

Evaluation Report for Category B, Subcategory 2.1, 2.3, 2.4, 2.5, 3.11, 3.12, 3.4 Application

Application Number: 2005-0691
Application: B.2.1 (Product Chemistry - Guarantee), B.2.3 (Product Chemistry - Formulants), B.2.4 (Product Chemistry - Proportion of Formulants), B.2.5 (Product Chemistry - Formulation Type), B.3.11 (Product Labels - New Pests), B.3.12 (Product Labels - New Site or Host), B.3.4 (Product Labels - Application Method)
Product: Check Mite + Bee Hive Pest Control Strip
Registration Number: 27147
Active ingredients (a.i.): 10% Coumaphos
PMRA Document Number: 1518598

Background

Coumaphos was first registered in 1958. Other than Checkmite+ Beehive Pest Control Strip, the only registered end use product is Cattle Dust Bag (Reg. No. 16772) which is currently registered for use on beef and dairy cattle to control horn flies and lice, and as an aid in reducing face flies, with phase-out of this use by 31 December 2007. Coumaphos underwent re-evaluation with the results being published in PACR 2003-04 and RRD 2004-21.

Purpose of Application

The purpose of this application was to register a new end-use product, Checkmite+ Beehive Pest Control Strip, containing 10% of the active ingredient coumaphos to control Varroa mites in honeybee colonies at a rate of one strip for each five combs of bees in each brood chamber with no more than 2 treatments per year. Treatments must be applied at a time when bees are not producing a surplus honey crop. Refer to the registered label for further information.

Chemistry Assessment

Checkmite+ Beehive Pest Control Strip is an impregnated strip containing the active ingredient coumaphos at a nominal concentration of 10%. This product has a density of 145 g/kg.

Health Assessments

Toxicology

No additional toxicology data were provided for the conditional registration of Checkmite+ Beehive Pest Control Strip. The toxicology assessment was based on the re-evaluation for the technical grade active ingredient coumaphos (RRD 2004-21). The re-evaluation of coumaphos determined that the risks to human health were acceptable; therefore, no additional information was required. During the duration of the conditional registration, additional toxicology data outlined in PACR2003-04 are required and will be reviewed to confirm the acceptability of the continued registration.

Exposure

Exposure to coumaphos from CheckMite+ Beehive Pest Control Strips could occur during placement or removal of the impregnated strips. The primary route of exposure would be dermal exposure to the hands since coumaphos is non-volatile (vapour pressure = 1×10^{-7} mm Hg). Chemical resistant gloves must be worn when handling the product. As such, exposure from applying Checkmite+ Beehive Pest Control Strips should be negligible considering the nature of the product (impregnated strips, slow release and non-volatile) and that chemical resistant gloves are to be worn during handling.

Food Residues

To support the use of CheckMite+ Beehive Pest Control Strips for use in honey bee colonies to control varroa mites, residue trials and processing data were reviewed. In the residue trials, beehives were treated with coumaphos according to the label directions. In the processing study, honey containing coumaphos residues was processed to determine the potential for concentration of residues in processed honey. The use of CheckMite+ Beehive Pest Control Strips applied according to the label directions to control varroa mites in honey bee colonies will not pose an unacceptable dietary risk to any segment of the population, including infants, and children.

Maximum Residue Limit(s)

Based on the reviewed data, MRLs will be established at 0.02 ppm and 0.10 ppm for honey and honeycomb, respectively, to cover residues of coumaphos and its oxygen analog. No separate MRLs are required for processed honey, as data show that residues of coumaphos do not concentrate when honey is processed.

Table 1. Summary of Residue Trial Data Used to Establish Maximum Residue Limit (MRL)							
Commodity	Application Method/ Total Application Rate	PHI (days)	Residues (ppm)		Experimental Processing Factor	Currently Established MRL	Recommended MRL
			Min	Max			
Honey	Plastic strips impregnated with coumaphos (10 % w/w) hung in hive for 42-45 days when honey supers are removed.	Honey supers may be replaced 14 days after the strips are removed.	<0.020	0.021	--	none	0.02 ppm
Honeycomb			<0.10	<0.10	--	none	0.10 ppm

Environmental Assessment

There will be no significant environmental risk during use of CheckMite+ Beehive Pest Control Strips in beehives since release of coumaphos from the pest strips into the environment and exposure of non-target species will be negligible. Disposal of the used pest strips is expected to pose negligible environmental risk. The amount of coumaphos on the pest strips is not expected to be a significant environmental input, and if disposed of in landfills, it is expected to remain localized. Any coumaphos released from the strips into soil is expected to bind strongly to soil and have a low potential for leaching, based on the properties of coumaphos (high K_{ow}, low water solubility, low mobility in soil, low volatility). Wrapping of the used pest strips in a sealed plastic bag prior to disposal will further slow release of coumaphos into the environment. The pest strips should not be disposed of near any water source (i.e., irrigation or drinking water supplies or aquatic habitats). Provincial disposal requirements may vary, and the used pest strips and packaging must be disposed of in accordance with provincial requirements.

