1 VOORGENOMEN BESLUIT

Op 29 mei 2017 is van

Sumitomo Chemical Agro Europe S.A.S.
Parc d'Affaires de Crécy
Rue de la Voie Lactée 10A
F-69370 SAINT DIDIER AU MONT D'OR
France

een aanvraag tot wederzijdse erkenning van een gewasbeschermingsmiddel ontvangen voor het middel

Gnatrol SC

op basis van de werkzame stof Bacillus thuringiensis subsp. israelensis stam AM65-52.

HET COLLEGE IS VOORNEMENS TE BESLUITEN tot toelating van bovenstaand middel.

Alle bijlagen, waaronder registratierapport deel A en deel B, vormen een onlosmakelijk onderdeel van dit besluit.

1.1 Samenstelling, vorm en verpakking

De toelating geldt uitsluitend voor het middel in de samenstelling, vorm en de verpakking als waarvoor de toelating is verleend.

1.2 Gebruik

Het middel mag slechts worden gebruikt volgens het wettelijk gebruiksvoorschrift, letterlijk en zonder enige aanvulling, zoals opgenomen in deel A van het registratierapport, Appendix I.

1.3 Classificatie en etikettering

Mede gelet op de onder “wettelijke grondslag” vermelde wetsartikelen, dienen alle volgende aanduidingen en vermeldingen conform de geldende regelgeving op of bij de verpakking te worden vermeld:

- De aanduidingen, letterlijk en zonder enige aanvulling, zoals vermeld onder “verpakkingsinformatie” in bijlage I.

- Het wettelijk gebruiksvoorschrift, letterlijk en zonder enige aanvulling, zoals opgenomen in deel A van het registratierapport, Appendix I.
- Overige bij wettelijk voorschrift voorgeschreven aanduidingen en vermeldingen.
- De classificatie die overeenkomstig het toelatingsbesluit is vastgesteld, moet volgens de voorschriften op de verpakking worden vermeld, zoals beschreven in bijlage II en in hoofdstuk 2 van deel A van het registratierapport.

1.4 Aflever- en opgebruiktermijn (respijtperiode)

Niet van toepassing. Het betreft een nieuwe toelating.

2 WETTELIJKE GRONDSLAG

Besluit	artikel 40 van de Verordening (EG) 1107/2009
Classificatie en etikettering	artikel 31 en artikel 65 van de Verordening (EG) 1107/2009
Gebruikt toetsingskader	Rgb d.d. 16 december 2011 en HTB 1.0 (micro-organismen)

3 BEOORDELINGEN

Voor nadere onderbouwing van de beoordelingen verwijzen wij u naar deel A en B van het Registration Report als toegevoegd aan de bijlagen van dit besluit overeenkomstig Besluit beleidsregel bekendmaken delen A en B van het Registration Report.

Zienswijzenprocedure

Ingevolge artikel 2:3 Besluit bestuursreglement regeling toelating gewasbeschermingsmiddelen en biociden Ctgb 2007 geldt dat dit ontwerpbesluit gedurende twee weken ter inzage wordt gelegd op het Ctgb; hiervan wordt mededeling gedaan in de Staatscourant. Het ontwerpbesluit wordt gedurende deze periode tevens op de website van het Ctgb geplaatst. Belanghebbenden kunnen

gedurende de ter inzagenlegging schriftelijk bij het Ctgb aangeven dat zij een zienswijze zullen indienen; de zienswijze dient schriftelijk binnen twee weken na de inzagenperiode te worden ingediend.

Ede, …..

HET COLLEGE VOOR DE TOELATING VAN GEWASBESCHERMINGSMIDDELEN EN BIOCIDEN

BIJLAGE I DETAILS VAN DE AANVRAAG EN TOELATING

1 Aanvraaginformatie

Aanvraagnummer:	20170960 NLWERG
Type aanvraag:	aanvraag tot wederzijdse erkenning van een gewasbeschermingsmiddel
Middelnaam:	Gnatrol SC
Verzenddatum aanvraag:	22 mei 2017
Formele registratiedatum: *	21 juni 2017
Datum in behandeling name:	11 oktober 2017

* Datum waarop zowel de aanvraag is ontvangen als de aanvraagkosten zijn voldaan.

Aangezien Gnatrol SC een voor Nederland nieuwe werkzame stof bevat (Bacillus thuringiensis subsp. israelensis stam AM65-52, zie hieronder), is de zienswijzeprocedure zoals bedoeld in artikel 2:3 Besluit bestuursreglement regeling toelating gewasbeschermingsmiddelen en biociden Ctgb 2007 van toepassing.

2 Stofinformatie

Werkzame stof	Gehalte
Bacillus thuringiensis subsp. israelensis stam AM65-52	123 g/L

De stof is per 1 mei 2009 geplaatst op Annex I van Richtlijn 91/414/EEG (2008/113/EC d.d. 8 december 2008) en vervolgens bij Uitvoeringsverordening (EU) 540/2011 d.d. 25 mei 2011 goedgekeurd. De goedkeuring van deze werkzame stof expireert op 30 april 2019.

