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Outcome of the consultation with Member States and EFSA on the basic substance application for L-cysteine for use in plant protection as insecticide

European Food Safety Authority (EFSA)

Abstract

The European Food Safety Authority (EFSA) was asked by the European Commission to provide scientific assistance with respect to the evaluation of applications received by the European Commission concerning basic substances. In this context, EFSA's scientific views on the specific points raised during the commenting phase conducted with Member States and EFSA on the basic substance application for L-cysteine are presented. The context of the evaluation was that required by the European Commission in accordance with Article 23 of Regulation (EC) No 1107/2009 following the submission of an application for approval of L-cysteine as a basic substance for use in plant protection as insecticide. The current report summarises the outcome of the consultation process organised by EFSA and presents EFSA's scientific views on the individual comments received.

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Keywords: L-cysteine, basic substance, application, consultation, plant protection, pesticide

Requestor: European Commission

Question number: EFSA-Q-2018-00821

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Summary

L-cysteine is an active substance for which, in accordance with Article 23(3) of Regulation (EC) No 1107/2009, the European Commission received an application from Soleo-EcoSolutions for approval as a 'basic substance'. Regulation (EC) No 1107/2009 introduced the new category of 'basic substances', which are described, among others, as active substances, not predominantly used as plant protection products but which may be of value for plant protection and for which the economic interest in applying for approval may be limited. Article 23 of Regulation (EC) No 1107/2009 lays down specific provisions for consideration of applications for approval of basic substances.

In March 2013, the European Commission requested the European Food Safety Authority (EFSA) to provide scientific assistance with respect to the evaluation of applications received by the European Commission concerning basic substances. By a further specific request, received from the European Commission in October 2018, EFSA was asked to organise a consultation on the basic substance application for L-cysteine, to consult the applicant on the comments received, and to deliver its scientific views on the specific points raised in the format of a reporting table within three months of acceptance of the specific request.

A consultation on the basic substance application for L-cysteine, organised by EFSA, was conducted with Member States via a written procedure in July-September 2018. Subsequently, EFSA also provided comments and the applicant was invited to address all the comments received in the format of a reporting table and to provide an application update as appropriate, within a period of 30 days.

The current report summarises the outcome of the consultation process organised by EFSA on the basic substance application for L-cysteine and presents EFSA's scientific views on the individual comments received in the format of a reporting table.

L-cysteine is a non-essential amino acid. It is a food additive authorised by Commission Regulation (EU) No 231/2012 as E920 with permitted use in flour up to *quantum satis* and it is also a flavouring additive (FL No 17.033) for food and feed. The proposed use is as an insecticide to control leaf cutting ants on all crops and forestry in the tropical area of France.

L-cysteine has been previously assessed by EFSA (2006 and 2013) and no consumer safety concerns were identified. The EFSA FEEDAP Panel, in the absence of data, considered it prudent to assume that exposure of the skin, eyes and mucous membranes could pose a risk to users. A similar concern for the active substance would be identified considering the proposed classification and labelling of L-cysteine from the safety material sheet (irritation properties). However, given the proposed concentration of L-cysteine in the product (8%), no concern for the product would be identified according to the CLP Regulation on classification and labelling of mixtures.

The application of the basic substance L-cysteine on nests of ants renders it unlikely that the active substance will be transferred to edible plants and will therefore not lead to an exposure to humans. It is a macronutrient and a normal component of protein.

Limited information was provided in relation to the fate and behaviour of L-cysteine in the environment. The applicant reported that L-cysteine is a natural substance that rapidly biodegrades in the environment. Some information was provided showing that the exposure to soil and groundwater for the intended uses is lower than the exposure resulting from cropping, while limited information was added concerning the exposure to surface water. Overall, the reliability of the applicant's assessment and conclusion regarding exposure levels is unclear.

In the area of ecotoxicology, the risk to aquatic organisms was not fully addressed due to the lack of exposure information. However, experiments on aquatic organisms indicated a low hazard. No other data gaps or areas of concerns were identified.

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1. Introduction

1.1. Background and Terms of Reference as provided by the requestor

Regulation (EC) No 1107/2009¹ (hereinafter referred to as 'the Regulation') introduced the new category of 'basic substances', which are described, among others, as active substances, not predominantly used as plant protection products but which may be of value for plant protection and for which the economic interest of applying for approval may be limited. Article 23 of the Regulation lays down specific provisions to identify a substance as a basic substance with a view to ensure that such active substances that do not have an immediate or delayed harmful effect on human and animal health nor an unacceptable effect on the environment can be approved as 'basic' and used for plant protection purposes.

L-cysteine is an active substance for which, in accordance with Article 23(3) of the Regulation, the European Commission received an application from Soleo-EcoSolutions for approval as a 'basic substance' for use in plant protection as insecticide.

The European Food Safety Authority (EFSA) organised a consultation with Member States on the basic substance application for L-cysteine, which was conducted via a written procedure in July-September 2018. The comments received, including EFSA's comments, were consolidated by EFSA in the format of a reporting table. Subsequently, the applicant was invited to address the comments in column 4 of the reporting table and to provide an application update as appropriate. The comments received and the response of the applicant thereon, together with the application update submitted by the applicant, were considered by EFSA in column 5 of the reporting table.

