



Health
Canada Santé
Canada

Your health and
safety... our priority.

Votre santé et votre
sécurité... notre priorité.

Proposed Registration Decision

PRD2017-17

Clothianidin

(publié aussi en français)

19 December 2017

This document is published by the Health Canada Pest Management Regulatory Agency. For further information, please contact:

Publications
Pest Management Regulatory Agency
Health Canada
2720 Riverside Drive
A.L. 6607D
Ottawa, Ontario K1A 0K9

Internet: pmra.publications@hc-sc.gc.ca

Facsimile: 613-736-3758
Information Service:
1-800-267-6315 or 613-736-3799
pmra.infoserv@hc-sc.gc.ca

Canada 

ISSN: 1925-0878 (print)
1925-0886 (online)

Catalogue number: H113-9/2017-17E (print version)
H113-9/2017-17E-PDF (PDF version)

© Her Majesty the Queen in Right of Canada, represented by the Minister of Health Canada, 2017

All rights reserved. No part of this information (publication or product) may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or stored in a retrieval system, without prior written permission of the Minister of Public Works and Government Services Canada, Ottawa, Ontario K1A 0S5.

Table of Contents

Overview	1
Background	1
List of Data Previously Required as Conditions of Registration under Section 12	3
Proposed Registration Decisions for Clothianidin	4
What Does Health Canada Consider When Making a Registration Decision?.....	5
Summary of Risk Mitigation Measures	6
Conclusion.....	7
Next Steps	7
Science Evaluation	9
1.0 The Active Ingredient, Its Properties and Uses	9
2.0 Impact on Human and Animal Health	9
3.0 Impact on the Environment.....	9
4.0 Value	10
References.....	11

Overview

Background

Clothianidin Technical Insecticide (Reg. No. 27445) is fully registered in Canada for structural uses as a crack and crevice or spot treatment for control of cockroaches, both indoors and on the exterior of structures. For further details see the Proposed Registration Decision PRD2016-04, *Clothianidin* and Registration Decision RD2016-13, *Clothianidin*. Other uses of Clothianidin Technical Insecticide, and its associated end-use products (listed in Table 1), are conditionally registered in Canada for use as seed treatments, foliar and soil applications. Additional information to assess the potential risk to pollinators for these uses was required under section 12 of the *Pest Control Products Act* as a condition of registration. Also under section 12, information on the movement of clothianidin into water was required for products with foliar and soil applications. The required additional information for these end-use products has been received and reviewed under applications to fulfill the conditions of registration.

A re-evaluation of clothianidin was announced in 2012 (Re-evaluation Note REV2012-02, *Re-evaluation of Neonicotinoid Insecticides*). This re-evaluation was initiated to assess the potential risk to pollinators in light of international updates to the pollinator risk assessment framework, including information requirements. Data received from the registrants, including those that were required to fulfill the conditions of registration under section 12, as well as data obtained from published literature, were considered in the re-evaluation assessment.

Health Canada has completed an assessment of pollinator risk for clothianidin. A Proposed Re-evaluation Decision was published in PRVD2017-23, *Clothianidin and Its Associated End-Use Products: Pollinator Re-Evaluation*. This document summarizes the science evaluation with regards to the potential risks posed by clothianidin to pollinators in Canada, as well as proposes strategies to reduce the risks to these pollinators.

This Proposed Registration Decision document is consistent with the pollinator re-evaluation outcome. The final re-evaluation outcome will be reflected in the final registration decision for clothianidin technical active ingredient, and the end-use products listed in Table 1.

Table 1 **Conditionally registered end-use products containing clothianidin included in this consultation.**

Product Name	Registration Number
Sepresto 75 WS	30972
Clothianidin Insecticide	29384
Arena 50 WDG Insecticide	29383
Clutch 50 WDG Insecticide	29382
Poncho 600 FS Seed Treatment Insecticide	27453
Titan Insecticide	27449
Prosper FL Flowable Insecticide and Fungicide Seed Treatment	27564

Product Name	Registration Number
Nipsit Inside 600 Insecticide	28975
Prosper T 200 Flowable Insecticide and Fungicide Seed Treatment	29158
Prosper FX Flowable Insecticide and Fungicide Seed Treatment	29159
Emesto Quantum	30362
Prosper Evergol	30363
Nipsit Suite Canola Seed Protectant	31355
Nipsit Suite Cereals of Seed Protectant	31357

For the four following end-use products; Sepresto 75 WS, Clothianidin Insecticide, Arena 50 WDG Insecticide, and Clutch 50 WDG Insecticide, and in respect of Use-Site Categories¹ 13, 14 and 30 for Clothianidin Technical Insecticide, Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act* and Pest Control Products Regulations, has extended the validity period of the registrations of these products until 31 December 2019. This extension was granted under 14(7) of the former Pest Control Products Regulations, to carry out a consultation under 28(1)(c)² of the *Pest Control Products Act*, on the proposed registration decisions in respect of these products. The PMRA considers it in the public interest to consult on the proposed registration decisions in light of, and in response to the growing public interest in the registration status of the neonicotinoid insecticides.

For the remaining 10 end-use products listed in Table 1, and in respect of Use-Site Categories 10 and 11 for Clothianidin Technical Insecticide, the validity period of the registrations of these products has been automatically extended until 31 December 2019 by operation of subsection 14(6) of the former Pest Control Products Regulations. This provision extends the validity period of a conditional registration for two years upon receipt of an application complying with the requirements of the notice delivered under section 12 of the *Pest Control Products Act*.

¹ USC 10 (Seed and Plant Propagation Materials Food and Feed), 13 (Terrestrial Feed Crops), 14 (Terrestrial Food Crops) and 30 (Turf) details at: <https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/registrants-applicants/product-application/use-site-category-dacotables/definitions-conventional-chemical-pesticides.html>

² 28 (1) The Minister shall consult the public and federal and provincial government departments and agencies whose interests and concerns are affected by the federal regulatory system before making a decision, (c) about any other matter if the Minister considers it in the public interest to do so.

List of Data Previously Required as Conditions of Registration under Section 12

Below is listed the additional information to assess the potential risk to pollinators which was previously required under section 12 of the *Pest Control Products Act* as a condition of registration.

DACO: 9.2.4.1
Title: Acute contact toxicity
Details: Available studies including those using end-use product formulations, dust from treated seed, or other species. Test material: active ingredient and major relevant transformation products, and/or end-use product.

DACO: 9.2.4.2
Title: Acute oral toxicity
Details: Available studies including those using end-use product formulations, dust from treated seed, or other species. Test material: active ingredient and major relevant transformation products, and/or end-use product.

DACO: 9.2.4.3
Title: Honeybee larvae toxicity
Details: Toxicity of clothianidin and its relevant transformation products to honeybee larvae; including those studies requested by the US EPA (United States Environmental Protection Agency) and CalDPR (California Department of Pesticide Regulation). Test material: active ingredient and major relevant transformation products, and/or end-use product.

DACO: 9.2.4.3
Title: Chronic adult honey study
Details: Chronic toxicity of clothianidin and relevant transformation products to adult honeybee; including those studies requested by the US EPA and CalDPR. Test material: active ingredient and major relevant transformation products, and/or end-use product.

DACO: 9.2.4.3
Title: Semi-field / field study for pollinators
Details: Semi-field and/or Field hive studies from various use patterns (e.g. soil application, foliar application (pre-bloom, during bloom, succeeding crops, etc.), seed treatment; including those studies requested by US EPA and CalDPR. Test material: end-use product.

DACO: 9.9 (8.5)
Title: Residue study for pollinators
Details: Residues of clothianidin and its major transformation products in pollen and/or nectar resulting from various use patterns (e.g. soil application, foliar application, seed treatment, including succeeding crops, etc.); including those studies requested by the US EPA and CalDPR. Test material: end-use product.

DACO: 9.9
Title: Information on dust generated from treated seed (including residues and/or effects)
Details: Information/studies to address the potential exposure/effects of dust generated from treated seeds. Test material: end-use product/active ingredient.

DACO: 9.9
Title: Other pollinator studies/data/reports
Details: Monitoring data (of exposure and/or effects). Test material: end-use product.

DACO: 9.9
Title: Information on other exposure routes (including residues and/or effects)
Details: Information/studies to address the potential exposure/effects of guttation water on bees. Test material: end-use product/active ingredient.

In addition to the requirements listed above, the additional requirement below was also identified under section 12 for these products: Clothianidin Insecticide (Reg. No. 29384), Arena 50 WDG Insecticide (Reg. No.29383), and Clutch 50 WDG Insecticide, (Reg. No. 29382).

DACO: 8.3.2.3
Title: Other Terrestrial field dissipation study
Details: Laboratory studies indicate that Clothianidin may be classified as having a medium to high mobility in soil. However, no adequate terrestrial field dissipation studies were submitted to validate these observations. Note that the available lysimeter studies have been conducted with seed treatment formulations and, therefore, a Lysimeter study conducted in coarse textured soil with a WDG formulation is required.

Proposed Registration Decisions for Clothianidin

1) Sepresto 75 WS (Reg. No. 30972)

Sepresto 75 WS contains the active ingredients clothianidin and imidacloprid, and is conditionally registered based on conditions of registration (section 12 data) for the clothianidin component of the product. The proposed decision in this document is to remove the section 12 conditions of registration for the clothianidin component of Sepresto 75 WS, previously established with regards to pollinators.

A proposed decision resulting from the re-evaluation of Imidacloprid (PRVD2016-20, *Imidacloprid*) was published for public consultation in 2016 and proposed a phase-out of all outdoor agricultural, ornamental, turf, and tree uses (except tree injection uses) and greenhouse uses of imidacloprid.

The continued registration of Sepresto 75 WS is implicated by this re-evaluation proposal, and as a result, is currently proposed for phase-out. Therefore, the continued registration of Sepresto 75 WS will be subject to the outcomes of the final re-evaluation decisions pertaining to clothianidin and imidacloprid.

2) Other End-use Products Listed in Table 1 and Clothianidin Technical Insecticide

Health Canada's PMRA, under the authority of section 8 of the *Pest Control Products Act*, is proposing a three-year registration for the sale and use of the technical grade active ingredient clothianidin and the end-use products listed in Table 1. This consultation is carried out under 28(1)(c) of the *Pest Control Products Act*, and as such is not subject to section 35(1) of the *Pest Control Products Act*.