3 Toelatingsinformatie

Toelatingsnummer:	15539 N
Expiratiedatum:	30 april 2020
Afgeleide parallel of origineel:	Origineel
Biocide, gewasbeschermingsmiddel of toevoegingsstof:	Gewasbeschermingsmiddel
Gebruikers:	Professioneel

4 Verpakkingsinformatie

Aard van het preparaat:
Suspensie concentraat

HET COLLEGE VOOR DE TOELATING VAN GEWASBESCHERMINGSMIDDELEN EN BIOCIDEN

BIJLAGE II Etikettering van het middel Gnatrol SC

Professioneel gebruik
de identiteit van alle stoffen in het mengsel die bijdragen tot de indeling van het mengsel:
-

Pictogram	-
Signaalwoord	-
Gevarenaanduidingen	-
Voorzorgsmaatregelen	P102 Buiten het bereik van kinderen houden. P261 Inademing van stof/rook/gas/nevel/damp/spuitnevel vermijden. P302 + P352 BIJ CONTACT MET DE HUID: Met veel water/... wassen. P501 Inhoud/verpakking afvoeren naar .... SP 1 Zorg ervoor dat u met het product of zijn verpakking geen water verontreinigt.
Aanvullende etiketelementen	EUH208 Bevat 1,2-benzisothizoline-3-on. Kan een allergische reactie veroorzaken. EUH401 Volg de gebruiksaanwijzing om gevaar voor de menselijke gezondheid en het milieu te voorkomen.

REGISTRATION REPORT

Part A

Risk Management

Product code: Gnatrol SC

Active Substance: *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52, 123 g/L

Indoor/Greenhouse

NATIONAL ASSESSMENT

The Netherlands

Applicant: Sumitomo Chemical Agro Europe (representing Valent BioSciences LLC)

Date: December 2017

Evaluator: Ctgb, NL

PART A – Risk Management

1 Details of the application

1.1 Application background

This application was submitted by Sumitomo Chemical Agro Europe (representing Valent BioSciences LLC) in May 2017.
The application was for authorisation of Gnatrol SC, a suspension concentrate containing 123 g/L *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 intended for soil application in indoor/greenhouse conditions for the control of fungus gnats in ornamentals and nursery plants.

1.2 Annex I inclusion

Bacillus thuringiensis subsp. *israelensis* strain AM65-52 was approved in EU on 01 January 2009 under Inclusion Directive 2008/113/EC. Regulation (EC) No 1107/2009 repealed and replaced Directive 91/414/EEC and the active substance *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 is included in the Annex to Regulation (EC) No 540/2011.
The approval of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 (**2008/113/EC)** provides no specific provisions under Part B which need to be considered by the applicant in the preparation of their submission and by the MS prior to granting an authorisation.
For the implementation of the uniform principles, the conclusions of the review report on *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52, and in particular Appendices I and II thereof, as finalised in the Standing Committee on the Food Chain and Animal Health on 11/07/2008 shall be taken into account. In this overall assessment there were no particular issues identified as requiring particular and short term attention from Member States.
Further, in compliance with the provisions of Article 25a of Regulation (EC) No 2229/2004, EFSA delivered its conclusions on *Bacillus thuringiensis* ssp. *israelensis*, (Serotype H-14), strain AM65-52 on 10 December 2012. Based on this new information available (EFSA, 2013), no need to change the conditions of approval of *Bacillus thuringiensis* ssp. *israelensis*, (Serotype H-14), strain AM65-52 was identified. The Commission referred on 13th December 2013 to an updated review report to the Standing Committee on the Food Chain and Animal Health, for examination.
The updated review report (SANCO/1540/08 – rev. 4 – 2013) contains the conclusions of the final examination by the Standing Committee. Given the importance of the draft assessment report, the conclusion of EFSA and the comments, and clarifications submitted after the conclusion of EFSA, these documents are also considered to be part of this review report.

1.3 Regulatory approach

To obtain authorization, the product Gnatrol SC must meet the conditions of EU approval and be supported by dossiers satisfying the requirements of Regulation (EC) No 1107/2009, with an assessment to Uniform Principles, using agreed end-points.
Gnatrol SC has been authorized by Denmark for soil application as a drench or by drip irrigation systems indoors for the control of fungus gnats in ornamentals (Danish authorisation no. 526-14).
The present application was submitted in order to obtain authorization of this product in The Netherlands based on Mutual Recognition following the authorisation by Denmark.

1.4 Data protection claims

Data protection of the active substance is claimed by Sumitomo Chemical Agro Europe (representing Valent BioSciences LLC) for all studies submitted to Denmark.

1.5 Letters of Access

No letters of access are required for this submission.

2 Details of the authorisation

2.1 Product identity

Product name	Gnatrol SC
Authorisation number	-
Function	Insecticide (biological larvicide)
Applicant	Sumitomo Chemical Agro Europe (representing Valent BioSciences Corporation)
Active substance	123 g/L *Bacillus Thuringiensis subsp. Israelensis* strain AM65-22 ($1.5x10^9$ CFU/g)
Formulation Type	Suspension concentrate [Code: SC]
Packaging	10L F-HDPE bottles with a screw cap. Material type: Virgin FDA approved high density PE.

2.2 Classification and labelling under Regulation 1272/2008

The identity of all substances in the mixture that contribute to the classification of the mixture *:			
-			
Pictogram:	-	Signal word:	-
H-statements:	-		
P-statements:	P102	Keep out of reach of children.	
	P261	Avoid breathing dust/fume/gas/mist/vapours/spray.	
	P302+P352	IF ON SKIN: Wash with plenty of water/...	
	P501	Dispose of contents/container to	
Supplemental Hazard information:	EUH208	Contains 1,2-benzisothizoline-3-one. May produce an allergic reaction.	
	EUH401	To avoid risks to human health and the environment, comply with the instructions for use.	
Child-resistant fastening obligatory?			not applicable
Tactile warning of danger obligatory?			not applicable

Explanation:	
Pictogram:	-
H-statements:	-
P-statements:	EUH208 is assigned based on the presence of a co-formulant

	above 10% of the specific concentration limit. The other P-statements were proposed by the applicant and are accepted.
Other:	-

* according to Reg. (EC) 1272/2008, Title III, article 18, 3 (b)