The current report aims to summarise the outcome of the consultation process organised by EFSA on the basic substance application for L-cysteine and to present EFSA's scientific views on the individual comments received in the format of a reporting table.

The application and, where relevant, any update thereof submitted by the applicant for approval of L-cysteine as a 'basic substance' in the context of Article 23 of the Regulation, is a key supporting documentation, therefore it is considered as a background documentation to this report and will also be made publicly available, excluding its appendices (Soleo-EcoSolutions; 2018a,b).

1.2. Interpretation of the Terms of Reference

On 6 March 2013 the European Commission requested EFSA to provide scientific assistance with respect to the evaluation of applications received by the European Commission concerning basic substances. By a further specific request, received by EFSA on 29 October 2018, EFSA was asked to organise a consultation on the basic substance application for L-cysteine, to consult the applicant on the comments received, and to deliver its scientific views on the specific points raised in the format of a reporting table.

To this end, a technical report containing the finalised reporting table is being prepared by EFSA. The agreed deadline for providing the finalised report is 29 January 2019.

On the basis of the reporting table, the European Commission may decide to further consult EFSA to conduct a full or focussed peer review and to provide its conclusions on certain specific points.

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

2. Assessment

The comments received on the basic substance application for L-cysteine and the conclusions drawn by EFSA are presented in the format of a reporting table.

The comments received are summarised in columns 2 and 3 of the reporting table. The applicant's considerations of the comments, where available, are provided in column 4, while EFSA's scientific views and conclusions are outlined in column 5 of the table.

The finalised reporting table is provided in Appendix A of this report. In addition, an overview table on the identity and biological properties of the substance and the list of intended uses in plant protection (GAP table) are provided in Appendix C and D, respectively.

Documentation provided to EFSA

1. Soleo-EcoSolutions, 2018a. Basic substance application on L-cysteine submitted in the context of Article 23 of Regulation (EC) No 1107/2009. May 2018. Documentation made available to EFSA by the European Commission.
2. Soleo-EcoSolutions, 2018b. Basic substance application update on L-cysteine submitted in the context of Article 23 of Regulation (EC) No 1107/2009. December 2018. Documentation made available to EFSA by the applicant.

References

- EFSA (European Food Safety Authority), 2009. Guidance on Risk Assessment for Birds and Mammals on request from EFSA. *EFSA Journal* 2009;7(12):1438, 358 pp. doi:10.2903/j.efsa.2009.1438
- EFSA AFC Panel (EFSA Panel on Food Additives, Flavourings, Processing Aids and Materials in Contact with Food), 2006. Opinion of the Scientific Panel on food additives, flavourings, processing aids and materials in contact with food related to the use of L-cysteine in foods intended for infants and young children. *EFSA Journal* 2006;4(11):390, 7 pp. doi:10.2903/j.efsa.2006.390
- EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2013. Scientific Opinion on the safety and efficacy of L-cysteine hydrochloride monohydrate as a flavouring additive for pets. *EFSA Journal* 2013;11(10):3437, 13 pp. doi:10.2903/j.efsa.2013.3437

Abbreviations

a.s.	active substance
BSA	Basic substance application
CAS	Chemical Abstracts Service
CIPAC	Collaborative International Pesticides Analytical Council Limited
CLP	classification, labelling and packaging
DG-SANTE	Directorates-General - Health and Food Safety
ECHA	European Chemicals Agency
EINECS	European Inventory of Existing Commercial Chemical Substances
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FEEDAP	EFSA Panel on Additives and Products or Substances used in Animal Feed
GAP	good agricultural practice
GD	guidance
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LD ₅₀	lethal dose, median; dosis letalis media
MSDS	material safety data sheet
MS	Member State
PEC	predicted environmental concentration
PHI	pre-harvest interval
RB	bait, ready for use
RETCS	Toxicity Effects of Chemical Substances
RUP	Ultra-Peripheral European Region
TER	toxicity exposure ratio

Appendix A – Collation of comments from Member States and EFSA on the basic substance application for L-cysteine and the conclusions drawn by EFSA on the specific points raised

General					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
1(1)	overall	DK: The applicant's use of the word 'phytosanitary' is misleading. Please use the wording 'plant protection' as used in the regulation etc.	DK: Update the whole application accordingly.	Ok, done	Addressed.
1(2)		DE: It is not agreed to approve L-cysteine hydrochloride as basic substance. According to the BSA document, chapter 4, the following classification from safety data sheet of the supplier (Wacker) is indicated: Skin irrit. Cat. 2, H315; Eye irrit. Cat. 2, H319; Respiratory irritant, STOT SE 3, H355. Therefore, the criteria for basic substances according to article 23(a) of Regulation (EC) No 1107/2009 are not fulfilled. The above mentioned classification is not a legal classification up to now. However, a large number of	EFSA: Please consider the concentration (%) of L-cysteine in the product and whether the product should be classified on the basis of CLP Regulation on classification and labelling of mixture regarding the hazards described by DE in column 2.	<p>The basic substance application concerns the basic substance L-cysteine in wheat flour diluent. The maximum concentration of L-cysteine in the mix L-cysteine + wheat flour is proposed to be reduced to 8% instead of 10%.</p> <p>At this maximum concentration the mixture L-cysteine + wheat flour is not classified according to the CLP Regulation.</p> <p>Classification by calculation of mixture is detailed in the core dossier.</p>	L-cysteine has been previously assessed by EFSA (EFSA AFC Panel, 2006 and EFSA FEEDAP Panel, 2013) and no consumer safety concerns were identified. The EFSA FEEDAP Panel, in the absence of data, considered it prudent to assume that exposure of the skin, eyes and mucous membranes could pose a risk to users (EFSA FEEDAP Panel, 2013). A similar concern for the active substance would be identified considering the proposed classification and labelling of L-cysteine from the safety material sheet (Skin irrit. Cat. 2, H315; Eye irrit. Cat. 2,