An evaluation of available scientific information as set out in PRVD2017-23, *Clothianidin and Its Associated End-Use Products: Pollinator Re-Evaluation* and in this Proposed Registration Decision document found that, under the approved conditions of use, the products have value and do not present an unacceptable risk to human health or the environment, provided that labels of registered products are amended as required.

What Does Health Canada Consider When Making a Registration Decision?

The key objective of the *Pest Control Products Act* is to prevent unacceptable risks to individuals and the environment from the use of pest control products. Health and environmental risks are considered acceptable³ if there is reasonable certainty that no harm to human health, future generations or the environment will result from the use or exposure to the product under its proposed conditions of registration. The Act also requires that products have value⁴ when used according to the label directions. Conditions of registration may include special precautionary measures on the product label to further reduce risk.

To reach its decisions, the PMRA applies modern, rigorous risk-assessment methods and policies. These methods consider the unique characteristics of sensitive subpopulations in humans (for example, children) as well as organisms in the environment. These methods and policies also consider the nature of the effects observed and the uncertainties when predicting the impact of pesticides. For more information on how the PMRA regulates pesticides, the

³ "Acceptable risks" as defined by subsection 2(2) of the *Pest Control Products Act*.

⁴ "Value" as defined by subsection 2(1) of the *Pest Control Products Act*: "... the product's actual or potential contribution to pest management, taking into account its conditions or proposed conditions of registration, and includes the product's (a) efficacy; (b) effect on host organisms in connection with which it is intended to be used; and (c) health, safety and environmental benefits and social and economic impact."

assessment process and risk-reduction programs, please visit the Pesticides and Pest Management portion of the Canada.ca website at <https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management.html>.

Before making a final registration decision on clothianidin, the PMRA will consider any comments received from the public in response to this consultation document.⁵ The PMRA will then publish a Registration Decision⁶ on clothianidin, which will include the decision, the reasons for it, a summary of comments received on the proposed final registration decision and the PMRA's response to these comments.

Summary of Risk Mitigation Measures

Labels of registered pesticide products include specific instructions for use. Directions include risk-reduction measures to protect human and environmental health. These directions must be followed by law. As a result of the pollinator re-evaluation of clothianidin, further risk mitigation measures for product labels are being proposed (see below).

Measures to Protect Pollinators as found in PRVD2017-23, Clothianidin and Its Associated End-use Products: Pollinator Re-Evaluation

Certain crops are highly attractive to bees when their flowers are in bloom. Since large numbers of bees are attracted to these crops when they are in bloom and based on an assessment of the risks to bees, the application of pesticides containing clothianidin can lead to effects that may impact the survival of bee colonies or solitary bee species.

In order to protect pollinators, Health Canada is proposing to phase out the following uses of clothianidin:

- Foliar application to orchard trees and strawberries, and
- Foliar application to municipal, industrial and residential turf sites.

In order to protect pollinators, Health Canada is proposing the following change to the conditions of use of clothianidin:

- Reduce maximum number of foliar applications to cucurbit vegetables to one per season.

To minimize bee exposure to dust during planting of treated seed, **additional label statements are proposed for the following use:**

- Seed treatment of cereal crops.

⁵ "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act*.

⁶ "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

The risk-reduction measures described above and other conditions of registration being proposed as a result of the re-evaluation review of the risk to pollinators will apply to the end-use products listed in Table 1. For more details, refer to PRVD201723, *Clothianidin and Its Associated End-use Products: Pollinator Re-Evaluation* (<https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/public/consultations.html>).

Conclusion

The conditions of registration relating to the submission of additional information required under section 12 of the *Pest Control Products Act* for clothianidin and its associated end-use products have been met. To address potential risks to pollinators, amendments to the registrations of clothianidin products have been proposed.

Health Canada's PMRA, under the authority of section 8 of the *Pest Control Products Act*, is proposing a three year registration for the sale and use of Clothianidin Technical Insecticide (Reg. No. 27445) and the end-use products listed in Table 1 - excluding Sepresto 75 WS, which is proposed for phase-out. An evaluation of available scientific information as set out in PRVD2017-23, *Clothianidin and Its Associated End-use Products: Pollinator Re-Evaluation* found that, under the approved conditions of use, the products have value and do not present an unacceptable risk to human health or the environment.

In addition, the continued registration of Sepresto 75WS is subject to the final outcome of the re-evaluation of imidacloprid.⁷

Next Steps

Before making a final registration decision on clothianidin, the PMRA will consider any comments received from the public in response to this consultation document.⁸ The PMRA will accept written comments up to 90 days from the date of publication. The PMRA will then publish a Registration Decision⁹ on clothianidin, which will include the decision, the reasons for it, a summary of comments received on the proposed final registration decision and the PMRA's response to these comments.

⁷ PRVD2016-20 - Imidacloprid

⁸ "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act*.

⁹ "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

Science Evaluation

The detailed reviews previously conducted for clothianidin based products can be found in the published documents listed below:

1. “Regulatory Note REG2004-06, *Clothianidin, Poncho 600 Seed Treatment Insecticide*”, which provides a summary of information previously reviewed and the rationale for the regulatory decision for the use of clothianidin as a seed treatment.
2. “Evaluation Report ERC2011-01, *Clutch 50 WDG, Arena 50 WDG and Clothianidin Insecticides*” which provides a summary of information previously reviewed and the rationale for the regulatory decision for the use of clothianidin as foliar treatments.
3. “Proposed Registration Decision PRD2016-04, *Clothianidin*”, which provides a summary of information previously reviewed and the rationale for the regulatory decision for the use of clothianidin for control of cockroaches in structures.

1.0 The Active Ingredient, Its Properties and Uses

No new additional information was required under section 12 to assess the active ingredient, its properties and uses.

2.0 Impact on Human and Animal Health

Previous human and animal health assessments determined that the under the conditions of use, no risks of concern were identified. As there were no additional information required pertaining to human health issued under section 12, no further assessment was conducted.

3.0 Impact on the Environment

Except for, DACO 8.3.2.3, for which the outcome is summarized below, refer to PRVD2017-23, *Clothianidin and Its Associated End-use Products: Pollinator Re-Evaluation* for the science review of all the data listed in the section “List of data previously required as conditions of registration under section 12”, and for the review of public literature relevant to the assessment.

Information to further understand the leaching potential of clothianidin was requested to clarify differences observed between field studies and laboratory data (see section 12 requirement under DACO 8.3.2.3 - *Other Terrestrial field dissipation study*). To address this requirement, a lysimeter study on a turf covered plot was originally submitted and reviewed and, in order to further study leaching, a prospective groundwater (PGW) study was begun in 2014 at a site in southwestern Michigan.

The PGW study was intended to follow an application of clothianidin as it moves from the soil surface to groundwater following a single application. Clothianidin and the bromide tracer, which intended to help track water movement in the soil, were applied to the field on 2014 July 30.

The depth of groundwater at the study site is 13 – 17 feet below the ground surface. As of July 2016, clothianidin has been detected at low concentrations in the soil as deep as 12 feet, but has not been detected in the groundwater.

Most of the bromide tracer has moved below the 12 foot depth and was still found in groundwater in the most recent samples reported to PMRA. The PGW study will continue to further monitor the movement of clothianidin and the bromide tracer.

While the PGW study has been underway, the PMRA has used modelled environmental concentrations to estimate the potential for leaching to ground water (drinking water). The modelling is based on conservative assumptions and is expected to be more conservative than leaching that may occur in the field. No human health risk has been identified from drinking water based on these conservative modelling exposure estimates. The PGW study has not identified strong leaching concerns during the first two years of the study, and modelling data is expected to be more conservative than results from the PGW study. Therefore, based on the available information regarding leaching, the risk from leaching to groundwater is not expected to pose a risk of concern.

4.0 Value

No updates to previously conducted value assessments were required as there were no additional information required pertaining to value issued under section 12.

References

A. Registrant Submitted Studies/Information

A.1 Environmental Assessment

A.1.1 Environmental Fate and Effects Assessment

PMRA Document Number	Reference
2248015	2012, Assessment of Clothianidin Mobility Using Groundwater Modeling at Terrestrial Field Dissipation Trial Sites Located Across North America, DACO: 8.6
2530480	2015, Clothianidin: A Small-Scale Prospective Groundwater Monitoring Study following Application of ARENA(R) 50 WDG to Turf in an Eco-Region Common to the United States and Canada: (1st Interim Report - Characterization and Instrumentation Report), DACO: 8.3.2.3
2530481	2014, A Small-Scale Prospective Groundwater Monitoring Study for Clothianidin (ARENA(R) 50 WDG) Located in an Eco-Region Common to the United States and Canada: Site Identification and Interim Characterization Phase, DACO: 8.3.2.3
2530483	2015, Clothianidin: A Small-Scale Prospective Groundwater Monitoring Study following Application of ARENA 50 WDG to Turf in an Eco-Region Common to the United States and Canada: (2nd Interim Report - 1st Quarterly Report), DACO: 8.3.2.3
2550457	2015, Clothianidin: A Small-Scale Prospective Groundwater Monitoring Study following Application of ARENA(R) 50 WDG to Turf in an Eco-Region Common to the United States and Canada (3rd Interim Report- 2nd Quarterly Report), DACO: 8.3.2.3
2550458	2015, Clothianidin: Michigan Prospective Groundwater Study Site Geospatial Vulnerability Assessment, DACO: 8.3.2.3
2571749	2015, Clothianidin: A Small-Scale Prospective Groundwater Monitoring Study following Application of ARENA(R) 50 WDG to Turf in an Eco-Region Common to the United States and Canada (4th Interim Report - 3rd Quarterly Report), DACO: 8.3.2.3
2617174	2016, Clothianidin: A Small-Scale Prospective Groundwater Monitoring Study following Application of ARENA(R) 50 WDG to Turf in an Eco-Region Common to the United States and Canada (6th Interim Report - 5th Quarterly Report), DACO: 8.3.2.3