2.3 Intended uses

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Use-No. (e)	**Member state(s)**	**Crop and/ or situation** **(crop destination / purpose of crop)**	**F, Fn, Fpn G, Gn, Gpn or I**	**Pests or Group of pests controlled** (additionally: developmental stages of the pest or pest group)	**Application**				**Application rate**			**PHI** (days)	**Remarks:** e.g. g safener/synergist per ha (f)
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	L product / ha a) max. rate per appl. b) max. total rate per crop/season	kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max		
Zonal uses (field or outdoor uses, certain types of protected crops)													
1	NL	Ornamental crops	G	larvae of Sciarid flies (Fungus gnat)	Drench by overhead spray or irrigation	All growth stages Jan-dec	3	5	50 to 100 l product/ha or 5 ml to 10 ml product/m²	6.15 kg to 12.30 kg MPCA/ha	0.2-2.0 l/m^2 or 2,000 to 20,000 l/ha	0	Maximum 100L/ha (5.6 x10^{14} cfu/ha) per application Maximum 3 applications per crop=1.8 x 10^{15} cfu/ha Maximum 9 crop cycles per year=1.5 x 10^{16} cfu/ha

3 Risk management

3.1 Reasoned statement of the overall conclusions taken in accordance with the Uniform Principles

3.1.1 Physical and chemical properties

Overall Summary: Gnatrol SC is a light brown liquid with a malt-like odour. The pH of a 1% solution is about 5.0 and the density is 1.06. The explosive, oxidizing, flammability/flash-point and auto-iginition properties have not been tested. However, based on the composition of the formulation, no classification is considered required.
The physical and chemical properties of Gnatrol SC do not pose any particular safety risk with respect to handling, storage or transport. The technical properties of the formulation are found to be acceptable for an SC-formulation.

In study by R.A. Brand (2009) the average total viable spore count (n=5) of *Bacillus thuringiensis israelensis* strain AM65-22 in technical powder of the *Bacillus thuringiensis israelensis* is determined to be $4.8x10^{10}$ CFU/g (min. $5.6x10^{9}$ CFU/g). In study by R.A. Brand (2007) the average total viable spore count (n=5) in Gnatrol SC is determined at $1.5x10^{9}$ CFU/g (min. $6.4x10^{8}$ CFU/g).

An ambient shelf-life study for 12 months at 20˚C and 18 months at 15˚C is available for Gnatrol SC in HDPE, however not evaluated in the country of origin (Denmark). Therefore, the results are summarized in the table 3-1 below. All the data are found to be acceptable and therefore the shelf-life is 12 months when stored at 20 °C in HDPE or 18 months when stored at <15 °C in HDPE. The results of the shelf-life study can be extrapolated to f-HDPE, as HDPE is found to be worst-cast packaging compared to f-HDPE.

Study	ABG-6193 (VectoBac 12 AS) Two year Storage Stability
Sponsor:	Valent BioSciences Corporation, Libertyville, USA
Facility	Huntingdon Life Sciences Ltd. Occold, Eye, Suffolk, UK
Author	A.L. Comb (25 July 2012)
Study number	ZAB0109
Guidance	91/414/EEC amended by European Commission Directive 94/37/EC and EPA/OPPTS Series 830.6317.
GLP Published	Yes No

Table 3-1: Results of the 2 year shelf-life in HDPE packaging at interval 12 months at 20˚C and 18 months at 15˚C (in-use concentrations in NL are between 0.25-5%)

Test Lot. No. 84-509-BA-81	**Initial**	**12 months at 20˚C[1]**	**18 months at 15˚C[1]**
Appearance	Light brown liquid with a malt-like odour	Light brown liquid with a malt-like odour	Light brown liquid with a malt-like odour
Active substance content* (Nominal 1200 ITU/mg)	1481 ITU/mg[2]	1170 ITU/mg[2] (Frozen control 1391 ITU/mg)	1289 ITU/mg[2] (Frozen control 1547 ITU/mg)
Bacterial Contamination	<10 CFU/g	30 CFU/g	55 CFU/g
Fungal contamination	<10 CFU/g	<10 CFU/g	<10 CFU/g

Screen for bacterial pathogens	E. Coli = Absent Salmonella = Absent Ps. Auruginosa = Absent Staph. Aureus = Absent	E. Coli = Absent Salmonella = Absent Ps. Auruginosa = Absent Staph. Aureus = Absent	E. Coli = Absent Salmonella = Absent Ps. Auruginosa = Absent Staph. Aureus = Absent
Density (EEC Method A.3)	1.06	1.06	1.06
pH (1% suspension, CIPAC MT 75.3)	5.0	5.0	5.0
Persistence of foaming (5%, CIPAC MT 47.2)	0 mL after 1 minute	0 mL after 1 minute	0 mL after 1 minute
Spontaneity of dispersion (5%, CIPAC MT 160)	101%	103%	101%
Suspensibility (0.031% and 5%, CIPAC MT 161)	Homogenous** (0.031%) 91% (5%)	Homogenous** (0.031%) 93% (5%)	Homogenous** (0.031%) 90% (5%)
Wet sieving (CIPAC MT 59.3)	0% retained on a 75µm sieve	0.005% retained on a 75µm sieve	0.011% retained on a 75µm sieve
Pourability (CIPAC MT 148)	Residue, R=1.4% Rinsed residue, R'= 0.18%	Residue, R=0.9% Rinsed residue, R'= 0.04%	Residue, R=1.1% Rinsed residue, R'= 0.11%

* ITU (International Toxic Units)/mg relative to a reference substance.
** No meaningful data was obtained for the samples prepared at an application concentration of 0.031% v/v since the residue weights were extremely low and consistent with the background weights due to salts in Standard Water used. Tis was exacerbated by the fact that the dried weight residue of the test substance was also quite low. It was confirmed during testing at the lowest application concentration that the suspension remained homogenous.
1) The results at 20˚C are only determined up to 12 months, after this time point the biopotency would have decreased too much (<1200 ITU/mg). The results at 15˚C are only determined up to 18 months, no 24 months time point was provided in the study.
2) To show stability after storage the biopotency expressed in ITU/mg was determined instead of CFU/g, as this is an accurate way of determining if the spores are still effective after storage rather than the spore count (amount).