General

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		<p>corresponding notifications was submitted to ECHA. The applicant argues in the BSA document, chapter 5 that no classification would be necessary. However, the studies were not submitted and the arguments are not verifiable. According to the applicant the substance is used as food and foodstuff. However, according to Working document SANCO/10363/2012 also for food and foodstuffs it is to consider that "Risks can result from the manner of application... so that human and animal health ... can be affected."</p>			<p>H319; Respiratory irritant, STOT SE 3, H355). However, given the proposed concentration of L-cysteine in the product (8%), no concern for the product would be identified according to the CLP Regulation on classification and labelling of mixtures².</p>
1(3)		<p>NL: Is it possible to make this use of L-cysteine available as a basic substance to the general public if (according to the submitted reports) it is based</p>		<p>All the information submitted in this application for approbation of the basic substance L-cysteine + wheat flour will be reported in the approbation</p>	<p>Addressed: See also comment 3(2)</p>

² Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. OJ L 353, 31.12.2008, p. 1–1355.

General

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
		on patented research?		<p>directive, including the recipe of the preparation and the method of application. There is no difficulty for an amateur to reproduce the mixture by himself.</p> <p>The patent cited in this application protects the technology of this product against industrial uses and against uses outside this demand of basic substance. The patent dossier is freely available.</p>	
1(4)		NL: It seems that the plaque this substance is intended to control is not occurring in Europe but only in French overseas colonies. Does this fall inside EU law?		Oversees French territories are not "colonies". They are plenty part of France as French departments (Guadeloupe and Martinique Islands, or French Guyana are legally called DOM and TOM for the French Republic) and are defined as RUP (Ultra-Peripheral European Region) for which all European Regulations applied. It thus falls inside EU law.	Addressed.

General					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
1(5)	1 Purpose	DK: Please include clearly what the purpose is; why is it important to add L-cysteine to the list of basic substances?!	DK: Please elaborate (a little) on the relevance of this application.	<p>A summary on the relevance to add L-cysteine + wheat flour to the list of basic substances is available in core dossier.</p> <p>It is important to highlight that leaf cutting ants are invasive species with huge impact on natural ecosystem as well as on agricultural activity. The impact of ants is that important that it caused around 1 billion US dollar of crop loss in Brazil these recent years, only considering sugarcane according to Mora <i>et al.</i> Their impact is well known and is an issue in the French West Indies for many years now. The fight against leaf cutting ants is an orphan use without effective mean of control since the withdrawal of chlordecone, an insecticide having major impact on human health and environment. L-cysteine + wheat flour is an efficient and reliable solution to control this</p>	Addressed.

General

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				species with a low impact on human health and environment.	

2. Identity of the substance/product as available on the market and predominant use
2.1. Identity and Physical and chemical properties of the substance and product to be used

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(1)	2.1.2	NL: Cystéine should be cysteine		Ok, corrected	Addressed.
2(2)	2.1.3	NL: The molecular formula is not in the international format (C3H7NO2S.HCl).		Ok, corrected	Addressed.
2(3)	2.1.4	NL: A more detailed description of the fermentation and purification process to produce L-cysteine should be provided.		The fermentation process is fully described in the patent US2015/0232897 A1.	Addressed.
2(4)	2.1.4	EFSA: a more detailed description of the manufacturing process would be helpful explaining the possibility of containing the relevant impurities, if any.	Should heavy metals, As be considered relevant impurities?	The fermentation process is fully described in the patent US2015/0232897 A1. Heavy metals are always present in the specifications for food substances/products; this does not imply that heavy	Addressed.

2.1. Identity and Physical and chemical properties of the substance and product to be used

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(5)	2.1.5 Specification	EFSA: agrees that the L-cysteine used should meet the European Pharmacopeia specification		<p>metals are relevant impurities for Cysteine hydrochloride. No heavy metals are used during the manufacturing process.</p> <p>L-cysteine hydrochloride anhydrous is not part of the European Pharmacopeia (only Cysteine hydrochloride monohydrate). For a use on culture, it is deemed sufficient that L-cysteine hydrochloride anhydrous used is food grade.</p>	<p>Addressed.</p> <p>L-cysteine should meet the specification from Commission Regulation (EU) No 231/2012 of 9 March 2012 laying down specifications for food additives listed in Annexes II and III to Regulation (EC) No 1333/2008 of the European Parliament and of the Council³.</p>

2.2. Current Former and in case proposed trade names

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
No comments.					

³ OJ L 83, 22.3.2012, p. 1–295.

