthworms, other soil macro-organisms and soil micro-organisms (Annex IIA points 8.4 and 8.5. Annex IIIA, points, 10.6 and 10.7)

Test organism	Test substance	Time scale	End point
Earthworms			
Eisenia fetida	6-benzyladenine ‡	Acute 14 days	LC_{50corr}[1] > 500 mg a.s./kg d.w.soil
	6-benzyladenine ‡	Chronic 8 weeks	Not required
	Preparation	Acute or chronic	Not required
	Metabolite	Acute or chronic	No relevant soil metabolite
Other soil macro-organisms			
Not required (1 application p.a., DT_{90lab} in soil: 3.3 - 4 days)			

Test organism	Test substance	Time scale	End point
Soil micro-organisms			
Nitrogen mineralisation	6-benzyladenine ‡	28 days	2.93% effect at day-28 at 0.2 mg a.s./kg dw soil 1.1% effect at day-28 at 1.0 mg a.s./kg dw soil (both <25% Annex VI trigger)
	Metabolite	No relevant soil metabolite	
Carbon mineralisation	6-benzyladenine ‡	28 days	-2.4% effect at day-28 at 0.2 mg a.s./kg dw soil -19.9% effect at day-28 at 1.0 mg a.s./kg dw soil (both <25% Annex VI trigger)
	Metabolite	No relevant soil metabolite	
Field studies			
Not required			

[1] End point has been corrected due to log Pow >2.0.

Toxicity/exposure ratios for soil organisms

Maize (18 g a.s./ha)

Test organism	Test substance	Time scale	Soil PEC (max. initial)	TER	Trigger
Earthworms					
Eisenia fetida	6-benzyladenine ‡	Acute	0.018	> 27 778	10
Other soil macro-organisms					
Not required					

Apple orchard (150 g a.s./ha)

Test organism	Test substance	Time scale	Soil PEC (max. initial)	TER	Trigger
Earthworms					
Eisenia fetida	6-benzyladenine ‡	Acute	0.040	> 12 500	10
Other soil macro-organisms					
Not required					

Effects on non target plants (Annex IIA, point 8.6, Annex IIIA, point 10.8)

Preliminary screening data

Not required for plant growth regulators as ER_{50} tests should be provided

Laboratory dose/rate:response tests

Test type	Test substance	Most sensitive species	ER_{50} and units (effect based on)	Exposure[1] (g/ha)[2]	TER	Trigger

Seedling emergence	6-benzyladenine	Ryegrass	1.27 mg a.s./kg soil (plant dry weight)	0.031 mg a.s./kg soil[2]	41.0	5
Vegetative vigour	MAXCEL	Tomato	187 g a.s./ha[1] (plant dry weight)	23.6 g a.s./ha[3]	7.92	5
No data						

[1] Formulation endpoint is expressed in terms of g a.s./ha.
[2] Off-crop soil PEC, based on a maximum application rate of 150 g a.s./ha (to apples) and a default drift value at 3 m of 15.73%, for field crops (Ganzelmeier drift data) and assuming a soil depth of 5 cm and density of 1.5 g/cm^3.
[3] Based on the maximum proposed application rate of 150 g a.s./ha (to apples) and a default drift value at 3m of 15.73% (Ganzelmeier drift data) for late fruit crops.

Additional studies (e.g. semi-field or field studies)

No data required.

Effects on biological methods for sewage treatment (Annex IIA 8.7)

Test type/organism	end point
Activated sludge test	> 1000 mg a.s./L
Pseudomonas sp.	No data required

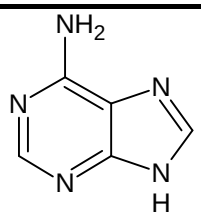
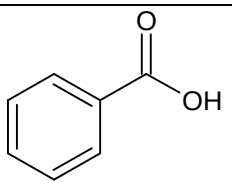
Ecotoxicologically relevant compounds (consider parent and all relevant metabolites requiring further assessment from the fate section)

Compartment	
soil	Parent (6-benzyladenine)
water	Parent (6-benzyladenine)
sediment	Parent (6-benzyladenine)
groundwater	Parent (6-benzyladenine)

Classification and proposed labelling with regard to ecotoxicological data (Annex IIA, point 10 and Annex IIIA, point 12.3)

	RMS/peer review proposal
Active substance	R 50

APPENDIX B – USED COMPOUND CODE(S)

Code/Trivial name*	Chemical name	Structural formula
-	Adenine	
	Benzoic acid	

* The metabolite name in bold is the name used in the conclusion.