Implications for labelling: None.

Compliance with FAO specifications: The product Gnatrol SC complies with FAO specifications, as far as could be assessed. Currently a FAO specification does not exists for microbial plant protection products.

Nature and characteristics of the packaging: Information with regard to type, dimensions, capacity, size of opening, type of closure, strength, leakproofness, resistance to normal transport & handling, resistance to & compatibility with the contents of the packaging, have been submitted, evaluated and is considered to be acceptable.

Nature and characteristics of the protective clothing and equipment: Information regarding the required protective clothing and equipment for the safe handling of Gnatrol SC has been provided and is considered to be acceptable.

3.1.2 Methods of analysis

3.1.2.1 Analytical method for the formulation

Methods were provided in the EU review of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 and were considered adequate.
Bacillus thuringiensis subsp. *israelensis* strain AM65-52 is not genetically modified.
Methods to ensure the lack of carry-over of a mutant is principally done through manufacturing controls, please see CONFIDENTIAL information - data provided separately (Part C).

3.1.2.2 Analytical methods for residues

Information provided in Annex II Point 4 is regarded sufficient, as relevant residues can only occur from the MPCA. Please refer to DAR, Volume 3, Annex B.5, Analytical methods Section B.5.3. Further information has been included in this submission that addresses the lack of need for residue studies.

No residues are expected in plant matrices, animal matrices, soil, water and air and therefore no methods are required.

3.1.3 Mammalian Toxicology

Acute toxicity studies for Gnatrol SC were not evaluated as part of the EU review of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52. Therefore, all relevant data are provided here and are considered adequate. All studies were carried out with VectoBac 12AS (synonym to Gnatrol SC) with the exception of dermal sensitization which was carried out with a similar formulation VectoBac AS.
Six studies of acute toxicity have been submitted for the Core assessment by Denmark.
The studies were performed with VectoBac 12 AS (identical to Gnatrol SC), and a sensitisation study was conducted with a similar formulation (VectoBAC AS (very similar to Gnatrol SC)). The results of the available studies are given in the table below.

Summary of acute toxicity studies for Gnatrol SC

Study	Species	Sex	Method	Result	Classification
Acute oral toxicity	Rat	5M/5F	OPPTS	>5000 mg/kg	None
Acute inhalation toxicity	Rat	5M/5F	OPPTS	>5.34 mg/l	None
Acute dermal toxicity	Rabbit	5M/5F	OPPTS	>5000 mg/kg	None
Skin irritation	Rabbit	2M/4F	OPPTS	Mildly irritant	None
Eye irritation	Rabbit	3M/6F	OPPTS	Mildly irritant	None
Sensitisation (Buehler)	Guinea Pig	15M/15F	OECD 406	Slight sensitiser	None*

*Considering that all microbials should be regarded as potential sensitizers, the agreed warning phases is "Micro-organisms may have the potential to provoke sensitising reactions"

All studies were evaluated in the core by DK and found acceptable. Gnatrol SC containing 123 g/l *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 has a low toxicity in respect to acute oral, dermal and inhalation toxicity. It is a mildly irritant to the rabbit skin and eye and was found to be a slight sensitiser to the skin of the guinea pig using a Buehler test with 9 applications.
Taking into account all submitted data Gnatrol SC does not require classification for acute effects.

3.1.3.2 Operator Exposure

Bacillus thuringiensis acts highly specifically and is not pathogenic to mammals. This has been shown in many tests on toxicity, pathogenicity and infectiveness to vertebrates, all without adverse effects.
No harmful effects have been observed on personnel in research or industrial mass production, over a production period of more than 20 years. Because all components of the preparation used are of negligible

toxicity as well, a toxic effect of Gnatrol SC on the operator is unlikely. For the same reasons no maximum allowable concentration (MAC) in drinking water was calculated. No cases on hypersensitivity have been reported in production or application of Gnatrol SC. As a consequence, an exposure assessment is not performed.

3.1.3.3 Bystander Exposure

Bacillus thuringiensis acts highly specifically and is not pathogenic to mammals. This has been shown in many tests on toxicity, pathogenicity and infectiveness to vertebrates, all without adverse effects.
No harmful effects have been observed on personnel in research or industrial mass production, over a production period of more than 20 years. Because all components of the preparation used are of negligible toxicity as well, a toxic effect of Gnatrol SC on the bystander is unlikely. For the same reasons no maximum allowable concentration (MAC) in drinking water was calculated. No cases on hypersensitivity have been reported in production or application of Gnatrol SC. As a consequence, an exposure assessment is not performed.

3.1.3.4 Worker Exposure

Bacillus thuringiensis acts highly specifically and is not pathogenic to mammals. This has been shown in many tests on toxicity, pathogenicity and infectiveness to vertebrates, all without adverse effects.
No harmful effects have been observed on personnel in research or industrial mass production, over a production period of more than 20 years. Because all components of the preparation used are of negligible toxicity as well, a toxic effect of Gnatrol SC on the worker is unlikely. For the same reasons no maximum allowable concentration (MAC) in drinking water was calculated. No cases on hypersensitivity have been reported in production or application of Gnatrol SC. As a consequence, an exposure assessment is not performed.

3.1.4 Residues and Consumer Exposure

Since *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 is to be used for control of fungus gnats in ornamental crops, it is considered unnecessary to provide any further information under this residue section for authorisation of Gnatrol SC.