2648203	2016, Clothianidin: A Small-Scale Prospective Groundwater Monitoring Study following Application of ARENA(R) 50 WDG to Turf in an Eco-Region Common to the United States and Canada (7th Interim Report - 6th Quarterly Report), DACO: 8.3.2.3
2648204	2016, EXCEL DATA for "Clothianidin: A Small-Scale Prospective Groundwater Monitoring Study following Application of ARENA(R) 50 WDG to Turf in an Eco-Region Common to the United States and Canada (7th Interim Report - 6th Quarterly Report)", DACO: 8.3.2.3
2721735	2017, Clothianidin: A Small-Scale Prospective Groundwater Monitoring Study Following Application of ARENA 50 WDG to Turf in an Eco-Region Common to the United States and Canada Termination of Sampling Request, DACO: 8.3.2.3
2757803	2017, Clothianidin: Review of Termination of Sampling Report for Prospective Ground water Study (MRID 49896801, PC Code 044309), DACO: 12.5.8
1086418	1999, Residue Levels of Imidacloprid and Imidacloprid Metabolites in Nectar, Blossoms, Pollen of Sunflowers Cultivated on Soils with Different Imidacloprid Residue Levels and Effects of These Residues on Foraging Honeybees., DACO: 9.2.9
1086427	1998, The Impact of GAUCHO and TI-435 Seed Treated Canola on Honey Bees, <i>Apis mellifera</i> L., DACO: 9.2.9
1194190	OECD/IIA/8.7.1/&8.7.2, OECD/IIA/8.7.2/&8.7.1: TI-435 Technical: Acute Contact And Oral Toxicity To Honey Bees. G.Weyman. Completion Date: March 13,1998. (110049;586/135;586/135-1018). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 8.7.1 & 8.7.2, OPPTS# 850.3020, PMRA DACO# 9.2.4.1; OECD Point 8: Ecotoxicology. Reference Number 1; Submitted: April 30,2001], DACO: 9.2.4.2
1194193	OECD/IIA/8.7.1: TI-435 Metabolite TMG: Acute Oral Toxicity To Honey Bees (<i>Apis Mellifera</i>). P.Wilkins. Completion Date: January 27, 2000. (110054;GQ3201). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 8.7.1, OPPTS# N/A, PMRA DACO# 9.2.4.2; OECD Point 8: Ecotoxicology. Reference Number 2; Submitted: April 30,2001], DACO: 9.2.4.2
1194194	OECD/IIA/8.7.1: TI-435 Metabolite MNG: Acute Oral Toxicity To Honey Bees (<i>Apis Mellifera</i>). P.Wilkins. Completion Date: January 27, 2000. (110056;GQ3203). [Clothianidin Technical; SUBN#2001-1293;OECD# IIA 8.7.1, OPPTS# N/A, PMRA DACO# 9.2.4.2; Oecd Point 8: Ecotoxicology. Reference Number 3; Submitted: April 30,2001], DACO: 9.2.4.2
1194196	OECD/IIA/8.7.1: TI-435 Metabolite TZMU: Acute Oral Toxicity To Honey Bees (<i>Apis Mellifera</i>). P.Wilkins. Completion Date: January 27,2000. (110055;GQ3202). [Clothianidin Technical; SUBN#2001-1293;OECD# IIA 8.7.1, OPPTS# N/A, PMRA DACO# 9.2.4.2; OECD Point 8: Ecotoxicology. Reference Number 4;Submitted: April 30,2001], DACO: 9.2.4.2

1194197	OECD/IIA/8.7.1: TI-435 Metabolite TZNG: Acute Oral Toxicity To Honey Bees (<i>Apis Mellifera</i>). P.Wilkins. Completion Date: January 27,2000. (110057;GQ3204). [Clothianidin Technical; SUBN#2001-1293;OECD# IIA 8.7.1, OPPTS# N/A, PMRA DACO# 9.2.4.2; OECD Point 8: Ecotoxicology. Reference Number 5; Submitted: April 30,2001], DACO: 9.2.4.2
1194863	2001, TI-435 Residue Levels In Corn Seeds And Seedlings, DACO: 9.6.5
1194868	2000, Residues Of Ti 435 In Nectar, Blossoms, Pollen And Honey Bees Sampled From A Summer Rape Field In Sweden And Effects Of These Residues On Foraging Honeybees., DACO: 9.2.8
1194869	2000, Residues of TI 435 in Nectar, Blossoms, Pollen And Honey Bees Sampled From A British Summer Rape Field And Effects Of These Residues On Foraging Honeybees., DACO: 9.2.8
1194870	2000, Residues of TI 435 in Nectar, Blossoms, Pollen And Honey Bees Sampled From A French Summer Rape Field And Effects Of These Residues On Foraging Honeybees, DACO: 9.2.8
1194871	2001, Effects Of Diet (Sugar Solution) Spiked With TI 435 Technical On Behavior And Mortality Of Honey Bees (<i>Apis Mellifera</i>) And On The Weight Development Of Bee Colonies Under Field Conditions., DACO: 9.2.9
1194872	2001, The Impact of Gaucho and TI-435 Seed-Treated Canola On Honey Bees, <i>Apis Mellifera</i> L., DACO: 9.2.9
1194873	2001, Residue Levels of TI 435 FS 600 and Its Relevant Metabolites in Nectar, Blossoms and Pollen of Summer Rape From Dressed Seeds and Effects of These Residues on Foraging Honeybees (Test Location: Farmland "Laacher Hof")., DACO: 9.2.8
1194874	2001, Residue Levels of TI-435 FS 600 and Its Relevant Metabolites in Nectar, Blossoms and Pollen of Summer Rape From Dressed Seeds and Effects of These Residues on Foraging Honeybees (Test Location: Farmland "Hofchen")., DACO: 9.2.8
1194876	2001, Residue Levels of TI 435 FS 600 and Its Relevant Metabolites in Pollen of Maize Plants From Dressed Seeds (Test Location: Farmland "Laacher Hof"), DACO: 9.2.8
1194877	2001, Residue Levels of TI 435 FS 600 and Its Relevant Metabolites in Pollen of Maize Plants From Dressed Seeds (Test Location: Farmland Hofchen), DACO: 9.2.8
1194878	2001, Effects of TI-435 Technical Residues in Pollen on the Development of Small Bee Colonies and On Behavior and Mortality of Honey Bees., DACO: 9.2.8
1464606	2005, An Investigation of the Potential Long-term Impact of Clothianidin Seed Treated Canola on Honey Bees, <i>Apis Mellifera</i> L., DACO: 9.2.4.3

1464608	2006, Spring 2006 Assessment of Overwintered Colonies Studied in an Investigation of the Potential Long-term Impact of Clothianidin Seed Treated Canola on Honey Bees, <i>Apis mellifera</i> L., DACO: 9.2.4.3
1636641	2008, Fate and ecological effects of TI-435 50 WG in a outdoor freshwater mesocosm study, DACO: 9.3.6,9.4.7,9.5.5,IIIA 10.2.3
2142805	2010, Monitoring of potential effects of the drilling of clothianidin treated maize seeds on honeybees, guttation monitoring of maize seedlings under agronomic use conditions and assessment of the relevance of guttation for honeybees in aquitaine (France), DACO: 9.9
2142806	2011, Monitoring of potential effects of the drilling of Clothianidin treated maize seeds on honeybees, guttation monitoring of maize seedlings under agronomic use conditions and assessment of the relevance of guttation for honeybees in Languedoc-Roussillon (France), DACO: 9.9
2142807	2011, Monitoring of potential effects of the drilling of Clothianidin treated maize seeds on honeybees, guttation monitoring of maize seedlings under agronomic use conditions and assessment of the relevance of guttation for honeybees in Champagne (France), DACO: 9.9
2142808	2011, Monitoring of potential effects of the drilling of Clothianidin treated maize seeds on honeybees, guttation monitoring of maize seedlings under agronomic use conditions and assessment of the relevance of guttation for honeybees in Alsace (France), DACO: 9.9
2197610	2010, Thiamethoxam FS (A9700B) - Determination of Residues of Thiamethoxam and CGA322704 in the Honeybee <i>Apis mellifera</i> L. in the Laboratory, DACO: 9.2.4,9.2.4.1,9.2.4.2
2197611	2010, Thiamethoxam (A9700B) - Exposure to Dust from A9700B Treated Maize Seeds and the Determination of Residues of Thiamethoxam and CGA322704 in the Honeybee <i>Apis mellifera</i> L. in the Laboratory, DACO: 9.2.4,9.2.4.1,9.2.4.2
2286963	2009, Determination of AE 0364971 Residues in Honey Bees (<i>Apis mellifera</i>) after Contact and Oral Application in the Laboratory, DACO: 9.2.4
2297706	2009, Determination of Clothianidin a.s. Residues in Honey Bees (<i>Apis mellifera</i>) after Contact and Oral Application in the Laboratory, 1st Amendment to Final Report, DACO: 9.2.4
2297707	2012, Investigation of a May 1, 2012 Bee Kill Incident Hypothesized to be Associated with Planting of Insecticide-treated Maize Seed near Elbow Lake, Minnesota, DACO: 9.9
2297708	2012, Indiana Spring 2012 Investigation of Bee Kills in Relation to Alleged Pesticide Exposure and Planting of Treated Corn Seed, DACO: 9.9
2352001	2013, Interim Report: Potential Long-Term Influences of Clothianidin-treated Canola Seed Plantings on Honey Bees (<i>Apis mellifera</i> L.), DACO: 9.2.9
2352302	2000, V-10066: Honey Bee (<i>Apis Mellifera</i> L.) Toxicity of V-10066 Residues On Foliage, DACO: 9.9