2.3. Manufacturer of the substance/products

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

2.4. Type of preparation

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(6)	2.4	DE: RB Bait (ready to use) is proposed for type of preparation.		Ok, done.	Addressed.
2(7)	2.4	EFSA: are there any information available about the storage stability of the product?	When describing the preparation and use of the product, it would be helpful to indicate if it should be used immediately, or can be stored for a certain period. In this case the storage conditions should be indicated.	L-cysteine hydrochloride anhydrous has a shelf-life of 24 months (see specification sheet in Annex 2). Considering the manufacturing process (mixing with wheat flour and water, followed by drying), no degradation is expected to be induced by this soft manufacturing process. The product is considered to be as stable as L-cysteine hydrochloride anhydrous.	Addressed.

2.5. Description of the recipe for the product to be used

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(8)	2.5 page 9	NL: According to Regulation 1107/2009 a basic substance is a substance that " <i>is useful in plant protection either directly or in a product consisting of the substance and a simple diluent</i> ". Does L-cysteine fit with this criteria considering that it is mixed with a matrix, such as wheat flour? Can the wheat flour really be considered as a simple diluent as it acts as a bait according to section 3.1?		<p>In this mixture the substance of interest is L-cysteine, the only substance acting against leaf ant's symbiotic fungus. The substance L-cysteine acting at a very low quantity, a matrix is thus necessary for an efficient application. Furthermore L-cysteine needs to be in contact with ant's symbiotic fungus located under the ground to be active.</p> <p>The diluent of L-cysteine is wheat flour, easily found in all markets. Wheat flour acts as a simple diluent to ensure a good concentration, as a carrier for the substance L-cysteine and as a bait for ants. Indeed this diluent allows forming granules with an ideal size to permit ants to carry and bring the L-cysteine in anthill in the contact of symbiotic fungus. Leaf ants are not attracted by L-cysteine itself, but by wheat flour (acting as bait).</p>	Addressed.

2.5. Description of the recipe for the product to be used

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(9)		<p>NL: The process of preparing the L-cysteine for use is more complicated than making a simple dilution: a paste needs to be made with the substance and water and flour, this needs to be passed through a machine to make strands, this needs to be dried for 72 hours, and has to be shredded to granules of the correct size. This does not appear to be in line with regulation 1107/2009 where it is stated that a basic substance is a substance that "is useful in plant protection either directly or in a product consisting of the substance and a simple diluent".</p>		<p>The process consists of a simple mix of L-cysteine and wheat flour. The water is used to form a paste for the granulation. Then the product is dried and shredded in granules.</p> <p>In the process the applicant proposes to pass the paste in machine to obtain strands. The machine used is a simple meat chopper that can be found in kitchen. This machine is not essential; it just allows having homogenous sizes of granules. The efficacy of the product is no depending on the size of granules. The only important point is to provide to ants granules with a sufficient size that allows them to carry granules in their anthills.</p> <p>The applicant needs to dry the paste during 72 hours in order to avoid the degradation of the preparation during storage</p>	<p>Addressed.</p>

2.5. Description of the recipe for the product to be used

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				before the application. In case of home preparation it can be possible to use the mix with a lower drying level.	
2(10)	2.5 Description of the preparation of the product	EFSA: taking into account the proposed classification of skin irritant: Skin Irrit. Cat.2, H315, eye irritant: Eye Irrit. Cat.2, H319 and respiratory irritant: STOT SE Cat.3, H335, is there a need for special protective equipment or protective measures during the preparation of the product?		<p>This classification is based on the MSDS from the supplier, referring to the US Registry of Toxicity Effects of Chemical Substances (RETCS). But as detailed in the core dossier, information from PubChem Open Chemistry Database and confirmed on ECHA website may lead to different conclusion with the absence of irritating effects to skin and eye for L-cysteine.</p> <p>However we chose to keep this worst case. For the manufacturing process, no risk is expected for operator by wearing appropriate EPI.</p> <p>Concerning the amateur reproducing the recipe by himself, there is no expected risk also by taking into account the low level of L-cysteine to handle.</p>	See 1(2).

3. Uses of the substance and its product

3.1. Field of use

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
3(1)	3.1 Field of use	EFSA: is the intended use only for the tropical regions of France?		This basic substance is intended to be use on leaf cutting ants which are present in south America and Caribbean islands. Some European Member States have territories in Caribbean area considered belonging to Europe. For example, for France, Guadeloupe and Martinique Islands, or French Guyana are legally called DOM and ROM for the French Republic and are defined as RUP (Ultra-Peripheral European Region) for which all European Regulations applied.	Addressed. See also comment 1(4)

3.2. Effects on harmful organisms or on plants

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
3(2)	3.2	DK: We question whether it is possible to base an application for a basic substance on a study that is described as "Results under patent, not published" Mora <i>et al.</i> , 2017, as basic substance are for all to use when approved (in this case only in 'tropical EU').	Please consider basing the efficacy on other data, or clearly justify why the patent status is irrelevant or other in this case.	<p>All the information submitted in this application for approbation of the basic substance L-cysteine + wheat flour will be reported in the approbation directive, including the recipe of the preparation and the method of application. There is no difficulty for an amateur to reproduce the mixture by himself.</p> <p>The cited patent in this application protects the technology of this product against industrial uses, against uses outside this demand of basic substance. The patent dossier is freely available.</p>	<p>Addressed.</p> <p>See also comment 1(3)</p>
3(3)	3.2 Effects on ants and fungus comb	DE: Only one study was presented to prove usefulness in plant protection. Granules made of L-cysteine in a matrix of wheat flour where put near anthills. This study was conducted without a control.	The experiments have to be conducted with both kinds of granules: the granules with cysteine and for control granules made of wheat flour only. Otherwise, it is not possible to derive any effects from such an experiment.	<p>The study submitted in this application present the efficacy of L-cysteine + wheat flour against leaf cutting ants.</p> <p>No control with granules made of wheat flour only was estimated necessary in the trial as wheat flour is known to</p>	Addressed.