Value Assessment

Three efficacy studies were reviewed to support a claim of control of varroa mite in honey bee hives for Checkmite+ (10% coumaphos). Of these reports, two were from the USA (Nebraska and Michigan), and one was from Guatemala. Conditions within the hive, as well bee activity during the treatment period, allow for the use of the foreign data that were provided. Data demonstrated that 10% strips performed better than lower concentration strips, and that treatments of 1 or 2 strips gave good levels of control. Data also supported the use direction “leave strips in hive for a minimum of 42 days and a maximum of 45 days.” The application directions “one strip for each five combs of bees in each brood chamber” is a reasonable application method. Brood chambers in Canada typically have 10 frames per chamber. Most beehives are 1 chamber in height, but may have up to 2 chambers. As this pesticide is applied by direct contact of bees with the strips, applying strips in each brood chamber would be essential to ensure that all bees come in contact with the pesticide. All three studies indicated that no unusual bee mortality or injury to the colonies due to the application of Checkmite+ was observed following treatment. As well, CheckMite+ Beehive Pest Control Strips have been successfully

used to control varroa mites in Canadian honey bee hives for 4 years under emergency registrations.

Conclusion

The PMRA has completed an evaluation of the subject application and has found the information sufficient to register Checkmite+ Beehive Pest Control Strip, containing 10% of the active ingredient coumaphos to control Varroa mites in honeybee colonies. Strips must be applied at a rate of one strip for each five combs of bees in each brood chamber with no more than 2 treatments per year. Treatments must be applied at a time when bees are not producing a surplus honey crop.

MRLs will be established at 0.02 ppm and 0.10 ppm for honey and honeycomb, respectively.

References

A. List of Studies/Information Submitted by Registrant

Chemistry Assessment

- 1034232 2005, Note to Reviewer., DACO: 3.1
- 1034233 2005, Product Identification., DACO: 3.1
- 1034234 2005, Description of Starting Materials., DACO: 3.2.1
- 1034235 2000, Chemistry Evaluation of Coumaphos Bee Strips 10% & Amended., 75007 & 75007-1, DACO: 3.2.2,3.2.3,3.4.1,5.5
- 1034236 2005, Establishing Certified Limits., DACO: 3.3.1
- 1034288 2001, Report for the Stability Evaluation of M772 Bee Strips 10%" (Containing 10% coumaphos), 23182, DACO: 3.5.10

Value Assessment

- 1034251 Value Summaries: Check Mite + Behive Pest Control Strip, DACO: 10.1
- 1034252 Mode of Action: Coumaphos, DACO: 10.2.1
- 1034253 Description of Pest Problem, DACO: 10.2.2
- 1034255 1998, Evaluation of the Efficacy of Coumaphos Impregnated Strips for the Control of Mites (*Varroa jacobsoni*) in Bee Colonies in Nebraska., 74969, DACO: 10.2.3.3
- 1034256 1998, Evaluation of the Efficacy of Coumaphos Impregnated Strips for the Control of Mites (*Varroa jacobsoni*) in Bee Colonies in Minnesota., 74968, DACO: 10.2.3.3

- 1034257 1998, Evaluation of the Efficacy of Coumaphos Impregnated Strips for the Control of Mites (*Varroa jacobsoni*) in Bee Colonies in Guatemala., 74952, DACO: 10.2.3.3
- 1034258 2002, Control of the Small Hive Beetle (*Aethina tumida*)., 75489, DACO: 10.2.3.3
- 1034259 Summaries: Adverse Effects on Use Sites, DACO: 10.3.1
- 1034260 Non-Safety Adverse Effects: Check Mite + Beehive Pest Control Strip, DACO: 10.3.2
- 1034262 Compatibility with Current Management Practices Including IPM, DACO: 10.5.22005-0691

Environment Assessment

- 1034250 Storage, Disposal and Decontamination. Bayer Inc. Animal Health. Correspondence. DACO 8.4.1.

Health Assessment

- 1034242 2000, Analytical Method for the Determination of Coumaphos and Coumaphos Oxygen Analog Residues in Bee Honey by LC/MS/MS., 75043, DACO: 7.2.1,7.2.2
- 1034243 2002, Analytical Method for the Determination of Coumaphos and Coumaphos Oxygen Analog in Beeswax by LC/MS/MS., 75044, DACO: 7.2.1,7.2.2
- 1034245 2000, Independent Laboratory Validation of Analytical Method for the Determination of Coumaphos and Coumaphos Oxygen Analog Residues in Bee Honey by LC/MS/MS ., 75188, DACO: 7.2.3
- 1034246 2001, Final Report Storage Stability of Coumaphos and Coumaphos P-O Analog in Bee Honey and Beeswax., 75315, DACO: 7.2.5
- 1034247 2002, Magnitude of Coumaphos Residues in Honey and Beeswax from CheckMite + Field Trials for Comb Honey and Processed Honey Production., 75270, DACO: 7.4.1

B. Additional Information Considered

D) Published Information

- 1516719 Pest Management Regulatory Agency, Proposed Acceptability for Continuing Registration, PACR2003-04, Re-evaluation of coumaphos. 31 March, 2003. Pest Management Regulatory Agency, Health Canada.
- 1516720 Pest Management Regulatory Agency, Re-evaluation Decision Document, RRD2004-21, Re-evaluation of coumpahos. 29 July 2004. Pest Management Regulatory Agency, Health Canada.

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