2352303	2011, Clothianidin: 21-Day Survival of Honey Bee Larvae, <i>Apis mellifera</i> L., During an InVitro Exposure, DACO: 9.2.4.3
2352304	2000, TI-435 Metabolite TMG: Acute Oral Toxicity to Honey Bees (<i>Apis mellifera</i>), DACO: 9.2.4.2
2352306	2000, TI-435 Metabolite TZNG Acute Oral Toxicity to Honey Bees (<i>Apis mellifera</i>), DACO: 9.2.4.2
2352307	2000, TI-435 Metabolite TZMU Acute Oral Toxicity to Honey Bees (<i>Apis mellifera</i>), DACO: 9.2.4.2
2355460	2009, Assessment of side effects of clothianidin FS 600B G treated maize seed on the honeybee (<i>Apis mellifera</i> L.) in a long-term field study in Alsace (France), DACO: 9.2.4.3
2355461	2009, Assessment of side effects of clothianidin FS 600B G treated maize seed on the honeybee (<i>Apis mellifera</i> L.) in a long-term field study in Languedoc-Roussillon (France), DACO: 9.2.4.3
2355462	2009, Assessment of side effects of clothianidin FS 600B G treated maize seed on the honeybee (<i>Apis mellifera</i> L.) in a long-term field study in Champagne (France), DACO: 9.2.4.3
2355463	2009, Final interim bee disease analysis phase report - Assessment of side effects of clothianidin FS 600B G treated maize seed on the honeybee (<i>Apis mellifera</i> L.) in a long-term field study in Alsace (France), DACO: 9.2.4.3
2355464	2009, Final interim bee disease analysis phase report: Assessment of side effects of clothianidin FS 600B G treated maize seed on the honeybee (<i>Apis mellifera</i> L.) in a long-term field study in Languedoc-Roussillon (France), DACO: 9.2.4.3
2355465	2009, Final interim bee disease analysis phase report: Assessment of side effects of clothianidin FS 600B G treated maize seed on the honeybee (<i>Apis mellifera</i> L.) in a long-term field study in Champagne (France), DACO: 9.2.4.3
2355466	2005, Assessment of chronic effects of Clothianidin to the honey bee, <i>Apis mellifera</i> L., in a 10 days laboratory test and Determination of Clothianidin residues in sugar solutions from a feeding study to bees (study number 20051186/01-BLEU; GAB), DACO: 9.2.4.3
2355467	2009, Clothianidin tech.: Effects of exposure to spiked diet on honeybee (<i>Apis mellifera carnica</i>) larvae in an in vitro laboratory testing design, DACO: 9.2.4.3
2355468	2002, Evaluation of the effects of residues of TI 435 in maize pollen from dressed seeds on honeybees (<i>Apis mellifera</i>) in the semifield, DACO: 9.2.4.3
2355469	2010, Field study to monitor potential effects on honey bees from exposure to guttation fluid of winter oil-seed rape (W-OSR), seed-treated with clothianidin & beta-cyfluthrin FS 400 + 80, DACO: 9.2.4.3,9.9

2355470	2001, Residue levels of TI 435 FS 600 and its relevant metabolites in nectar, blossoms and pollen of sunflowers from dressed seeds and effects of these residues on foraging honeybees - test location: "Laacher Hof", DACO: 9.2.4.3,9.9
2355471	2001, Residue levels of TI 435 FS 600 and its relevant metabolites in nectar, blossoms and pollen of sunflowers from dressed seeds and effects of these residues on foraging honeybees - test location: farmland "Hoefchen", DACO: 9.2.4.3,9.9
2355472	2012, Amendment no. 1 to report no: MR-12/038 - Field study to monitor potential effects on honey bees from exposure to guttation fluid of winter barley (W-BAR), seed-treated with the insecticidal seed-treatment product Clothianidin + Imidacloprid FS 100 + 175 G in Germany in 2011/2012, DACO: 9.2.4.3,9.9
2355474	2010, Determination of residues of clothianidin and imidacloprid and their metabolites in melon following an application of clothianidin & imidacloprid WS 56.25 + 18.75 as seed treatment, DACO: 9.9
2355475	2010, Determination of residues of clothianidin and imidacloprid and their metabolites in sweet pepper following an application of clothianidin & imidacloprid WS 56.25 + 18.75 as seed treatment, DACO: 9.9
2355476	2009, Clothianidin FS 600B G: A residue study with Clothianidin FS 600B G treated maize seed, investigating residues in crop, soil and honeybee products in Languedoc-Roussillon (France), DACO: 9.9
2355477	2009, Clothianidin FS 600B G: A residue study with Clothianidin FS 600B G treated maize seed, investigating residues in crop, soil and honeybee products in Alsace (France), DACO: 9.9
2355478	2009, Clothianidin FS 600B G: A residue study with clothianidin FS 600B G treated maize seed, investigating residues in crop, soil and honeybee products in Champagne (France), DACO: 9.9
2355479	2013, Compilation of autoradiographic study data on the distribution of imidacloprid and clothianidin residues in plant tissues in accordance with US EPA Data submission requirement, DACO: 9.9
2355482	2002, Determination of the residue levels of TI 435 and its relevant metabolites in nectar and pollen of winter rape from dressed seeds test location: Farmland "Laacher Hof", DACO: 9.9
2355483	2002, Residue levels of TI 435 and its relevant metabolites in pollen of maize plants from dressed seeds, DACO: 9.9
2355484	2002, Residue levels of TI 435 and its relevant metabolites in pollen of maize plants from dressed seeds, DACO: 9.9
2355485	2007, Determination of residue levels of clothianidin, TZMU and TZNG in bee-relevant matrices of winter rape in a cereal succeeding crop scenario at Bayer CropScience AG experimental farm Hoefchen, Germany, DACO: 9.9

2355486	2007, Determination of residue levels of clothianidin, TZMU and TZNG in bee-relevant matrices of winter rape in a cereal succeeding crop scenario at Bayer CropScience AG experimental farm Laacher Hof, Germany, DACO: 9.9
2355487	2005, Determination of residue levels of Clothianidin, TZMU and TZNG in bee-relevant matrices of summer rape in a succeeding crop scenario at Bayer CropScience AG experimental farm "Hoefchen", Germany, DACO: 9.9
2355488	2005, Determination of residue levels of Clothianidin, TZMU and TZNG in maize pollen in a succeeding crop scenario at Bayer CropScience AG experimental farm "Laacher Hof", Germany, DACO: 9.9
2355489	2005, Determination of residue levels of Clothianidin, TZMU and TZNG in maize pollen in a succeeding crop scenario at Bayer CropScience AG experimental farm "Hoefchen", Germany, DACO: 9.9
2355490	2012, Determination of the residue levels of clothianidin, TZNG and TZMU in bee relevant matrices of two different varieties of winter rape at Bayer CropScience AG experimental farm Hoefchen, Germany, DACO: 9.9
2355491	2012, Determination of the residue levels of clothianidin, TZNG and TZMU in bee relevant matrices of two different varieties of spring rape at Bayer CropScience AG experimental farm Hoefchen, Germany, DACO: 9.9
2355492	2012, Determination of the residue levels of clothianidin, TZNG and TZMU in bee relevant matrices of two different varieties of spring rape at Bayer CropScience AG experimental farm Laacher Hof, Germany, DACO: 9.9
2355493	2011, Determination of the residue levels of clothianidin, TZNG and TZMU in bee relevant matrices of two different varieties of winter rape at Bayer CropScience AG experimental farm "Laacher Hof", Germany, DACO: 9.9
2355494	2005, Determination of residues of clothianidin and metabolites in/on corn pollen after seed treatment of TI 435 (600 FS) in the field in Germany, Northern France and Southern France, DACO: 9.9
2355495	2005, Determination of the residues of TI 435 in/on corn after seed treatment of TI 435 (600 FS) in the field in Southern France, DACO: 9.9
2355496	2005, Determination of the residues of TI 435 in/on corn after seed treatment of TI 435 (600 FS) in the field in Northern France, DACO: 9.9
2355497	2010, Field study to monitor the potential exposure of honey bees to guttation fluid of winter wheat (W-WHT) treated with Clothianidin & Beta-Cyfluthrin FS 375 + 80 or Triadimenol & Imidacloprid & Fuberidazol & Imazalil FS 60 + 70 + 7.2 + 8 on fields in southern and northern Germany in autumn 2009 and spring 2010, DACO: 9.9
2355498	2010, Field study to monitor the potential exposure of honey bees to guttation fluid of winter barley (W-BAR) treated with clothianidin & beta-cyfluthrin FS 375 + 80 or triadimenol & imidacloprid & fuberidazol & imazalil FS 60 + 70 + 7.2 + 8 on fields in southern and northern Germany in autumn 2009 and spring 2010, DACO: 9.9

2355499	2009, Guttation monitoring of maize seedlings under agronomic use conditions in Austria and assessment of the relevance of Guttation for honeybees, DACO: 9.9
2355500	2005, Effect of clothianidin on honeybee food gland development Microscopic analysis, DACO: 9.9
2355501	2005, Carry-over of Chlothianidin from spiked bee bread to honeybee royal jelly and determination of residues of Chlothianidin and its metabolites TZNG and TZMU in samples from bee bread and royal jelly, DACO: 9.9
2355502	2008, Determination of residue levels of clothianidin and its metabolites TZMU and TZNG in pollen harvested from maize plants grown in commercial practice from Poncho Pro dressed seeds (nominally 1.25 mg clothianidin/seed) in the upper Rhine valley in Germany, DACO: 9.9
2357346	2013, Potential Long-term Influences of Clothianidin-treated Canola Seed Plantings on Honey Bees (<i>Apis mellifera</i> L.), DACO: 9.2.9
2364810	1997, Assessment of side effects of CGA 322704 to the honey bee, <i>Apis mellifera</i> L. in the laboratory following the EPPO Guideline No. 170, DACO: 9.2.4.1,9.2.4.2,9.2.4.3
2364970	2002, Subchronic toxicity of CGA 293343 and CGA 322704 to Honeybees, DACO: 9.2.4.3
2365400	2013, Feeding of honey bees (<i>Apis mellifera</i> L.) with thiamethoxam (CGA 293343) 1. Testing of return flight ability 2. Feed consumption and exchange (trophallaxis), DACO: 9.9
2365431	2010, Feeding of honey bees (<i>Apis mellifera</i> L.) with CGA 322704 1. Testing of return flight ability 2. Feed consumption and exchange (Trophallaxis), DACO: 9.9
2377280	2009, Bee monitoring in Switzerland (translation), DACO: 9.9
2377282	2009, Field survey on guttation of maize seedlings under agronomic use conditions in Austria and assessment of the relevance of guttation fluid for honeybees (final report), DACO: 9.9
2377283	2009, Seed treatment dust - Preliminary results on dust-off dispersal, implemented exposure mitigation measures and experiences with dust-off under agronomic use conditions - European industry presentation to the Bundesamt fuer Verbraucherschutz und Lebensmittelsicherheit (BVL), dated November 27, 2009, DACO: 9.9
2377284	2006, [Thiazolyl-2-14C]-Clothianidin: Seed leaching study, DACO: 9.9
2422410	2014, Laboratory quantification of the reduction of potential dust emissions from a John Deere vacuum planter meter with an alternate planter lubricant, DACO: 9.9
2423280	2014, Clothianidin: Quantitation of Residues of Clothianidin, TZNG, TZMU in Nectar Following Soil Application of Belay Insecticide to Citrus, DACO: 9.9