3.2. Effects on harmful organisms or on plants

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				<p>have no toxicity or effect on fungus and ants. Wheat flour used as matrix in mixture is standard wheat flour, no adjuvant or others substances are incorporated. Furthermore, a study (A. Silva and <i>all</i>) in the core dossier shows the possibility of leaf cutting ant's fungus to degrade starch to glucose. The summary of the study is available in the core dossier.</p>	

3.3. Summary of intended uses

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
3(4)		<p>DE: In the columns "Application rate per treatment" it makes no sense to give the data in or per liter. The data should be given in g or kg a.s./kg (first column) and kg granules/ha (second column).</p>	<p>Please adapt the headings of the first column (g or kg a.s./ kg instead of kg a.s./hL) and of the second column (kg granules/ha) and add the figures below in the second column for the amount of granules per ha: 3-</p>	Ok, corrected.	<p>Addressed: The summary of intended uses has been amended accordingly.</p>

3.3. Summary of intended uses

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
			36 kg/ha (0,3 kg/nest; 10-120 nests).		

4. Classification and labelling of the substance

Classification and labelling of the substance

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5. Impact on Human and Animal Health

5.1. Toxicokinetics and metabolism in humans

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.2. Acute toxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.3. Short-term toxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.4. Genotoxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.5. Long-term toxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.6. Reproductive toxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.7. Neurotoxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 4 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.8. Toxicity studies on metabolites

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.9. Medical Data: adverse effects reported in humans

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.10. Additional Information related to therapeutic properties or health claims

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.11. Additional information related to use as food

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.12. Acceptable daily intake, acute reference dose, acceptable operator exposure level

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

5.13. Impact on human and animal health arising from exposure to the substance or impurities contained in it

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(1)		<p>EFSA: please also consider more recent assessment done by EFSA on L-cysteine in other areas regulated areas:</p> <p>Opinion of the Scientific Panel on Food Additives, Flavourings, Processing Aids and Materials</p>	The updated report should include all relevant information from EFSA assessment on L-cysteine.	The requested information has been implemented in the report: In an Opinion of the Scientific Panel on Food Additives, Flavourings, Processing Aids and Materials in Contact with Food (EFSA Journal (2006) 390, 1-7), the EFSA concluded that the use of L-cysteine was	See 1(2).

5.13. Impact on human and animal health arising from exposure to the substance or impurities contained in it

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
		<p>in Contact with Food on a request from the Commission related to the use of L-cysteine in foods intended for infants and young children. The EFSA Journal (2006) 390, 1-7</p> <p>EFSA FEEDAP Panel (EFSA Panel on Additives and Products or Substances used in Animal Feed), 2013. Scientific Opinion on the safety and efficacy of L-cysteine hydrochloride monohydrate as a flavouring additive for pets. EFSA Journal 2013;11(10):3437, 13 pp. doi:10.2903/j.efsa.2013.3437</p>		<p>also of no safety concern for infants and young children when used as dough improver (to control the texture of the final product) in processed cereal-based foods and foods (specifically baby biscuits). In this assessment, the total intake of cysteine per day for an infant was estimated to be 296 mg/day. As well, an EFSA Opinion from the Panel on Additives and Products or Substances used in Animal Feed (FEEDAP) (EFSA Journal 2013;11(10):3437) concluded that the addition of L-cysteine to the food of cats and dogs was safe (if the balance between cysteine and methionine in the complete diet was maintained). Moreover in the absence of data, the FEEDAP Panel also considered it prudent to assume that exposure of the skin, eyes and mucous membranes could pose a risk to users. However this</p>	

5.13. Impact on human and animal health arising from exposure to the substance or impurities contained in it					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				concern is raised by taking into account the data proposed for these specific endpoints in the following current assessment."	

6. Residues

Residues					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
6(1)	6. residues	DK: It is not clear if the safe use shown in the food industry covers the use as basic substance; however as the use is on anthills only exposure to the crops should not be relevant.	Please update the argumentation accordingly.	The use of L-cysteine as flavouring substance is permitted for instance in flours with no maximum level; it is also authorised in the list of food additives permitted in foods for infants and young children (with restriction only in biscuits – 1 g/kg). Considering the intended use, application by hand on nest of ants (limited application, soil directed), it is not expected that L-cysteine comes into contact with edible plants. Therefore it can be considered that the use of L-cysteine in the food industry covers the use as basic substance.	Addressed. The application of the basic substance has been clarified and it is not likely that the active substance will be transferred to edible plants. The application dossier has been updated accordingly.
6(2)	Chapter 6	NL: If understood correctly, the application is made on the nest of ants. This could be an (additional) argument why residues do not play a role, i.e. the crops themselves do not come into contact with the		The application is indeed only on nest of ants, and it is not expected that L-cysteine comes into contact with edible plants. A sentence has been added in the report.	Addressed. The application of the basic substance has been clarified and it is not likely that the active substance will be transferred to edible plants. The application dossier has