3.1.5 Environmental fate and behaviour

Reference is made to the information submitted for the MPCA *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 (Bti) in the Draft Assessment Report, Volume 1 (2007). The ingredients of the preparation Gnatrol SC, formulated as suspension concentrate, are inert and are not expected to present any hazards to the environment (please refer to Part C). Therefore, studies and information on the microbial pest control agent, *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52, are considered applicable and relevant with regard to the evaluation of the formulated product.

3.1.5.1 Predicted Environmental Concentration in Soil (PECsoil)

Core assessment

The fate and behaviour of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 in the terrestrial environment was evaluated during the Annex I Inclusion. No additional studies have been performed and no further data are provided. The fate and behaviour of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 in soil is discussed in detail in the corresponding document of the EU review dossier where the references cited from the scientific literature can be found. A brief overview of this information is provided below.

The survival of *Bacillus thuringiensis* in soil is a dynamic process involving sporostasis, germination and sporulation in specific habitats. Survival is influenced by changing conditions regarding soil type, native micro flora, nutrient availability and fertilisation. Therefore, with the exception of some months following application, the application of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 to soil is not expected to significantly increase the number of *Bacillus thuringiensis* present in soil (background levels reported to range between 2×10^2 and 4.9×10^4 CFU/g).
Gnatrol SC containing *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 will be applied as a soil drench to control fungus gnats in indoor ornamentals. Based on this indoor use of Gnatrol SC exposure is considered negligible and it is not necessary to calculate PEC.

NL assessment
This is not an NL specific aspect. Please refer to the core assessment, which states that, based on the indoor use of Gnatrol SC, it is not considered necessary to calculate PECsoil.

3.1.5.2 Predicted Environmental Concentration in Surface water (PECsw)

Surface water
Core assessment
The fate and behaviour of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 in the aquatic environment was evaluated during the Annex I Inclusion. No additional studies have been performed and no further data are provided. The fate and behaviour of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 in water is discussed in detail in the corresponding document of the EU review dossier where the references cited from the scientific literature can be found. A brief overview of this information is provided below.
Although *Bacillus thuringiensis* subsp. *israelensis* has been shown to survive to some extent in water, viability in the natural aquatic environment is influenced by many biological, chemical and physical factors. Predation by bacteriophages, protozoans and other lower animal forms undoubtedly plays a role in controlling the bacteriological population in the aquatic environment.
Bacillus thuringiensis subsp. *israelensis* is not regarded as an autochthonous inhabitant of aquatic environments and does not find optimal conditions for growth in the aquatic environment (e.g. natural water is poor in organic carbon content). Therefore, proliferation is not likely to occur. Bacterial spores may survive, but will be subject to natural competition in the diverse microbiota of natural waters. Survival of the applied spores of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 is not expected to cause any environmental or health impact. The intended indoor use of Gnatrol SC is not considered to lead to significant exposure of surface water or groundwater.

NL assessment
For the calculation of PECsw of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 the GEM model is not considered suitable. GEM was developed to model the fate of chemicals in the greenhouse water system, not that of bacteria. Essential input parameters such as DT50 in water, sediment and various other matrices, Freundlich sorption constant, vapour pressure, water solubility, diffusion coefficient and octanol-water partition coefficient are not applicable to and meaningful for bacteria such as *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52. Moreover, one of the elements of the water treatment system in the GEM model is a disinfection tank, where the recirculating solution is disinfected in order to avoid distribution of pathogens in the environment, mostly with heat treatment or UV radiation treatment. If this disinfection tank functions properly, *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 should be eliminated from the recirculation water passing through the disinfection tank. Release of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 to surface water should therefore be negligible.

In order however to allow a risk assessment for those aquatic species for which toxicity values are available, PECsw values have been calculated by assuming that 0.1% of the total worst case seasonal dose (9 cycles per year x (3 x 12.3 = 36.9 kg MPCA/ha/cycle) = 322 kg MPCA/ha) is deposited into the standard ditch (1 m in length) that contains 210 L of water per square meter. The value of 0.1% is the default emission rate from greenhouses used in the Netherlands. The PECsw under these worst case assumptions is 158 µg MPCA/L. Based on the a.s. and CFU content of the formulation (123 g MPCA/L equivalent to 5.6 x 10^{12} CFU/L (information from Core dossier section B.5), the PECsw of 158 µg/L is equivalent to 7.2 x 10^{6} CFU/L.

Groundwater

Core assessment

See above core assessment for surface water, which concluded that the intended indoor use of Gnatrol SC is not considered to lead to significant exposure of surface water or groundwater.

NL assessment

In the core assessment Denmark agreed with the conclusions by the applicant, who stated that movement movement of *Bacillus thuringiensis* through the soil by leaching is unlikely to occur.

This agrees with the Conclusion of the Review Report (SANCO/1540/08 –rev. 4 – 2013), which states in section 3: "*Potential contamination of groundwater. However, potential contamination by δ-endotoxins is considered unlikely since the crystalline proteins are rapidly degraded by the actions of indigenous microorganisms and photo-degradation. Regarding the microorganism itself, Bacillus thuringiensis subsp israelensis occurs naturally ubiquitously in soil*".

Hence no threat of contamination of groundwater exists following applications of Gnatrol SC according to the GAP.

3.1.5.3 Predicted Environmental Concentration in Air (PECair)

Core assessment

The fate and behaviour of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 in the atmosphere was evaluated during the Annex I Inclusion. No additional studies have been performed and no further data are provided. The fate and behaviour of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 in air is discussed in detail in the corresponding document of the EU review dossier where the references cited from the scientific literature can be found. A brief overview of this information is provided below. Following application of the Gnatrol SC formulation as proposed, as a soil drench for control of fungus gnats in indoor ornamentals, spray drift is unlikely to occur and the outdoor exposure is expected to be negligible. Furthermore, *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 is expected to undergo rapid degradation in the atmosphere since inactivation by solar radiation is a very important factor causing loss of activity and degradation of bacteria spores and δ-endotoxin crystals in the field environment. The survival and persistence of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 in air is therefore expected to be very limited.