2465284	2014, Clothianidin: Evaluation of Toxicity of Cotton Leaf Residues to Adult Honey Bees (<i>Apis mellifera</i> L.), DACO: 9.9
2510477	2012, Field study to monitor potential effects on honey bees from exposure to guttation fluid of winter barley (W-BAR), seed-treated either with an imidacloprid or a clothianidin combi-product, DACO: 9.2.4.3,9.9
2510478	2014, Field study to monitor potential effects on honey bees from exposure to guttation fluid of winter barley (W-BAR), seed-treated with the insecticidal seed-treatment product clothianidin + imidacloprid FS 100 + 175 G in Germany in 2011/2012, DACO: 9.2.4.3,9.9
2510479	2014, A long-term field study to monitor potential effects on the honeybee (<i>Apis mellifera</i> L.) from exposure to guttation fluid of sugar beets, seed-treated with the insecticides clothianidin + imidacloprid + beta-cyfluthrin in Southern Germany in 2013 and 2014, DACO: 9.2.4.3,9.9
2510480	2014, A long-term field study to monitor potential effects on the honeybee (<i>Apis mellifera</i> L.) from exposure to guttation fluid of sugar beets, seed-treated with the insecticides clothianidin + imidacloprid + beta-cyfluthrin in Southern Germany in 2013 and 2014, DACO: 9.2.4.3,9.9
2510484	2014, Determination of the residues of clothianidin in bee relevant matrices collected from succeeding crops following application of clothianidin FS 600B G via soil incorporation to plateau concentration and sowing of clothianidin-treated winter barley seeds. Field phase conducted in southern France, DACO: 9.9
2510485	2014, Residues of clothianidin in nectar and pollen of flowering rotational crops in Western Germany, DACO: 9.9
2510486	2014, Field study to monitor potential effects on honey bees from exposure to guttation fluid of winter wheat (W-WHT), seed-treated either with an imidacloprid or a clothianidin combi-product, DACO: 9.2.4.3,9.9
2520652	2015, Clothianidin: Quantitation of Residues of Clothianidin, TZNG, and TZMU in Leaves, Nectar, Pollen and Soil Following Soil Application of Belay Insecticide to Cucurbits, DACO: 9.9
2520653	2015, Clothianidin: Quantitation of Residues of Clothianidin, TZNG, and TZMU in Nectar and Pollen Following Foliar Application of Clutch 50 WDG Insecticide to Cucurbits, DACO: 9.9
2532795	2014, Clothianidin: Acute contact and oral toxicity to bumblebee (<i>Bombus terrestris</i>), DACO: 9.2.4.1,9.2.4.2
2532796	2013, Dantop SOWG: Effects of a spray application of clothianidin in potatoes on honeybees, DACO: 9.9
2532797	2013, Santana (a.s. clothianidin 1 %): Exposure of honeybee colonies to clothianidin in pollen and nectar from sunflowers grown as a follow-on crop, DACO: 9.9
2532798	2014, Effects of CLOTHIANIDIN 0.7 GR in guttation water on bees (<i>Apis mellifera</i> L.) colony under field conditions, DACO: 9.9

2571750	2015, Clothianidin: Quantitation of Residues of Clothianidin, TZNG, and TZMU in Nectar, Pollen and Leaves Following Foliar Post Bloom Application of Belay(R) Insecticide to Almond Trees - Interim report, DACO: 9.9
2571751	2015, Clothianidin: Quantitation of Residues of Clothianidin, TZNG and TZMU in Nectar, Pollen and Leaves Following Foliar Post Bloom Application of Belay Insecticide/Clutch 50 WDG Insecticide to Apple Trees - Interim report, DACO: 9.9
2571752	2015, Clothianidin: Quantitation of Residues of Clothianidin, TZNG and TZMU in Nectar, Pollen and Leaves Following Foliar Post Bloom Application of Belay(R) Insecticide to Peach Trees - Interim report, DACO: 9.9
2571753	2015, Clothianidin: Quantitation of Residues of Clothianidin in Leaves and Clothianidin, TZNG, and TZMU in Extrafloral Nectars, Floral Nectar, and Pollen from Cotton Plants, DACO: 9.9
2598230	2015, PONCHO/VOTiVO - Magnitude of the Residues in/on Bee Relevant Matrices Collected from Soybean - Final Report, DACO: 9.9
2610259	2016, Colony feeding study evaluating the chronic effects of clothianidin-fortified sugar diet on honey bee (<i>Apis mellifera</i>) colony health under free foraging conditions - Final Report, DACO: 9.2.4.3
2617876	2016, Clothianidin: Quantitation of Residues of Clothianidin, TZNG and TZMU in Pollen and Leaves Collected from Potatoes Following Soil and Foliar Applications of Belay Insecticide, DACO: 9.9
2617877	2016, Clothianidin: Quantitation of Residues of Clothianidin, TZNG and TZMU in Nectar, Pollen and Leaves Following Soil Application of Belay Insecticide to Four Different Species of Cucurbit, DACO: 9.9
2641052	2016, Determination of Clothianidin Residues in Bee Relevant Matrices Collected from Cotton Plants Following Seed Treatment and Foliar Applications - Final Report, DACO: 9.9
2693159	2016, Report Amendment No. 1 to Study No. S13-05010: Determination of Residues of Imidacloprid and Clothianidin in Flowers, Leaves, Soil, Nectar and Pollen of Soybean after Seed Treatment with Gaucho(R) FS (Imidacloprid 600 FS) or Poncho(R) (Clothianidin 600 FS), or Foliar Application with Connect(R) (Imidacloprid & Beta-Cyfluthrin 112.5 SC) in a Semi-Field Study in Brazil, DACO: 9.9
2693160	2016, Report Amendment No. 1 to Study No. S13-05011: Determination of Residues of Imidacloprid and Clothianidin in Flowers, Leaves, Soil, Nectar and Pollen of Soybean after Seed Treatment with Gaucho(R) FS (Imidacloprid 600 FS) or Poncho(R) (Clothianidin 600 FS), or Foliar Application with Connect(R) (Imidacloprid & Beta-Cyfluthrin 112.5 SC) in a Semi-Field Study in Brazil, DACO: 9.9
2779468	2017, Clothianidin Colony Feeding Study, 2016, DACO: 9.2.4.3

1194126	2000, OECD/IIA/7.6: Photolysis of [Nitoimino-14C]TI-435 and [THIOZOLYL-2-14C] TI-435 in Sterile Aqueous Buffer Solution., DACO: 8.2.3.3.2
1194139	2000, OECD/IIA/7.6: Photolysis of TI-435 in Natural US-Water. P.Babczynski. Completion Date: December 7,2000. (110262;M1120992-4). [Clothianidin Technical; SUBN#2001-1293;OECD# IIA 7.6, OPPTS# 835.2240, PMRA DACO# 8.2.3.3.2; OECD Point 7: Fate and Behaviour in the Environment. Reference Number 2; Submitted: April 30,2001], DACO: 8.2.3.3.2
1194152	2000, OECD/IIA/7.6: Calculation of Half-Lives of TI-435 and its Main Metabolites Generated by Photolysis in Sterile Aqueous Buffer Solution. T.Schad. Completion Date: April 19,2000. (110124;P668006756). [Clothianidin Technical; SUBN#2001-1293;OECD# IIA 7.6, OPPTS# 835.2240, PMRA DACO# 8.2.3.3.2; OECD Point 7: Fate and Behaviour in the Environment. Reference Number 3; Submitted: April 30,2001], DACO: 8.2.3.3.2
1194195	2000, OECD/IIA/7.6: Calculation of Half-Lives of TI-435 and its Main Metabolites Generated by Photolysis in Natural Water. T.Schad. Completion Date: April 14,2000. (110125;P668006762). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 7.6, OPPTS# 835.2240, PMRA DACO# 8.2.3.3.2; OECD Point 7: Fate And Behaviour In The Environment. Reference Number 4; Submitted: April 30,2001], DACO: 8.2.3.3.2
1194206	1999, OECD/IIA/7.6: Determination of the Quantum Yield And Assessment of The Environmental Half-Life of the Direct Photodegradation of TI-435 in Water. E. Hellpointner. Completion Date: August 2, 1999. (110126; M1430953-5). [Clothianidin Technical; SUBN#2001-1293;OECD# IIA 7.6, OPPTS# 835.2240, PMRA DACO# 8.2.3.3.2; OECD Point 7: Fate and Behaviour in the Environment. Reference Number 5; Submitted: April 30,2001], DACO: 8.2.3.3.2
1194208	2000, OECD/IIA/7.8.1: [14C]TI-435: Aerobic Aquatic Biotransformation. S. Swales. Completion Date: November 28, 2000. (110250;1820/3;T5882401). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 7.8.1, OPPTS# 835.4300, PMRA DACO# 8.2.3.5.2 & 8.2.3.5.4; OECD Point 7: Fate and Behaviour in the Environment. Reference Number 1;Submitted: April 30,2001], DACO: 8.2.3.5.2,8.2.3.5.4
1194209	2000, OECD/IIA/7.8.3: Aerobic Degradation and Metabolism of TI-435 in the Water/Sediment System. M. Gilges And B. Brumhard. Completion Date: April 14,2000. (119870;M1510842-1). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 7.8.3, OPPTS# N/A, PMRA DACO# 8.2.3.5.4; OECD POINT 7: Fate And Behaviour In The Environment. Reference Number 1;Submitted: April 30,2001], DACO: 8.2.3.5.4
1194210	OECD/IIA/7.8.3: Anaerobic Aquatic Metabolism For The Active Ingredient TI-435. J. Reddemann. Completion Date: December 13,2000. (110253;M1520859-0). [Clothianidin Technical; SUBN#2001-1293;OECD# IIA 7.8.3, OPPTS# 835.4400, PMRA DACO# 8.2.3.5.5 & 8.2.3.5.6; OECD Point 7: Fate and Behaviour in the Environment. Reference Number 2; Submitted: April 30,2001], DACO: 8.2.3.5.6