Residues

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
6(3)	Chapter 6, residues	<p>active ingredient.</p> <p>EFSA: It should be clarified whether the basic substance is intended to be applied to edible plants and whether exposure to plants is foreseeable.</p>	<p>EFSA: Elaborate more on the intended use, the transfer ways of the active substance and its impact on exposure.</p>	<p>L-cysteine is intended to be applied by hand on nest of ants (limited application, soil directed). Wheat flour granules containing L-cysteine will be taken by harvesting ants and brought back in the anthill to destroy the fungus. Therefore it is not expected that L-cysteine comes into contact with edible plants. In addition, it can be considered that the use of L-cysteine in the food industry covers the use as basic substance (see 6(1)). Details have been added in the report.</p>	<p>been updated accordingly.</p> <p>Addressed.</p> <p>The application of the basic substance has been clarified and it is not likely that the active substance will be transferred to edible plants. The application dossier has been updated accordingly.</p>

7. Fate and Behaviour in the environment

7.1 Fate and Behaviour in the environment

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
7(1)	7.1 Fate and behaviour in the environment	EFSA: it is mentioned that after a bibliography search for the other environmental parameters, no study shows an impact of this substance on environment. However, no details on this search are reported.	Report details on how the bibliography search was done and which environmental parameters were considered, and summarize the results in order to show no impact of L-cysteine on environment.	<p>Sorry for the confusion, what we wanted to say is, after bibliography search on internet, no study on the effect (positive or negative) of L-cysteine on environment has been found.</p> <p>Furthermore, L-cysteine is included in Regulation (EU) No. 872/2012 adopting the list of flavouring substances provided by Regulation (EC) No. 2232/96, it is thus expected that L-cysteine will not induced impact on environment.</p> <p>The L-cysteine is a natural amino acid, present in proteins. It is for example naturally found in yeasts, eggs, onions, cabbages, nuts, seeds, fish and meats.</p>	<p>Limited information was added on the fate and behaviour of L-cysteine in the environment.</p> <p>It was reported that L-cysteine is readily biodegradable under the test conditions.</p> <p>The applicant reported that a bibliography search was carried out and no studies on the effect of L-cysteine on the environment were found. However, no details were given in order to evaluate how the bibliography search was performed.</p> <p>Therefore, overall, the reliability of the applicant's assessment and conclusion is unclear.</p>

7.2 Estimation of the short and long-term exposure of relevant environmental media (soil, groundwater, surface water)

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
7(2)	7.2 environmental exposure	NL: to determine the consequences of the increased exposure of the environment due to the use of L-cysteine as described in the GAP table (at maximally 3.6 kg/ha), it is helpful to include any information on the natural exposure levels of soil.	<p>Based on the application method, the exposure to soil and groundwater are most important. It would be helpful to include information on the amounts of L-cysteine that reach the soil due to natural presence (in animals, plants, etc) and to other uses.</p> <p>For example, onions apparently contain approximately 20 mg cysteine per kg dry weight (https://link.springer.com/article/10.1007/s10722-015-0270-2). Assuming an onion yield of 50 tonnes per hectare and a dry weight:fresh weight ratio of 0.1, this would result in 200 kg cysteine per hectare. A reasoning along similar lines (content in hair/skin etc?) would put the application rate of 3.6 kg/ha into CRUperspective.</p> <p>If exposure due to the proposed use is considerably higher than exposure due to other use of natural concentrations, calculation of PEC values in soil and groundwater may be</p>	<p>The comparison between rate of L-cysteine proposed in GAP Table and the one calculated in the environment is provided in the core dossier.</p> <p>The exposure due to the proposed use for the product provides a maximal impact on environment of 8.64 kg/ha/year versus 200 kg/ha/year for an agricultural cultivated soil.</p> <p>Therefore no PEC values in soil and groundwater are necessary.</p>	<p>Some information was provided showing that the exposure to soil and groundwater for the intended uses is lower than the exposure compared to the concentration resulting from cropping in agricultural soil. Regarding exposure to surface water, limited information was added; it was reported that no direct exposure of water bodies is expected during application. Overall, the reliability of the applicant's assessment and conclusion is unclear.</p>

7.2 Estimation of the short and long-term exposure of relevant environmental media (soil, groundwater, surface water)

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
7(3)	7.2 Estimation of the short and long-term exposure of relevant environmental media (soil, ground water, surface water)	EFSA: it is concluded that no concern is expected with this basic substance. However more information should be provided in order to justify this conclusion.	<p>necessary.</p> <p>Report more information in order to justify that no exposure of soil, ground water and surface water is expected from the use of L-cysteine.</p>	<p>For soil and groundwater, the exposure due to the proposed use for the product provides a maximal impact on environment of 8.64 kg/ha/year versus 200 kg/ha/year for an agricultural cultivated soil.</p> <p>Furthermore the application of granules is to be done by hands; therefore no direct exposure of water bodies is expected during application of granules. However, if basic substance reaches water by run-off or drainage, no risk is expected because the concentration in soil after application of the basic substance L-cysteine is less than the natural concentration in soil (e.g. after cultivation of onions). Moreover, L-cysteine is a natural substance, a quick degradation is expected in environment. Therefore, the risk for contamination of</p>	See comment 7(2).

