



## Evaluation Report for Category B, Subcategory 3.1 Application

**Application Number:** 2016-5734  
**Application:** New Product Labels - Application Rate Increase  
**Product:** Synergy Shield MCH  
**Registration Number:** 32922  
**Active ingredient (a.i.):** 3-methyl-2-cyclohexen-1-one  
**PMRA Document Number :** 2748147

### Purpose of Application

The purpose of this application was to register the insect repellent product Synergy Shield MCH to be used in forests and woodlots against Douglas-fir beetles and spruce beetles.

### Chemistry Assessment

Synergy Shield MCH is formulated as a slow-release generator containing 3-methyl-2-cyclohexen-1-one at a nominal concentration of 97.0%. This end-use product has a specific gravity of 0.97. The required chemistry data for Synergy Shield MCH have been provided, reviewed and found to be acceptable.

### Health Assessments

Based on the toxicology profile of 3-methyl-2-cyclohexen-1-one (MCH), the end-use product is likely to be of low acute toxicity irrespective of the routes of exposure, minimally irritating to eyes and skin, and not likely to be a skin sensitizer. Data waivers submitted by the applicant were granted for acute oral toxicity, dermal toxicity, inhalation toxicity, eye and skin irritation and dermal sensitization on the basis of a long history of use of MCH, and given that a prolonged exposure is unlikely based on the use pattern, and that adequate exposure mitigative statements are present on the label.

There is no occupational exposure concern anticipated from the use because of the low toxicity of the end-use product, low exposure and adequate exposure mitigation measures present on the label, which include precautionary statements (e.g., wearing of personal protective equipment).

Synergy Shield MCH is not intended for use on food or feed crops and the active ingredient is wholly contained within a weather-proof capsule. Moreover, the label has necessary precautionary statements to prevent drinking water contamination from the uses. Consequently, the use is not expected to result in dietary exposures to the public from food and/or water. A dietary exposure assessment was not required for this application.

### Environmental Assessment

The increase in rate of Synergy Shield MCH will not result in an increase in

effects on non-target organisms. When used according to label instructions, Synergy Shield MCH is not expected to pose risks of concern to the environment.

## Value Assessment

Numerous published research trials support the registered use pattern of MCH dispensers to deter attack by Douglas-fir beetle and spruce beetle on Douglas-fir and spruce trees. The modified use pattern of Synergy Shield MCH, with application of fewer dispensers per hectare, is supported by the higher release rate demonstrated for the Synergy Shield MCH dispensers and by studies indicating that dispensers with higher release rates may be placed at lower densities and still provide sufficient pheromone coverage to prevent beetle infestation.

## Conclusion

The Pest Management Regulatory Agency has completed an assessment of the information provided and has found the information sufficient to register the insect repellent product Synergy Shield MCH to be used in forests and woodlots against Douglas-fir beetles and spruce beetles.

## References

### A. List of Studies/Information Submitted by Registrant

PMRA Document Number	References
2681767	2013, Product Chemistry for Synergy Shield MCH, DACO: 3.1.3,3.1.4,3.2.1,3.2.2,3.2.3,3.3.1,3.4.1,3.4.2,3.5.1,3.5.10,3.5.11,3.5.13,3.5.14,3.5.2,3.5.3,3.5.4,3.5.6,3.5.7,3.5.9 CBI
2692588	2016, Applicant and Formulator Information, DACO: 3.1.1,3.1.2 CBI
2694887	2016, Enforcement Analytical Method, DACO: 3.4.1 CBI
2694888	2016, Combined Storage Stability and Corrosion Characteristics Study for the Synergy Shield - MCH (90515-1), DACO: 3.5.10,3.5.14 CBI
2681768	2013, Response to Tier 1 Biochemical Pesticide Data Requirements for Synergy Shield MCH, DACO: 4.6.1,4.6.2,4.6.3,4.6.4,4.6.5,4.6.6
2681774	1998, Reference Document: 3-Methylcyclohexen-1-one (MCH) - Human Health and Ecological Risk Assessment Final Report, DACO: 12.5.4,12.5.5,9.9
2681769	2016, Use Description, DACO: 5.2
2681774	1998, Reference Document: 3-Methylcyclohexen-1-one (MCH) - Human Health and Ecological Risk Assessment FINAL REPORT, DACO: 12.5.4,12.5.5,9.9
1304806	1998, Syracuse Environmental Research Associates, Inc., Final Report: 3 Methylcyclohexen 1 one (MCH) Human Health and Ecological Risk Assessment. Prepared for the USDA Forest Service (Contract No. 53 3187 5 12). Report No. SERA TR 98 21 09 03d. Report Date: September 23, 1998.
2770877	2017, Response to email clarification of 01JUN17 - DACO: 9.6.6
2681771	T.M. Strand, D.W. Ross, H.W. Thistle, I.R. Ragenovich, I. Matos Guerra, and B.K. Lamb, 2012, Predicting <i>Dendroctonus pseudotsugae</i> (Coleoptera: Curculionidae) antiaggregation pheromone concentrations using an instantaneous

- puff dispersion model, *Journal of Economic Entomology* 105: 451-460, DACO: 10.1
- 2681773 D.W. Ross and K.F. Wallin, 2008, High release rate 3-methylcyclohex-2-en-1-one dispensers prevent Douglas-fir beetle (*Coleoptera: Curculionidae*) infestation of live Douglas-fir, *Journal of Economic Entomology* 101: 1826-1830, DACO: 10.1
- 2746624 2017, MCH History of Use Background Information, DACO: 10.2
- 2746627 2017, Use History Table, DACO: 10.2.4
- 2746628 2017, Use History Table, DACO: 10.2.4
- 2746629 2017, Use History Table, DACO: 10.2.4
- 2752339 2017, Double Bubble Descriptor, DACO: 10.2
- 2753508 2017, Use History Table, DACO: 10.2.4

## **B. Additional Information Considered**

### **i) Published Information**

#### **1.0 Environment**

- 1304836 Ross, D.W., and Daterman, G.E. 1994. Reduction of Douglas-fir beetle infestation of high-risk stands by antiaggregation and aggregation pheromones. *Canadian Journal of Forest Research*. 24:2184-2190.
- 1304835 Furniss, M.M., Daterman, G.E., Kline, L.N., McGregor, M.D., Trostle, G.C., Pettinger, L.F., and Rudinsky. 1974. Effectiveness of the Douglas-fir beetle antiaggregative pheromone methylcyclohexenone at three concentrations and spacings around felled host trees. *Canadian Entomologist*. 106: 381-392.
- 2821497 Pureswaran, D.S., R. Gries, J.H. Borden and H.D. Pierce, Jr. 2000. Dynamics of pheromone production and communication in the mountain pine beetle *Dendroctonus ponderosae* and the pine engraver, *Ips pini* (Say) (*Coleoptera: Scolytidae*). *Chemoecology* 10: 153-168.

ISSN: 1911-8082

© Her Majesty the Queen in Right of Canada, represented by the Minister of Public Works and Government Services Canada 2018

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.