NL assessment

The fate and behaviour in air is considered as core data since there are no specific national requirements.

3.1.6 Ecotoxicology

3.1.6.1 Effects on Terrestrial Vertebrates

Core assessment
The ecotoxicological effects of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 on birds were evaluated during the Annex I inclusion. No additional studies have been performed. The ecotoxicological effects of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 is discussed in detail in the DAR (B.9.1) where the study references can be found.
No treatment related mortalities or effects of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52 technical material occurred in these two short-term oral toxicity studies with both Mallard duck and Northern Bobwhite at rates of 3077 mg/kg food for five days, equivalent to approx. 6.2×10^{11} spores/kg b.w. per day. These data confirms that birds will not be affected by insecticidal crystal proteins and living spores of *Bacillus thuringiensis* subsp. *israelensis* strain AM65-52.
Given that Gnatrol SC will only be used indoors in greenhouses, it is considered that exposure in the general environment will be negligible. The lack of likely effects on avian species is further confirmed by the specificity of the mode of action of *Bti* strain AM65-52 which requires alkaline gut conditions of pH 9.0 – 10.5 (as detailed in the introduction). The pH of avian intestinal tracts is slightly acidic so even if ingestion of *Bti* (Strain AM65-52) occurs there will be no exposure to the active protein delta endotoxins. In addition the results of numerous surveys indicate that *Bt*, possessing minimal growth requirements, is a ubiquitous soil microbe as well as a common inhabitant of the phylloplane, therefore birds are likely to be continuously exposed to low levels of *Bt*.
Since Gnatrol SC is due to be used only as an indoor soil drench for the control of fungus gnat larvae, it is not considered necessary to calculate the toxicity/exposure ratio for birds as they are unlikely to be exposed to Gnatrol SC. It is concluded that Gnatrol SC, used according to Good Agricultural Practice does not pose an unacceptable risk to birds.

NL assessment
The effects on birds and mammals are considered as Core data since there are no specific national requirements. Therefore, reference is made to the core assessment. Because of the proposed use in greenhouses, there is no exposure of wild birds and mammals and no further risk assessment was required.

Considering the nature of the plant protection product (Microbial Pesticide Control Product), the concept of secondary poisoning, a national specific aspect, is not relevant and no further calculations need to be performed. The risk is considered to be low.

3.1.6.2 Effects on Aquatic Species

NL assessment
The risk to aquatic invertebrates is a national specific aspect for The Netherlands. In the Core assessment no quantitative risk assessment was carried out, as the proposed uses are limited to the greenhouse. For The Netherlands greenhouse emissions are relevant and therefore a (semi)quantitative assessment was carried out in the NL addendum.

Fish and Daphnids
Acute and chronic endpoints were available for fish and aquatic invertebrates (including long-term endpoints for grass shrimp, may fly and copepod) in the EFSA Conclusion on Bacillus thuringiensis israelensis AM65-52 (EFSA Journal 2013;11(4):3054) and were used to perform a semi-quantitative risk assessment using the calculated exposure (PECsw derived from 0.1% assumed greenhouse emission) from Section 5 of the dRR NL addendum for The Netherlands. As the usual trigger values for chemicals do not apply to microorganisms a margin of safety (ratio between toxicity and estimated exposure without trigger value) was used. For both, the acute and long-term risks in fish and aquatic invertebrates respectively, the ratios indicate a sufficient margin of safety, which allows the conclusion that *Bacillus*

thuringiensis israelensis AM65-52 poses low acute and long-term risk to fish and aquatic invertebrates following the proposed use of Gnatrol SC.

Algae and Aquatic plants
No endpoints in terms of ErC50 or EyC50 values are available for algae and aquatic plants. With regard to algae, the EFSA List of Endpoints states (note: Bti = Bacillus thurin-giensis israelensis): *"A study with Bti toxins showed that pure Euglena spp, Chlamydomonas sp., Oedogonium sp, mixed algal cultures and a cyanobacterium (Oscillatoria sp) were not inhibitory in dilution tests. Algae are not considered to be at risk as there is no mechanism for the ingestion of Bti (Strain AM65-52) and therefore no appropriate digestive enzymes to enable the release of the active protein delta endotoxins."*. With regard to aquatic plants, the List of Endpoints states: *"Plants are not considered to be at risk as there is no mechanism for the ingestion of Bti (Strain AM65-52) and therefore no appropriate digestive enzymes to enable the release of the active protein delta endotoxins."*. Therefore the risk to algae and aquatic plants is considered to be low.

3.1.6.3 Effects on Bees and Other Arthropod Species

Effects on bees
The effects on bees are normally considered as core data since there are no specific national requirements. In the Core assessment the zRMS performed the assessment with the wrong application rate (0.58 kg a.s./ha instead of 12.3 kg a.s./ha). In addition, the Core assessment concluded that exposure to bees does not occur as the use is limited to greenhouses. While the Ctgb agrees that exposure to bees outside the greenhouses does not occur and therefore a risk assessment is not required, exposure to bees used inside greenhouse as pollinators remains relevant. Therefore, the risk assessment was repeated in the NL addendum for the proposed use in The Netherlands considering the risk to pollinators used in greenhouses.