7.2 Estimation of the short and long-term exposure of relevant environmental media (soil, groundwater, surface water)

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				surface water will be also minimized.	

8. Effects on non-target species

EFSA: no comments

8.1. Effects on terrestrial vertebrates

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(1)	8.1. terrestrial vertebrates	DK: Please directly compare the exposure to wild birds and mammals feeding on the granules with the exposure in the study. It is not clear from the argumentation that the use of L-cysteine granules would be safe for omnivorous birds and mammals; the described effects (or lack of effects) should always be correlated with the proposed exposure. The GAP is for 3.6 kg a.s./ha, and it would be easy to demonstrate, that	Please update the application with a more exposure relevant argumentation (e.g. including some acute risk assessment), or at least justify why the current argumentation is relevant for the exposure related with the use as basic substance.	A risk assessment has been performed in the core dossier according to the EFSA guidance (2009) for the recommended small omnivorous species: house sparrow and wood mouse as suggested by DK. This risk assessment is acceptable for birds and mammals according to the intended use.	Addressed.

8.1. Effects on terrestrial vertebrates

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
		<p>this application rate will not cause unacceptable acute or long-term harm without risk mitigation.</p> <p>A quick tier 1 risk assessment in according to EFSA GD (2009) Birds and mammals for the generic focal omnivore species 'wood mouse' ingesting granules when seeking seeds as food, show acute TER value of 32 (thus above the trigger value of 10) when the rat endpoint LD50 >2000 mg/kg bd is used.</p>			

8.2. Effects on aquatic organisms

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(2)	overall	DK: Please include that the proposed use against ants (anthills) will lead to negligible exposure of water bodies (if justified).		The spreading of granules is located on anthills. No direct exposure of water bodies is expected during application of granules as it will be performed by hand.	The risk to aquatic organisms is not fully addressed. There are still some uncertainties regarding the surface water exposure. However, experiments on

8.2. Effects on aquatic organisms

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				<p>Granules or L-cysteine can possibly reach water bodies in case of rain by run-off. However, the natural amount of L-cysteine in soil is largely above the amount brought by the use of the product. So the exposure to L-cysteine by run-off due to the use of the product will be very low in comparison to the natural exposure to L-cysteine already present in soil which can reach surface water by run-off.</p> <p>Moreover, according to the core dossier, no acute or long-term toxicity to aquatic species is expected. So as the exposure of surface waters would be low and considering the low toxicity, no risk is expected for aquatic organisms following applications of L-cysteine.</p>	<p>aquatic organisms indicated a low hazard. See also points 7(1) and 7(2).</p>

8.3. Effects on bees and other arthropods species

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(3)	Basic substance application 8.3 Effects on bees and other...	DE: The applicant states there is literature available, showing no impact on bees.	Please refer to the studies.	Sorry for the confusion, what we wanted to say is, after bibliography search, no study characterising the effect (positive or negative) of L-cysteine to bees has been found. It has been concluded that no toxicity is thus expected.	Addressed.
8(4)		NL: This section could use some more elaboration; as it is written now it is not very convincing, since after all the substance is proposed to be used as an insecticide. More argumentation is needed why L-cysteine works specifically against ants but would not be harmful to other arthropods. (This also could include argumentation based on expected exposure of non-target arthropods, if possible also related to natural background level.)		The target of the L-cysteine is the symbiotic fungus of leaf cutting ants and no directly ants. L-cysteine will act on ants by destruction of the symbiotic fungus, essential to the survey of colony as it is a source of feed for their larvae. This association of ant and fungus is a mutualistic symbiosis as ants feed the fungus by organic material in order to have feed for their larvae. Without renewal of generation, ant colony disappears. This insecticide is thus very specific to leaf cutting ants and no effects to bees and other arthropods species is expected.	Addressed.

8.3. Effects on bees and other arthropods species

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				<p>As it is detailed in the core dossier, after bibliography search, no study has been found regarding the impact of the substance L-cysteine to bees and others arthropods. Furthermore, L-cysteine is included in Regulation (EU) No. 872/2012 adopting the list of flavouring substances provided by Regulation (EC) No. 2232/96, it is thus expected that L-cysteine will not induced toxicity to bees and non arthropods species.</p> <p>The L-cysteine is a natural amino acid, present in proteins. It is for example naturally found in yeasts, eggs, onions, cabbages, nuts, seeds, fish and meats. According to the point 7.2, the amount of L-cysteine derivated from onion crop is lower than the amount expected with the basic substance.</p>	

8.4. Effects on earthworms and other soil macroorganisms

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(5)		DE: The applicant states that "after bibliography search, no study shows an impact ... on earthworms and other soil macro-organisms." This statement leaves open whether there are no studies or whether the studies found show no impact.	Please make a clear statement whether there are studies, and in case there are, please add references.	<p>Sorry for the confusion, what we wanted to say is, after bibliography search, no study characterising the effect (positive or negative) of L-cysteine to earthworms and other soil macro-organisms were found.</p> <p>The L-cysteine is a natural amino acid, present in proteins. It is for example naturally found in yeasts, eggs, onions, cabbages, nuts, seeds, fish and meats. According to the point 7.2 the amount of L-cysteine derivated from an onion crop is lower than the amount expected with the basic substance.</p>	Addressed.

