UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

DATE: December 22, 2008

SUBJECT: Science Review in Support of the Registration of Z112-011, Containing 8.62% (S)-Methoprene [Isopropyl (2E,4E,7S)-11-methoxy-3,7,11-trimethyl-2,4-dodecadienoate]) As Its Active Ingredient

Decision Number:	**399777**
Data Package Number:	**358771**
EPA Reg. Number:	**63823-57**
Chemical Class:	**Biochemical**
PC Code:	**105402**
CAS Number:	**40596-69-8**
Active Ingredient Tolerance Exemptions:	**OPPTS 180.1033**
MRID Numbers:	**47511301, 47511302, 47225801, 47225802, 47225803**

FROM: *Sadaf Shaukat, Biologist* /s/
Biochemical Pesticides Branch
Biopesticides & Pollution Prevention Division (7511P)

THROUGH : *Angela Gonzales, Biologist* */s/*
Biochemical Pesticides Branch
Biopesticides & Pollution Prevention Division (7511P)

TO: *Cheryl Greene, Regulatory Action Leader*
Biochemical Pesticides Branch
Biopesticides & Pollution Prevention Division (7511P)

ACTION REQUESTED

On behalf of Management Contract Services, Inc., Landis International submitted data about Stability to Elevated Temperatures, Metals, and Metal Ions and Efficacy of the product Z112-011, EPA Reg. No. 63825-57. The submission is in response to the Agency's deficiency letter dated 8/24/07. This memorandum is a review of the stability and efficacy data submitted in MRID 47511301 and 47511302, respectively. In addition, this memorandum will review MRID 47225801, 47225802, 47225803 which are addendums to MRID 46877101, 46877104, and 47164701. These latter MRID's were submitted on 9/6/07 in response to the Agency's deficiency letter dated 8/24/07.

THE FOLLOWING CONTAINS CONFIDENTIAL BUSINESS INFORMATION

RECOMMENDATIONS AND CONCLUSIONS:

Product Chemistry: The product chemistry submission is ACCEPTABLE, pending submission and review of requested data.

MRID 47511301-ACCEPTABLE, 47225801-ACCEPTABLE

1. The registrant must submit the following two studies for the new formulation (not containing [redacted] to fulfill the requirements for registration:
    a. Storage Stability (OPPTS 830.6317)
    b. Corrosion Characteristics (OPPTS 830.6320)
2. The addendum to the Report: Product Identity and Composition of Z112-011 (MRID 46877101) is acceptable. This addendum was addressed in the registrant's 9/06/07 letter responding to the Agency's 8/14/07 deficiency letter.

Product Performance: The product performance submission is ACCEPTABLE, pending resolution of the deficiencies listed below.

MRID 47511302-ACCEPTABLE, 47225802-ACCEPTABLE, 47225803-ACCEPTABLE

1. The addendum to the Report: Laboratory Efficacy Evaluation of Z112-011 BA-16 (MRID 46877104) is acceptable. This addendum was addressed in the registrant's 9/06/07 letter responding to the Agency's 8/14/07 deficiency letter.
2. The addendum to the Report: Laboratory Efficacy Evaluation of Z112-011 BA-R0059 (MRID 47164701) is acceptable. This addendum was addressed in the registrant's 9/06/07 letter responding to the Agency's 8/14/07 deficiency letter.
3. On pages 7, 8, 9, 10, 11, and 12 of MRID 47511302, the p-value was incorrectly reported in the paragraphs underneath each table. It should be written as $p<0.001$ instead of $p>0.001$.
4. The registrant must verify which formulation (with or without [redacted]) was utilized as the test substance in the submitted efficacy study (MRID 47511302).
5. Until the registrant provides clarification as to which formulation (the formulation with or without the [redacted]) was used as the test substance in MRID 47511302, the reviewer cannot complete the review regarding the efficacy of this product.

NOTE TO RAL:

1. On the label, the section that reads *Application Sites*, it is stated that "Z112-011 briquets are designed to control mosquitos in small bodies of water…" This statement is ambiguous and misleading. It should be amended to indicate that only *man-made* small bodies of water are intended.

STUDY SUMMARIES:

Product Chemistry:

Note: A DER was not composed for MRID 47511301 or 47225801

Storage stability and corrosion characteristics data on the new formulation (not containing [redacted]) must be submitted upon completion. To the reviewer's knowledge, these data have not been submitted.