NL assessment
The risk assessment, using newly generated endpoints on the formulations evaluated in the Core assessment, was based on the comparison of the spray concentration following from the proposed use and the exposure in the application solution in the bee studies with the aim to derive an estimate of the margin of safety. The derived margin of safety for oral exposure was very low (<1) and therefore indicated a potential risk. However, it should be noted that the MoS for oral and contact toxicity was derived from a limit test and at the only tested dose of 100 (contact) and 115.47 (oral) µg a.s./bee no treatment related mortality or abnormal behavior was observed during the 48-hour exposure.

The lack of toxicity of *Bacillus thuringiensis var. israeliensis* has also been confirmed by a study by Atkins (1990) summarized in section B.9.3.1 of the DAR. Measured dose rates up to and including 100.80-138.3 µg a.s./bee/day (range for 3 replicates) fed continuously for 14 days ad libitum did not cause any stomach poison effects. This result supports the assumption that the single dose oral LD50 will be higher than the value of >115.47 µg a.s./bee, which was the only tested rate in the OECD 213 formulation studies with Gnatrol SC.

Furthermore, the proposed use is by means of soil drench using spray or irrigation, and spray treatment spray treatment is restricted to growth stages before flowering. In section IIIM 3.1 of the Core RR by Denmark, it is stated that the micro-organism is not translocated in the plant. The lack of translocation in the plant in combination with the fact that the product is only applied before flowering in case of spray treatment (and directly to the soil in case of irrigation) implies that under these conditions there will be very limited exposure of bees, which are used in greenhouses.

Due to the lack of significant exposure, the endpoints derived from the limit study considered to be highly conservative, and the weight of evidence from the other considerations mentioned, the risk is negligible. No warning sentence for pollinators used in greenhouse is required on the label, but a restriction to pre-flowering stages is required.

Effects on arthropods other than bees
An in-field risk assessment was not performed in the core assessment due to an assumed lack of exposure (greenhouse only) and is normally also not a Dutch specific aspect. However, exposure of natural enemies ('beneficials') used in integrated pest management (IPM) systems may be relevant since it cannot be excluded that soil dwell-ing beneficials are used within IPM systems. Therefore an IPM assessment was performed in the NL addendum.

NL assessment
A semi-quantitative risk assessment, based on comparison of the exposure concentration in the performed studies (limit design, no significant effects at the rate tested) and the spray concentration following from the proposed use resulted in a margin of safety of > 0.183, which indicates a risk. Although, based on additional considerations, such as a much higher real LC50 (no mortality or reproduction effects were seen in the glass plate assays) and the specificity of the mode of action of Bti to *Lepidoptera*, the Ctgb considers the risk to non-target arthropods used in IPM programs rather low the risk cannot sufficiently be excluded. The applicant themselves proposed to include a warning sentence on the label to avoid damage to natural enemies used by the grower, thus the following phrase will be included on the label *'Let op: dit middel kan schadelijk zijn voor natuurlijke vijanden. Raadpleeg uw leverancier van natuurlijke vijanden over het gebruik van dit middel in combinatie met het gebruik van natuurlijke vijanden.'*

An off-field risk assessment was not required as the uses are limited to greenhouses.

3.1.6.4 Effects on Earthworms and Other Soil Macro-organisms

Core assessment
Since Gnatrol SC is due to be used only as an indoor soil drench for the control of fungus gnat larvae, it is not considered necessary to calculate the toxicity/exposure to earthworms as they are unlikely to be exposed to Gnatrol SC.

NL assessment
The effects on earthworms are considered as core data since there are no specific national requirements. General management practices of greenhouses involve soil sterilisation, therefore earthworms are not expected to be present in greenhouses.

3.1.6.5 Effects on Soil Non-target Micro-organisms

Core assessment
Gnatrol SC will be used on ornamental crops (pot plants) in greenhouses. The usual route of exposure for soil micro-organisms is via contact in soil or ingestion after application. However, since Gnatrol SC application and maintenance of the treated plants and substrate is performed indoors in greenhouses exposure of soil micro-organisms is considered to be negligible.

NL assessment
The effects on soil microbial activity are considered as core data since there are no specific national requirements. In the Core, no assessment was carried out for soil microorganisms, because no exposure is expected from the proposed uses limited to greenhouse applications. General management practices of

greenhouses involve soil sterilisation, therefore soil microorganisms are not expected to be present in greenhouses.

3.1.6.6 Effects on other Non-target organisms

Non-Target Plants

Core assessment

Bacillus thuringiensis subsp. *israelensis*, strain AM65-52 is toxic specifically to insects of the *Dipteran* order and no effects on terrestrial or aquatic plants from applications of Bti in insecticidal formulations, targeted specifically at these insects, is expected or envisaged.

NL assessment

The effects to non-target plants are a Dutch specific aspect. However, as the proposed product is not a herbicide and the proposed uses are limited to greenhouses no data and no risk assessment were required. No risk to plants is expected.

Other non-target species (Flora and Fauna)

Core assessment

Tests on other non-target species are not required.

NL assessment

Please refer to the Core assessment.

3.1.7 Efficacy

Gnatrol SC is intended for use against fungus gnats on ornamental plants. Gnatrol SC is a microbiological insecticide, containing *Bacillus thuringiensis* subsp. *israelensis* strain AM 65-52 as active substance. The product is formulated as an aqueous suspension for application as a drench or by drip irrigation systems and contains 11.61% w/w *Bti* fermentation slurry per liter product.
Applications are made with the product when early stage fungus gnat larvae are detected in growing media. Successful treatment of fungus gnat infested plants with Gnatrol SC should result in control of the root damaging insects.

Bacillus thuringiensis subsp. *israelensis* strain AM 65-52 was included on Annex 1 under Directive 91/414 from 1 May 2009 and has not previously been registered in Denmark under the trademark Gnatrol SC. However Gnatrol SC is currently commercialised in Denmark under the product names VectoBac 12 AS and Bactimos L, these products are identical.