1194671	2000, Aerobic Degradation and Metabolism of TI-435 in Four Soils OECD/IIA/7.1.1/&/IIIA/9.1.1/&/IIA/7.2.1, OECD/IIA/7.2.1/&/IIIA/9.1.1/&/IIA/7.1.1, OECD/IIIA/9.1.1/&/IIA/7.1.1/&/IIA/7.2.1, DACO: 8.2.3.4.2
1194675	2000, OECD/IIA/7.1.1/&/IIIA/9.1.1/&/IIA/7.2.1, OECD/IIA/7.2.1/&/IIA/7.1.1/&/IIIA/9.1.1, OECD/IIIA/9.1.1/&/IIA/7.1.1/&/IIA/7.2.1: Aerobic Degradation and Metabolism of TI-435 in Six Soils., DACO: 8.2.3.4.2
1194678	1999, OECD/IIA/7.1.3: Photolysis of [Guanidine-14C]TI-435 on Soil Surface., DACO: 8.2.3.3.1
1194679	2000, OECD/IIA/7.2.3: Degradation of 14C-MNG, Degradate of TI-435, in Three Different Soils., DACO: 8.2.3.4.2
1194681	2000, OECD/IIA/7.2.3: Degradation Of 14C-TZNG, A Degradate Of TI-435, In Three Different Soils., DACO: 8.2.3.4.2
1194682	OECD/IIA/7.4.1: [14C]TI-435: Adsorption/Desorption In Soil. C. Lewis. Completion Date: August 17,2000. (110254;586/139). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 7.4.1, OPPTS# 835.1230, PMRA DACO# 8.2.4.2; OECD Point 7: Fate and Behaviour in the Environment. Reference Number 1;Submitted: April 30,2001], DACO: 8.2.4.2
1194683	OECD/IIA/7.4.1: Time Dependent Sorption of TI-435 in Two Different Soils. H. Stupp. Completion Date: January 17, 2001. (110121;M1311032-1). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 7.4.1, OPPTS# 835.1230, PMRA DACO# 8.2.4.2; OECD Point 7: Fate and Behaviour in the Environment. Reference Number 2; Submitted: April 30,2001], DACO: 8.2.4.2
1194684	OECD/IIA/7.4.2: Adsorption/Desorption Of 14C-MNG, A Degradate Of TI-435, On Five Different Soils. R.Dorn And W.Hein. Completion Date: December 19,2000. (110256;TAK02). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 7.4.2, OPPTS# 835.1230, PMRA DACO# 8.2.4.2; OECD Point 7: Fate And Behaviour In The Environment. Reference Number 1;Submitted: April 30,2001], DACO: 8.2.4.2
1194685	OECD/IIA/7.4.2: Adsorption/Desorption Of 14C-TZNG, A Degradate Of TI- 435, On Five Different Soils. M.Mondel And W.Hein. Completion Date: December 19,2000. (110255;TAK01). [Clothianidin Technical;SUBN#2001- 1293;OECD# IIA 7.4.2, OPPTS# 835.1230, PMRA DACO# 8.2.4.2; OECD Point 7: Fate And Behaviour In The Environment. Reference Number 2;Submitted: April 30,2001], DACO: 8.2.4.2
1194686	OECD/IIA/7.4.2: Adsorption/Desorption Of 14C-TZMU, A Degradate Of TI- 435, On Five Different Soils. R.Dorn And W.Hein. Completion Date: December 19,2000. (110257;TAK03). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 7.4.2, OPPTS# 835.1230, PMRA DACO# 8.2.4.2; OECD Point 7: Fate And Behaviour In The Environment. Reference Number 3;Submitted: April 30,2001], DACO: 8.2.4.2

1194687	OECD/IIA/7.4.2: Adsorption/Desorption Of 14C-TMG, A Degradate Of TI-435, On Five Different Soils. R.Dorn And W.Hein. Completion Date: December 18,2000. (110258;TAK04). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 7.4.2, OPPTS# 835.1230, PMRA DACO# 8.2.4.2; OECD POINT 7: Fate And Behaviour In The Environment. Reference Number 4;Submitted: April 30,2001], DACO: 8.2.4.2
1194688	2001, OECD/IIA/7.4.7: Degradation And Translocation Behavior Of The Insecticide Active Ingredient TI-435 Under Field Conditions In A Lysimeter (Autumn Application)., DACO: 8.3.2.3
1194689	2001, OECD/IIA/7.4.7: Degradation And Translocation Behavior Of The Insecticide TI-435 In A Lysimeter Under Field Conditions., DACO: 8.3.2.3
1194690	2000, OECD/IIA/7.5: (14C)TI-435: Hydrolytic Stability. C.Lewis. Completion Date: JUNE 5,2000. (110259;586/140). [Clothianidin Technical;SUBN#2001-1293;OECD# IIA 7.5, OPPTS# 835.2120, PMRA DACO# 8.2.3.2; OECD Point 7: Fate And Behaviour In The Environment. Reference Number 1;Submitted: April 30,2001], DACO: 8.2.3.2
1194853	2001, TI-435 -Terrestrial Field Dissipation Study, North Dakota, 1998., DACO: 8.3.2.2
1194854	2001, TI-435 -Terrestrial Field Dissipation Study, Ontario, Canada, 1998., DACO: 8.3.2.1
1194855	2001, TI-435 -Terrestrial Field Dissipation Study, Saskatchewan, Canada, 1998, DACO: 8.3.2.1
1194898	2001, Terrestrial Field Dissipation Study, Wisconsin, 1998., DACO: 8.3.2.2
1194899	2001, TI-435 -Terrestrial Field Dissipation Study, Ohio, 1998, DACO: 8.3.2.2
1464604	2006, [Thiazole-2-14C]Clothianidin Seed Leaching Study, DACO: 8.5
1464605	2006, Clothianidin: Long-term Hydrolytic Degradation, DACO: 8.5
1544535	2001, T1-435 - Terrestrial Field Dissipation Study, Washington,1998, DACO: 8.3.2.2
1636689	2006, Clothianidin: Long-term hydrolytic degradation, DACO: 8.2.3.6,8.2.4.6,8.5.2,8.6,IIIA 9.10.1
1636690	2008, [Thiazolyl-2-14C]-Clothianidin: Seed leaching study, DACO: 8.2.4.4,IIIA 9.3.3
1856875	2010, Determination of Residues of Clothianidin and Imidacloprid and their Metabolites in Sweet Pepper following an Application of Clothianidin & Imidacloprid WS 56.25 + 18.75 as Seed Treatment, DACO: 8.5
1856879	2010, Determination of Residues of Clothianidin and Imidacloprid and their Metabolites in Melon following an Application of Clothianidin & Imidacloprid WS 56.25 + 18.75 as Seed Treatment, DACO: 8.5

2373072	2012, The role of pesticides on honey bee health and hive maintenance with an emphasis on the neonicotinoid, imidacloprid, DACO: 8.6,9.9
2465501	2009, Determination of the Residues of TI-435 in/on Soil, Winter Wheat and Durum Wheat after Seed Treatment of TI 435 (600FS) in Germany, Southern France and Great Britain, DACO: 8.3.2.3,8.6
2465502	2014, Clothianidin Plant Bioavailability and Soil Accumulation Study, DACO: 8.3.2.1,8.3.2.2,8.6,9.9
2465504	2014, Clothianidin - Overview of Accumulation in Soil and Bioavailability for Uptake into Crops, Pollen and Nectar, DACO: 8.3.1,8.6,9.9
2491176	2006, [Thiazolyl-2-14C]-Clothianidin: Aerobic Aquatic Metabolism, DACO: 8.2.3.5.4
2555839	2015, Amendment 1 to Clothianidin Plant Bioavailability and Soil Accumulation Study, DACO: 8.3.4
2597451	2015, Clothianidin: A Small-Scale Prospective Groundwater Monitoring Study following Application of ARENA(R) 50 WDG to Turf in an Eco-Region Common to the United States and Canada (5th Interim Report - 4th Quarterly Report), DACO: 8.3.2.3
2630589	2015, Magnitude of the residue of clothianidin and its metabolites in pollen and nectar in succeeding crop Northern and Southern Europe - 2014, DACO: 8.5,9.9
2630590	2015, Magnitude of the residue of clothianidin and its metabolites in potato pollen in Northern and Southern Europe - 2014, DACO: 8.5,9.9
2639403	2016, Clothianidin: Quantitation of Residues of Clothianidin, TZNG and TZMU in Nectar, Pollen and Leaves Collected from Pumpkins Following Soil Application of Belay Insecticide and Foliar Application of Belay 50 WDG Insecticide, DACO: 8.5,9.9
2656869	2016, Clothianidin: Residues of Clothianidin, TZNG, TZMU in Nectar Following Soil Application of Belay Insecticide to Citrus, DACO: 8.5,9.9
2737114	2017, Clothianidin: Quantitation of Residues of Clothianidin, TZNG and TZMU in Nectar, Pollen and Leaves Following Foliar Post Bloom Application of Belay Insecticide to Almond Trees, DACO: 8.5,9.9
2737115	2017, Clothianidin: Quantitation of Residues of Clothianidin, TZNG and TZMU in Nectar, Pollen and Leaves Following Foliar Post Bloom Application of Belay Insecticide to Peach Trees, DACO: 8.5,9.9
2737116	2017, Clothianidin: Quantitation of Residues of Clothianidin, TZNG and TZMU in Pollen and Leaves Collected from Grapevines Following Soil and Foliar Applications of Belay 50 WDG Insecticide (Clutch 50 WDG), DACO: 8.5,9.9
2737117	2017, Clothianidin: Quantitation of Residues of Clothianidin, TZNG and TZMU in Nectar, Pollen and Leaves Following Foliar Post Bloom Application of Belay Insecticide/Clutch 50 WDG Insecticide to Apple Trees, DACO: 8.5,9.9

2737118	2017, Quantitation of Residues of Clothianidin, TZNG and TZMU in Nectar, Pollen and Leaves Following Soil Application of Belay Insecticide to Melon, DACO: 8.5,9.9
2737119	2017, Exposure of Pollinators to Residues of Clothianidin, TZNG, and TZMU in Pollen Following In-Furrow Application to Corn at Planting Study (2015), DACO: 8.5,9.9