8.5. Effects on soil microorganisms

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(6)	This chapter is lacking in the application.	DE: There is no special statement concerning soil microorganisms.	Please state whether there are studies, and in case there are, please add references.	The chapter 8.5 Effects on soil microorganisms has been integrated in the core dossier	Addressed.

8.6. Effects on other non-target organisms (flora and fauna)

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(7)	In the application the number of this chapter is 8.5	DE: The applicant states that "after bibliography search, no study shows an impact on other non-target organisms (flora and fauna)." This statement leaves open whether there are no studies or whether the studies found show no impact.	Please make a clear statement whether there are studies, and in case there are, please add references.	<p>Sorry for the confusion, what we wanted to say is, after bibliography search, no study characterising the effect (positive or negative) of L-cysteine to others non target organisms has been found.</p> <p>The L-cysteine is a natural amino acid, present in proteins. It is for example naturally found in yeasts, eggs, onions, cabbages, nuts, seeds, fish and meats. According to the point 7.2 the amount of L-cysteine derivated from an onion crop is lower than the amount expected with the basic</p>	Addressed.

8.6. Effects on other non-target organisms (flora and fauna)

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				substance.	

8.7. Effects on biological methods of sewage treatment

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application

No comments.

9. Overall conclusions with respect of eligibility of the substance to be approved as basic substance

Overall conclusions with respect of eligibility of the substance to be approved as basic substance

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

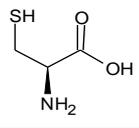
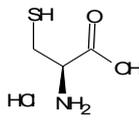
10. Other comments

Other comments

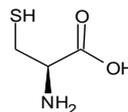
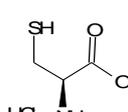
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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No comments.

Appendix B – Used compound codes

Code/trivial name	Chemical name/SMILES notation/InChiKey	Structural formula
L-cysteine	L-cysteine <chem>O=C(O)[C@@H](N)CS</chem> XUJNEKJLAYXESH-REOHCLBHSA-N	
L-cysteine hydrochloride	L-cysteine hydrochloride (1:1) <chem>Cl.O=C(O)[C@@H](N)CS</chem> IFQSXNOEPCSLW-DKWTVANSSA-N	

Appendix C – Identity and biological properties

Common name (ISO)	L-cysteine (not ISO)
Chemical name (IUPAC)	L-cysteine
Chemical name (CA)	L-cysteine
Common names	L-cysteine, R(+)-cysteine, L-cysteine hydrochloride
CAS No	52-89-1 (L-cysteine hydrochloride)
CIPAC No and EEC No	200-157-7 (EINECS)
FAO specification	-
Minimum purity	98.0 % (on the anhydrous basis)
Relevant impurities	max. 1.5 mg/kg As max. 5 mg/kg Pb 121.1 g/mol (L-cysteine)
Molecular mass and structural formula	 <p>157.6 g/mol (L-cysteine hydrochloride)</p> 
Mode of Use	Hand-held spreader
Preparation to be used	RB (bait, ready for use)
Function of plant protection	insecticide

Appendix D – List of uses

Crop and/or situation (a)	Member State or Country	Example product name as available on the market	F G or I (b)	Pests or Group of pests controlled (c)	Formulation		Application				Application rate per treatment			PHI (days) (l)	Remarks: (m)
					Type (d-f)	Conc. of a.s. (i)	Method kind (f-h)	Growth stage & season (j)	Number min-max (k)	Interval between applications min	kg L-cysteine /ha min max	kg granules/ha min max	kg a.s./ha min max		
All crops and forestry	France (tropical area)	L-cysteine	F	Ants	RB	0.5 to 8% L-cysteine	Hand-held spreader	Post swarming (July)	3	1 month	0.005 kg a.s./kg to 0.8 kg a.s./kg	3 - 36 kg granules/ha	Min 0.015 kg a.s./ha Max 2.88 kg a.s./ha ⁴	n.a.	Used as an insecticide against ants. Application is made by hand on nest of ants. The application can be renewed if necessary with a maximum of 3 applications Minimum / Maximum number of nests by hectare: 10 - 120

- (a) For crops, the EU and Codex classifications (both) should be used; where relevant, the use situation should be described (e.g. fumigation of a structure)
- (b) Outdoor or field use (F), glasshouse application (G) or indoor application (I)
- (c) e.g. biting and suckling insects, soil born insects, foliar fungi, weeds
- (d) e.g. wettable powder (WP), emulsifiable concentrate (EC), granule (GR)
- (e) GCPF Codes - GIFAP Technical Monograph No 2, 1989
- (f) 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 plants - type of equipment used must be indicated

- (i) g/kg or g/L
- (j) Growth stage at last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application
- (k) The minimum and maximum number of application possible under practical conditions of use must be provided
- (l) PHI - minimum pre-harvest interval
- (m) Remarks may include: Extent of use/economic importance/restrictions

⁴ 300 g of granules per nest multiplied by 120 nest/ha = 36 kg product/ha. Considering a maximum of 8% L-cysteine in the product, the maximum application rate per treatment of L-cysteine is 3.6 kg/ha.