ABBREVIATIONS

1/n	slope of Freundlich isotherm
ε	decadic molar extinction coefficient
°C	degree Celsius (centigrade)
µg	microgram
µm	micrometer (micron)
a.s.	active substance
AChE	acetylcholinesterase
ADE	actual dermal exposure
ADI	acceptable daily intake
AF	assessment factor
AOEL	acceptable operator exposure level
AP	alkaline phosphatase
AR	applied radioactivity
ARfD	acute reference dose
AST	aspartate aminotransferase (SGOT)
AV	avoidance factor
BCF	bioconcentration factor
BUN	blood urea nitrogen
bw	body weight
CAS	Chemical Abstract Service
CFU	colony forming units
ChE	cholinesterase
CI	confidence interval
CIPAC	Collaborative International Pesticide Analytical Council Limited
CL	confidence limits
d	day
DAA	days after application
DAR	draft assessment report
DAT	days after treatment
DM	dry matter
DT_{50}	period required for 50 percent disappearance (define method of estimation)
DT_{90}	period required for 90 percent disappearance (define method of estimation)
dw	dry weight
EbC_{50}	effective concentration (biomass)
EC_{50}	effective concentration
ECHA	European Chemical Agency
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)
EU	European Union
EUROPOEM	European Predictive Operator Exposure Model
f(twa)	time weighted average factor
FAO	Food and Agriculture Organisation of the United Nations
FIR	Food intake rate
FOB	functional observation battery
FOCUS	Forum for the Co-ordination of Pesticide Fate Models and their Use
g	gram
GAP	good agricultural practice
GC	gas chromatography
GCPF	Global Crop Protection Federation (formerly known as GIFAP)

GGT	gamma glutamyl transferase
GM	geometric mean
GS	growth stage
GSH	glutathion
h	hour(s)
ha	hectare
Hb	haemoglobin
Hct	haematocrit
hL	hectolitre
HPLC	high pressure liquid chromatography or high performance liquid chromatography
HPLC-MS	high pressure liquid chromatography – mass spectrometry
HQ	hazard quotient
IEDI	international estimated daily intake
IESTI	international estimated short-term intake
ISO	International Organisation for Standardisation
IUPAC	International Union of Pure and Applied Chemistry
JMPR	Joint Meeting on the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Expert Group on Pesticide Residues (Joint Meeting on Pesticide Residues)
K_{doc}	organic carbon linear adsorption coefficient
kg	kilogram
K_{Foc}	Freundlich organic carbon adsorption coefficient
L	litre
LC	liquid chromatography
LC_{50}	lethal concentration, median
LC-MS	liquid chromatography-mass spectrometry
LC-MS-MS	liquid chromatography with tandem mass spectrometry
LD_{50}	lethal dose, median; dosis letalis media
LDH	lactate dehydrogenase
LOAEL	lowest observable adverse effect level
LOD	limit of detection
LOQ	limit of quantification (determination)
m	metre
M/L	mixing and loading
MAF	multiple application factor
MCH	mean corpuscular haemoglobin
MCHC	mean corpuscular haemoglobin concentration
MCV	mean corpuscular volume
mg	milligram
mL	millilitre
mm	millimetre
MRL	maximum residue limit or level
MS	mass spectrometry
MSDS	material safety data sheet
MTD	maximum tolerated dose
MWHC	maximum water holding capacity
NESTI	national estimated short-term intake
ng	nanogram
NOAEC	no observed adverse effect concentration
NOAEL	no observed adverse effect level
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 ground water
PEC_{sed}	predicted environmental concentration in sediment
PEC_{soil}	predicted environmental concentration in soil
PEC_{sw}	predicted environmental concentration in surface water
pH	pH-value
PHED	pesticide handler's exposure data
PHI	pre-harvest interval
PIE	potential inhalation exposure
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})
ppp	plant protection product
PT	proportion of diet obtained in the treated area
PTT	partial thromboplastin time
QSAR	quantitative structure-activity relationship
r^2	coefficient of determination
RPE	respiratory protective equipment
RUD	residue per unit dose
SC	suspension concentrate
SD	standard deviation
SFO	single first-order
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
TSH	thyroid stimulating hormone (thyrotropin)
TWA	time weighted average
UDS	unscheduled DNA synthesis
UV	ultraviolet
W/S	water/sediment
w/v	weight per volume
w/w	weight per weight
WBC	white blood cell
WG	water dispersible granule
WHO	World Health Organisation
wk	week
yr	year