B. Additional Information Considered

B.1 Published Information

B.1.0 Environmental Assessment

B.1.1 Environmental Fate and Effects Assessment

Reference
Abbott VA, Nadeau JL, Higo HA, Winston ML. 2008. Lethal and sublethal effects of imidacloprid on <i>Osmia lignaria</i> and clothianidin on <i>Megachile rotundata</i> (Hymenoptera: Megachilidae). <i>Journal of Economic Entomology</i> , 101(3): 784-796. DACO: 9.2.4.3
Alburaki M, Cheaib B, Quesnel L, Mercier P-L, Chagnon M, Derome N. 2016. Performance of honeybee colonies located in neonicotinoid-treated and untreated cornfields in Quebec. <i>J. Appl. Entomol.</i> doi: 10.1111/jen.12336. DACO: 9.2.4.7
Alkassab AT, Kirchner WH. 2016. Impacts of chronic sublethal exposure to clothianidin on winter honeybees. <i>Ecotoxicology</i> . DOI 10.1007/s10646-016-1657-3. DACO: 9.2.4.2, 9.2.4.4, 9.2.4.7
Bailey JC, Scott-Dupree CD, Harris CR, Tolman J, Harris BJ. 2005. Contact and oral toxicity to honey bees (<i>Apis mellifera</i> L.) of agents registered for use for sweet corn insect control in Ontario, Canada, <i>Apidologie</i> 36: 623-633. DACO: 9.2.4.1, 9.2.4.2
Boily M, Sarrasin B, DeBlois C, Aras P, Chagnon M. 2013. Acetylcholinesterase in honey bees (<i>Apis mellifera</i>) exposed to neonicotinoids, atrazine and glyphosate: Laboratory and field experiments. <i>Environ Sci Pollut Res</i> 20(8):5603-5614. DACO: 9.2.4.4
Bonmatin JM, Giorio C, Girolami V, Goulson D, Kreutzweiser DP, Krupke C, et al. 2015. Environmental fate and exposure; neonicotinoids and fipronil. <i>Environmental Science and Pollution Research International</i> 22(1):35-67. DACO: 8.5
Botias et al., 2017. Quantifying exposure of wild bumblebees to mixtures of agrochemicals in agricultural and urban landscapes. <i>Environmental Pollution</i> http://dx.doi.org/10.1016/j.envpol.2017.01.001 . DACO: 9.2.4.7

Reference
Cohen SZ, Creeger SM, Carsel RF and Enfield CG. 1984. Potential for pesticide contamination of groundwater resulting from agricultural uses. Pages 297-325 In R.F. Krugger and J.N. Seiber, eds., Treatment and Disposal of Pesticide Wastes. ACS Symposium Series No. 259. American Chemical Society, Washington, DC, pp. 297-325. DACO: 9.9
Cutler GC, Scott-Dupree CD. 2014. A field study examining the effects of exposure to neonicotinoid seed-treated corn on commercial bumble bee colonies. <i>Ecotoxicology</i> 23(9):1755-1763. DACO: 9.2.4.7
De Perre C, Murphy TM, Lydy MJ. 2015. Fate and Effects of Clothianidin in Fields Using Conservation Practices. <i>Environmental Toxicology and Chemistry</i> . 34(2): 258–265. DACO: 8.6
du Rand EE, Smit S, Beukes M, Apostolides Z, Pirk CW, Nicolson SW. 2015. Detoxification mechanisms of honey bees (<i>Apis mellifera</i>) resulting in tolerance of dietary nicotine. 5:11779. DOI: 10.1038/srep11779. DACO: 9.2.4.2
European Food Safety Authority. 2013. Evaluation of the FERA study on bumble bees and consideration of its potential impact on the EFSA conclusions on neonicotinoids. <i>EFSA Journal</i> 11(6):3242. DACO: 9.2.4.7
Fauser-Misslin A, Sadd BM, Neumann P and Sandrock C. 2013. Influence of combined pesticide and parasite exposure on bumblebee colony traits in the laboratory. <i>J Appl Ecol</i> 51:450-459. DACO: 9.2.4.6
FERA. 2013. Effects of neonicotinoid seed treatments on bumble bee colonies under field conditions. Sand Hutton, York YO41 1LZ: Food & Environment Research Agency. Available at http://FERA.co.uk/ccss/documents/defraBumbleBeeReportPS2371V4a.pdf . DACO: 9.2.4.7
Fischer J, Müller T, Spatz A.-K, Greggers U, Grünewald B, Menzel R. 2014. Neonicotinoids interfere with specific components of navigation in honeybees. <i>PLoS ONE</i> 9(3): e91364. DACO: 9.2.4.6
Girolami V, Mazzon L, Squartini A, Mori N, Mazarò M, Di Bernardo A, Greatti M, Giorio C, Tapparo A. 2009. Translocation of neonicotinoid insecticides from coated seeds to seedling guttation drops: A novel way of intoxication for bees. <i>Journal of Economic Entomology</i> , 102(5): 1808-1815. DACO: 9.2.4.2
Goring CAI, Laskowski DA, Hamaker JW and Meikle RW. 1975. Principle of pesticide degradation in soil. In (Haque, R. and V.H. Freed, eds.) <i>Environmental dynamics of pesticides</i> . Plenum Press, New York, pp. 135–172. DACO: 12.5
Goulson, D. 2015. Neonicotinoids impact bumblebee colony fitness in the field; a reanalysis of the UK's Food & Environment Research Agency 2012 experiment. <i>Peer J</i> 3:e854. DACO: 9.2.4.7

Reference
Gustafson DI. 1989. Groundwater ubiquity score: a simple method for assessing pesticide leachability. <i>Environmental Toxicology and Chemistry</i> , v. 8, no. 4, p. 339-357. DACO 9.9
Heimbach et al., 2016. Large-scale monitoring of effects of clothianidin dressed oilseed rape seeds on pollinating insects in Northern Germany: implementation of the monitoring project and its representativeness. <i>Ecotoxicology</i> 25:1630-1647. DACO: 9.2.4.7
Iwasa T, Motoyama N, Ambrose JT, Roe RM. 2004. Mechanism for the Differential Toxicity of Neonicotinoid Insecticides in the Honey Bee, <i>Apis Mellifera</i> . <i>Crop Protection</i> . 23: 371-378. DACO: 9.2.4.1
Jeyalakshmi T, Shanmugasundaram R, Saravanan M, Geetha S, Mohan SS, Goparaju A, Balakrishna Murthy P. 2011. Comparative toxicity of certain insecticides against <i>Apis cerana indica</i> under semi field and laboratory conditions. <i>Pestology</i> 35(12):23-26. DACO: 9.2.4.1
Jin N, Klein S, Leimig F, Bischoff G, Menzel R. 2015. The neonicotinoid clothianidin interferes with navigation of the solitary bee <i>Osmia cornuta</i> in a laboratory test. <i>J. Exp. Biol.</i> 2015 218: 2821-2825; doi: 10.1242/jeb.123612. DACO: 9.2.4.2
Kessler SC, Tiedeken EJ, Simcock KL, Derveau S, Mitchell J, Softley S, Stout JC, Wright GA. 2015. Bees prefer foods containing neonicotinoid pesticides. <i>Nature</i> 521: 74–76 doi:10.1038/nature14414. DACO: 9.2.4.2
Krupke CH, Hunt GJ, Eitzer BD, Andino G and Given K. 2012. Multiple routes of pesticide exposure for honey bees living near agricultural fields. <i>Plos One</i> 7(1):e29268. DACO: 9.2.4.7
Larson, J.L., C.T. Redmond, and D.A. Potter. 2013. Assessing Insecticide Hazard to Bumble Bees Foraging on Flowering Weeds in Treated Lawns. <i>PLoS ONE</i> , 8(6): e66375. DACO: 9.2.4.6
Larson JL, Redmond CT, Potter DA. 2015. Mowing mitigates bioactivity of neonicotinoid insecticides in nectar of flowering lawn weeds and turfgrass guttation. <i>Environ Toxicol Chem</i> 34:127–132. DACO: 9.2.4.8
Laurino D, Porporato M, Patetta A and Manino A. 2011. Toxicity of neonicotinoid insecticides to honey bees: Laboratory tests. <i>Bull Insect</i> 64(1):107-113. DACO 9.2.4.1, 9.2.4.2
Laurino D, Manino A, Patetta A, Ansaldi M, Porporato M. 2010. Acute oral toxicity of neonicotinoids on different honey bee strains. <i>Redia</i> ; 2010.93:99-102. DACO: 9.2.4.2
Laurino D, Manino A, Patteta A, Porporato M. 2013. Toxicity of neonicotinoid insecticides on different honey bee genotypes. <i>Bulletin of Insectology</i> . 66 (1) 119-126. DACO: 9.2.4.1, 9.2.4.2