An *addendum to the Report on Product Identity and Composition* was submitted by the registrant (MRID 47225801), specifically addressing the effect of removing [redacted] from the formulation of Z112-011. [redacted] The registrant adequately addressed all of the relevant product chemistry related to the removal of the inert ingredient. It was concluded that the removal of this ingredient will have no significant effect on any of the physical and chemical properties of the finished product, including composition of the active ingredient and presence of impurities. The product identity, composition, certified limits, and description of the beginning materials have been adequately addressed. The manufacturing process has been amended and no longer includes the addition of [redacted]

Stability to Elevated Temperatures, Metals and Metal Ions (MRID 47511301)
The test substance, Z112-011 Briquet, was tested to determine its stability to elevated temperatures. Two samples of 20g of Z112-011 were placed in 400 mL beakers and placed in an oven set at 54° C. The samples were removed from the oven after 14 days and were observed. No significant physical changes were observed. In addition, Z112-011 was tested to determine its stability to metal and metal ion exposure at ambient and elevated temperatures. The four reagents used were Fe^{0}, Fe^{III}, Al^{0}, and Al^{III}. 20 samples consisting of a small amount of the test substance along with one of the four reagents were divided between two incubators, one at 23° C and one at 54° C. After 1, 2, 7 and 14 days, each sample was observed and descriptions recorded. There were no changes with Fe^{0}, some slight changes with Al^{0} and Al^{III}, and more significant changes with Fe^{III}. Overall, there was a slight degradation of the test substance in elevated temperatures and also when exposed to Al^{0}, Al^{III}, and Fe^{III}. However, this product is not expected to come into physical contact with metals or metal ions during storage, and therefore this conclusion is insignificant. This product is packaged in HDPE trays or polyethylene bags within an outer package of corrugated fiber, and thus it is highly unlikely that it will come into contact with metals/metal ions.

Product Performance:

Note: A DER was not composed for MRID 47511302., 47225802, or 47225803.

An *addendum to the Report: Laboratory Efficacy Evaluation of Z112-011 BA-16* was submitted by the registrant (MRID 47225802), specifically characterizing the formulation utilized in the efficacy study. It was confirmed that [redacted] had not been removed in this formulation, but that its removal would have had no significant effect on product performance.

An *addendum to the Report: Laboratory Efficacy Evaluation of Z112-011 BA-R0059* was submitted by the registrant (MRID 47225803), specifically characterizing the formulation utilized in the efficacy study. It was confirmed that [redacted] had not been removed in this formulation, but that its removal would have had no significant effect on product performance.

MRID 47511302
In a laboratory study, efficacy of Z112-011 (8.62% (S)-methoprene) against *Aedes aegypti* mosquitoes was tested over 44 days. It was not addressed in the study whether or not the formulation utilized in this study was with or without the inert ingredient, [redacted]. Six wooden framed pools were filled with 6 inches of pond water and 6 inches of well water. All pools contained floating cages for the mosquito larvae, constructed out of PVC pipe and fine gage tulle. Three pools were treated with one Z112-011 briquette each and the other three pools remained untreated as controls. Treatment was made 24 hours prior to the introduction of the 3rd instar mosquito larvae into all six pools. All floats were observed and the number of live/dead larvae, live/dead pupae, and incomplete/viable adults were recorded. After each challenge set, a new set of larvae were added to the pools in clean PVC floats. The treatment and controls were replicated three times with six challenge sets. Environmental conditions were monitored adequately (daily rainfall, air and water temperature). Adequate control data were submitted. In Z112-011 treated pools, the average mosquito mortality rate was 100%, 100%, 100%, 96.7%, 73.3%, and 76.7%. at 11, 21, 24, 32, 35, and 44 days (respectively) after treatment. The average mosquito mortality rate in the untreated control pools was 0%, 1.67%, 3.33%, 5%, 6.7%, and 1.7% at 11, 21, 24, 32, 35, and 44 days (respectively) after treatment. Statistical analyses of reported data were submitted.

cc: *S. Shaukat, A. Gonzales, C. Greene*, BPPD Science Review File, IHAD/ARS
S. Shaukat, A. Gonzales, FT, PY-S: *12/22/08*