The following use was approved based on the core dossier reviewed by DK:

Crop	Pest	Dose rate	Remarks
Ornamental plants grown in glasshouse	Fungus gnats	Label: 5-10 ml/m^2 50-100 l product/ha	3/crop applications at 5 to 7 day internals

Results from 7 trials are reported and these were conducted at glasshouse conditions in Belgium (2 trials), Germany (2 trials), Denmark (2 trials) and Sweden (1 trial). The test product in all trials was Vectobac 12AS, identical to Gnatrol SC, and therefore they are accepted for efficacy evaluation of Gnatrol SC.
The efficacy trials prove the efficacy of Gnatrol SC for control of sciarid fly larvae in ornamental plants. The efficacy data showed that the best control was achieved with 10 ml/m^2, and this dose rate was also necessary to meet the level of control achieved with the reference treatment. A reduced dose rate down to

5 ml/m^2 may provide sufficient control but this must give a clear recommendation for which conditions a dose rate lower than 10 ml/m^2 can be used.

For the evaluation of the aspect 'Efficacy' we refer to the evaluation of the member state of the original authorisation (Denmark).

Information on the occurrence or possible occurrence of the development of resistance

No specific information regarding Gnatrol SC or *Bacillus thuringiensis* subs. *israliensis* strain AM 65-52 was submitted.
Gnatrol SC contains *Bacillus thuringiensis* subspecies *israliensis. T*here are several other known subspecies that are used as insecticides. As with any insecticide, too frequent use of one type of *Bt* strain or one type of *Bt* delta-endotoxin can result in resistance of the insect to the active ingredient. *Bacillus thuringiensis* is a biological non-persistent insecticide thus reducing the chances of resistance build up. No cross-resistance has been reported between chemical insecticides and *Bt* products. Certain insect species have developed a resistance to particular *Bt* products caused by prolonged use resulting in a reduction in binding of specific Cry toxins to the gut membrane binding site. However, indications are that certain pest species are susceptible to more than one Cry toxin produced by different *Bt* subspecies. Therefore, resistance management strategy of altering applications of *Bt* products can prove effective. In conclusion, *Bt* products like any other insecticide should be used in IRM (Insecticide Resistance Management) or IPM (Integrated Pest Management) programs and not used over and over as the only insecticide of choice. IRM and IPM cultural practices are commonly in place already. Therefore the applicant must give information on the label regarding risk of resistance when Gnatrol SC is used, and regarding the IRAC MoA classification and appropriate IRM strategies.

The following sentence should be placed on the label:

Resistentiemanagement Dit middel bevat de werkzame stof Bacillus thuringiensis subspecies israelensis. De IRAC code is 11A. Bij dit product bestaat er kans op resistentieontwikkeling. In het kader van resistentie-management dient u de adviezen die gegeven worden in de voorlichtingsboodschappen, op te volgen.

3.2 Conclusions

The assessment conducted for Gnatrol SC was in accordance with the Uniform Principles and demonstrates an acceptable risk to human health and the environment. An authorisation can therefore be granted.

3.3 Further information to permit a decision to be made or to support a review of the conditions and restrictions associated with the authorisation

None.

Appendix 1 – Copy of the product label

Wettelijk Gebruiksvoorschrift
Het middel is uitsluitend toegelaten als insectenbestrijdingsmiddel voor het professionele gebruik door middel van een grondbehandeling in de volgende toepassingsgebieden (volgens Definitielijst toepassingsgebieden versie 2.1 Ctgb juni 2015) onder de hierna vermelde toepassingsvoorwaarden.

Toepassingsvoorwaarden:

Toepassingsgebied	Type toepassing	Werkzaamheid getoetst op	Dosering* middel per toepassing	Maximale dosering middel per toepassing	Maximaal aantal toepassingen per teeltcyclus	Minimum interval tussen toepassingen in dagen
Bloemisterijgewassen (bedekte teelt)	aangieten druppelbehandeling	Larven van rouwmuggen[1]	5 – 10 ml/m^2	10 ml/m^2	3	5

[1] rouwmuggen *(Sciaridae)*
* Verlaging van de dosering is toegestaan, maar van het maximaal aantal toepassingen en de andere toepassingsvoorwaarden mag niet worden afgeweken. Werkzaamheid is vastgesteld voor de genoemde dosering per toepassing en niet voor verlaagde doseringen.

Overige toepassingsvoorwaarden
In de bovengenoemde teelten het middel toepassen in ruim water 0,2 – 2,0 liter water per m^2 (2.000 – 20.000 liter water per ha).

In geval van druppelbehandeling kan in alle groeistadia worden behandeld. In geval van spuiten alleen toepassen vóór de bloei.

Gnatrol SC niet combineren met koper en/of chloor bevattende fungiciden en bemesting.

Bevat *Bacillus thuringiensis* subsp. Israelensis, stam AM65-52. Micro-organismen kunnen mogelijk sensibiliserende reacties veroorzaken.

Let op: dit middel kan schadelijk zijn voor natuurlijke vijanden. Raadpleeg uw leverancier van natuurlijke vijanden over het gebruik van dit middel in combinatie met het gebruik van natuurlijke vijanden.

<u>Resistentiemanagement</u>
Dit middel bevat de werkzame stof *Bacillus thuringiensis* subspecies israelensis. De IRAC code is 11A.
Bij dit product bestaat er kans op resistentieontwikkeling. In het kader van resistentie-management dient u de adviezen die gegeven worden in de voorlichtingsboodschappen, op te volgen.

Appendix 2 – Letter of Access

Not relevant. No letters of access are required for this submission.

Appendix 3 – Reference list

No new data was submitted.