Reference
López JH, et al. Sublethal pesticide doses negatively affect survival and the cellular responses in American foulbrood-infected honeybee larvae. <i>Sci. Rep.</i> 7, 40853; doi: 10.1038/srep40853 (2017). DACO: 9.2.4.4
Matsumoto T. 2013. Reduction in homing flights in the honey bee <i>Apis mellifera</i> after a sublethal dose of neonicotinoid insecticides. <i>Bulletin of Insectology</i> 66(1):1-9. DACO: 9.2.4.6
McCall PJ, Laskowski DA, Swann RL and Dishburger HJ. 1981. Measurements of sorption coefficients of organic chemicals and their use in environmental fate analysis. In <i>Test Protocols for Environmental Fate and Movement of Toxicants. Proceedings of AOAC Symposium</i> , AOAC, Washington D.C. DACO: 8.6
McEwen FL and Stephenson GR. 1979. The use and significance of pesticides in the environment. John Wiley and Sons Inc. Toronto. 282 pp. DACO: 8.6
Moffat C, Buckland ST, Samson AJ, McArthur R, Pino VC, Bollan KA, Huang J TJ, Connolly CN. 2016. Neonicotinoids target distinct nicotinic acetylcholine receptors and neurons, leading to differential risks to bumblebees. <i>Scientific Reports</i> . 6: 24764. DOI: 10.1038/srep24764. DACO: 9.2.4.6
Palmer MJ, Moffat C, Saranzewa N, Harvey J, Wright GA and Connolly CN. 2013. Cholinergic pesticides cause mushroom body neuronal inactivation in honeybees. <i>Nat Commun</i> 4:1634. DACO: 9.2.4.1
Peters et al., 2016. Large-scale monitoring of effects of clothianidin-dressed oilseed rape seeds on pollinating insects in Northern Germany: effects on red mason bees (<i>Osmia bicornis</i>). <i>Ecotoxicology</i> 25:1679-1690. DACO: 9.2.4.7
Piiroinen S, Botías C, Nicholls E, Goulson D. 2016. No effect of low-level chronic neonicotinoid exposure on bumblebee learning and fecundity. <i>PeerJ</i> 4:e1808; DOI 10.7717/peerj.1808. DACO: 9.2.4.6
Piiroinen S, Goulson D. 2016. Chronic neonicotinoid pesticide exposure and parasite stress differentially affects learning in honey bees and bumblebees. <i>Proc. R. Soc. B</i> 283: 20160246. http://dx.doi.org/10.1098/rspb.2016.0246 . DACO: 9.2.4.4
Pistorius J, Wehner A, Kriszan M, Bargaen H, Knabe S, Klein O, Frommberger M, Stahler M, Heimbach U. 2015. Application of predefined doses of neonicotinoid containing dusts in field trials and acute effects on honey bees. <i>Bulletin of Insectology</i> 68 (2): 161-172. DACO: 9.2.4.7
Reetz JE, Schulz W, Seitz W, Spiteller M, Zühlke S, Armbruster W, Wallner K. 2015. Uptake of Neonicotinoid Insecticides by Water-Foraging Honey Bees (Hymenoptera: Apidae) Through Guttation Fluid of Winter Oilseed Rape. <i>J. Econ. Ent.</i> DOI: http://dx.doi.org/10.1093/jee/tov287 . DACO: 9.2.4.7

Reference
<p>Rolke et al., 2016. Large-scale monitoring of effects of clothianidin-dressed oilseed rape seeds on pollinating insects in northern Germany: residues of clothianidin in pollen, nectar and honey. <i>Ecotoxicology</i> 25:1691-1701. DACO: 9.2.4.6, 9.2.4.7, 9.2.4.8</p>
<p>Rundlöf M, Andersson GKS, Bommarco R, Fries I, Hederström V, Herbertsson L, Jonsson O, Klatt BK, Pedersen TR, Yourstone J, Smith HG. 2015. Seed coating with a neonicotinoid insecticide negatively affects wild bees. <i>Nature</i> 521, 77–80. DACO: 9.2.4.7</p>
<p>Sandrock C, Tanadini M, Tanadini LG, Fauser-Misslin A, Potts SG, Neumann P. 2014. Impact of chronic neonicotinoid exposure on honeybee colony performance and queen supersedure. <i>PLoS ONE</i> 9(8):e103592. DACO: 9.2.4.6</p>
<p>Sandrock C, Tanadini LG, Pettis JS, Biesmeijer JC, Potts SG, Neumann P. 2014. Sublethal neonicotinoid insecticide exposure reduces solitary bee reproductive success. <i>Agricultural and Forest Entomology</i>, 16: 119-128. DACO: 9.2.4.4, 9.2.4.6</p>
<p>Schneider CW, Tautz J, Grünewald B and Fuchs S. 2012. RFID tracking of sublethal effects of two neonicotinoid insecticides on the foraging behavior of <i>Apis mellifera</i>. <i>Plos One</i> 7(1):e30023. DACO: 9.2.4.6</p>
<p>Scholer J, Krischik V. 2014. Chronic Exposure of Imidacloprid and Clothianidin Reduce Queen Survival, Foraging, and Nectar Storing in Colonies of <i>Bombus terrestris</i>. Published: March 18, 2014 http://dx.doi.org/10.1371/journal.pone.0091573 . DACO: 9.2.4.6</p>
<p>Scott-Dupree CD, Conroy L, Harris CR. 2009. Impact of Currently Used or Potentially Useful Insecticides for Canola Agroecosystems on <i>Bombus impatiens</i> (Hymenoptera: Apidae), <i>Megachile rotundata</i> (Hymenoptera: Megachilidae), and <i>Osmia lignaria</i> (Hymenoptera: Megachilidae). <i>J. Econ. Entomol.</i> 102(1): 177-182. DACO: 9.2.4.1</p>
<p>Sgolastra F, Renzi T, Draghetti S, Medrzycki P, Lodesani M, Maini S and Porrini C. 2012. Effects of neonicotinoid dust from maize seed-dressing on honey bees. <i>Bulletin of Insectology</i> 65(2):273-280. DACO: 9.2.4.1</p>
<p>Simon-Delso N, Amaral-Rogers V, Belzunces LP, Bonmatin JM, Chagnon M, Downs C, et al. (2015). Systemic insecticides (neonicotinoids and fipronil): Trends, uses, mode of action and metabolites. <i>Environmental Science & Pollution Research</i>. 22(1): 5-34. DACO 8.5</p>
<p>Sterk et al., 2016. Large-scale monitoring of effects of clothianidin-dressed OSR seeds on pollinating insects in Northern Germany: effects on large earth bumble bees (<i>Bombus terrestris</i>). <i>Ecotoxicology</i> 25:1666-1678. DACO: 9.2.4.7</p>
<p>Straub L et al. 2016 Neonicotinoid insecticides can serve as inadvertent insect contraceptives. <i>Proc. R. Soc. B</i> 283: 20160506. http://dx.doi.org/10.1098/rspb.2016.0506. DACO: 9.2.4.6</p>

Reference
Thompson HM, Wilkins S, Harkin S, Milner S, Walters KF. 2014. Neonicotinoids and bumblebees (<i>Bombus terrestris</i>): Effects on nectar consumption in individual workers. <i>Pest Manage Sci</i> , 71(7):946-950. DACO: 9.2.4.2
Thompson HM, Fryday SL, Harkin S, Milner S. 2014. Potential impacts of synergism in honeybees (<i>Apis mellifera</i>) of exposure to neonicotinoids and sprayed fungicides in crops. <i>Apidologie</i> 45(5):545-553. DACO: 9.2.4.1, 9.2.4.2
Tsvetkov N, Samson-Robert O, Sood K, Patel HS, Malena DA, Gajiwala PH, Maciukiewicz P, Fournier V, Zayed A. 2017. Chronic exposure to neonicotinoids reduces honeybee health near corn crops. DOI 10.1126/science.aam7470. DACO: 9.2.4.2, 9.2.4.6, 9.2.4.7
Whiting SA, Strain KE, Campbell LA, Young BG, Lydy MJ. 2014. A multi-year field study to evaluate the environmental fate and agronomic effects of insecticide mixtures. <i>Sci Total Environ</i> 497-498: 534-542. DACO: 8.6
Williams GR, Troxler A, Retschnig G, Roth K, Yanez O, Shutler D, Neumann P, Gauthier L. 2015. Neonicotinoid pesticides severely affect honey bee queens. <i>Scientific Reports</i> . 5:14621. DOI: 10.1038/srep14621. DACO: 9.2.4.6
Williamson SM, Willis SJ, Wright GA. 2014. Exposure to Neonicotinoids Influences the Motor Function of Adult Worker Honeybees <i>Ecotoxicology</i> . 2014 Oct; 23(8):1409-18. doi: 10.1007/s10646-014-1283-x. Epub 2014 Jul 11. DACO: 9.2.4.2
Woodcock BA, Bullock JM, Shore RF, Heard MS, Pereira MG, Redhead J, Ridding L, Dean H, Sleep D, Henrys P, Peyton J, Hulmes S, Humes L, Saraspataki M, Saure C, Edwards M, Genersch E, Knabe S, Pywell RF. 2017. Country-specific effects of neonicotinoid pesticides on honeybees and wild bees. DOI 10.1126/science.aaa1190. DACO: 9.2.4.7
Wu JY, Anelli CM, Sheppard WS. 2011. Sub-lethal Effects of Pesticide Residues in Brood Comb on Worker Honey Bee (<i>Apis mellifera</i>) Development and Longevity. <i>PLoS ONE</i> 6(2): e14720. DACO: 9.2.4.7
Yamada T, Yamada K, Wada N. 2012. Influence of dinotefuran and clothianidin on a bee colony. <i>Jpn J Clin Ecol</i> 21:10-23. DACO: 9.2.4.6
Zhu YC, Adamczyk J, Rinderer T, Yao J, Danka R, Luttrell R, Gore J. 2015. Spray Toxicity and Risk Potential of 42 Commonly Used Formulations of Row Crop Pesticides to Adult Honey Bees. <i>J Econ Entomol</i> . 2015 Dec;108(6):2640-7. doi: 10.1093/jee/tov269. DACO: 9.2.4.1

B.1.2 Water Monitoring Assessment

PMRA Document Number	Reference
2526146	Samson-Robert, O., G. Labrie, M. Chagnon, and V. Fournier, 2014, Neonicotinoid-contaminated puddles of water represent a risk of intoxication for honey bees. PLoS ONE 9(12): e108443, DACO: 8.6
2526184	Schaafsma, A., V. Limay-Rios, T. Beaute, J. Smith and Y. Xue, 2015, Neonicotinoid insecticide residue in surface water and soil associated with commercial maize (corn) fields in Southwestern Ontario. PLoS ONE 10(2): e0118139, DACO: 8.6

B.2 Unpublished Information

B.2.0 Environmental Assessment

B.2.1 Environmental Fate and Effects Assessment

PMRA Document Number	Reference
1544410	2004, U.S. Data Evaluation Record for Study Title: T1-435 - Terrestrial Field Dissipation Study, Washington, 1998, DACO: 12.5.8
2374877	2011. US EPA Data Evaluation Record, Column Leaching with Treated Seed, METIX050. DACO: 12.5.8
2491175	2009, Data Evaluation Record (DER) for "[Thiazolyl-2-14C]-Clothianidin: Aerobic Aquatic Metabolism", DACO: 12.5.8

B.2.2 Water Monitoring Assessment

PMRA Document Number	Reference
2548876	Pest Management Regulatory Agency, Pesticides detected in water and soil samples collected as part of the Hive Monitoring Program in 2014, Health Canada. Unpublished, DACO: 8.6

2548877	Pest Management Regulatory Agency, Pesticides detected in water and soil samples collected during Bee Mortality Incidents in 2013 and 2014, Health Canada. Unpublished, DACO: 8.6
---------	---