**Background**

Bed bugs have been designated by the EPA and other government health agencies as pests of ‘significant public health importance’. Attempting to control bed bugs using ineffective products can exacerbate the problem by delaying effective treatment, allowing bed bug outbreaks to increase in scope and size and allowing uncontrolled infestations to spread to additional areas. In addition, consumers often over-apply insecticides, particularly when they do not immediately see results. There is significant concern about the large numbers of 25(b) pesticides marketed for control of bed bugs, which are sold without any federally mandated efficacy or data requirements. Ultimately, use of ineffective pesticide products in failed attempts to control bed bugs has been found by the Pesticide Control Program to have an unreasonable adverse effect on human health, safety, and welfare.

Procedures for pesticide product registration and registration renewals are outlined in the Alaska Administrative Code at 18 AAC 90.205, which requires that the producer provide in its application, among other requirements, "… other information that the department requests and that the department considers pertinent to product registration." Accordingly, the Pesticide Control Program has established specific criteria for the purposes of registering 25(b) pesticide products which list bed bugs as a target species or that include the terms “bed bug” or “bedbug” on the product packaging. Specifically, each product that is seeking first time registration or registration renewal must be able to demonstrate ≥80% efficacy. Products that cannot demonstrate this level of efficacy on bed bugs will be refused new or renewing registration in accordance with 18 AAC 90.215.

**Efficacy Data Requirements**

The efficacy data requirements apply to 25(b) pesticide products which list bed bugs as a target species, or that include the terms “bed bug” or “bedbug” on the product packaging.

Studies showing that products are effective must meet the criteria listed below. These criteria are primarily based on the criteria developed by the Association of American Pesticide Control Officials in that organization's “25(b) Product Efficacy Data Guidance”. Additional criteria developed by the Alaska Pesticide Control Program also requires that the data show the required efficacy when used under field conditions.

**Efficacy Review Process**

In addition to other information required by 18 AAC 90.205, applicants must also submit a complete data package to the Alaska Pesticide Control Program for review. This should include all studies to be considered regarding product efficacy against bed bugs. Each study should meet all of the criteria listed below. Studies that do not meet these requirements will be rejected.

After its initial review, the Alaska Pesticide Control Program will contact the applicant regarding any concerns or needs for additional data. The applicant will have one opportunity to address our findings or respond with additional data. If the findings are not adequately and completely addressed, the efficacy data will be rejected, and the Alaska Pesticide Control Program will decline product registration.

**Data Requirements**

Please ensure that each study submitted meets all of the following criteria before submission.

**Testing must reflect field conditions in which bed bugs are typically treated.**

For the purposes of efficacy studies, the Alaska Pesticide Control Program defines “field conditions” to mean that the study must demonstrate use and effectiveness of a product in the way that a product will be used when treating a pest in the habitat where the pest is found. In the case of bed bugs, a study that only indicates that a product will be effective if it is sprayed directly on a bed bug is not adequate, as the majority of bed bugs seek harborage in cracks and crevices, or inside of furniture and other areas where direct spray cannot reach. A successful study would either need to show indication that there will be residual efficacy, such as indication that a bed bug would be killed by tracking through product that had previously been sprayed, or that a formulation could reach a bed bug that is hiding in a location where direct spray is not possible.

Studies showing efficacy when product is sprayed directly on bed bugs that have no cover or harborage do not reflect conditions under which bed bugs are typically treated, and will not be accepted.

**Testing must be done on bed bugs.**

Studies conducted on organisms other than *cimex* species will not be accepted.

**Testing must be done on the specific product being submitted for review.**

The specific product must be named in the report, or its exact ingredients in the same proportions must be readily identified in the report. Studies conducted on products that are “substantially similar” but do not contain all the same ingredients in the same proportions as the product submitted for registration will not be accepted. Studies that do not clearly identify the product being tested, or its ingredients will not be accepted.

**Data must demonstrate ≥80% efficacy for products that claim to kill or repel bed bugs.**

**Data must show ≥90% knockdown of bed bugs within 30 seconds for products that claim “kills on contact”, “knockdown”, or “quick kill”.**

**Data must be credible, independently collected, reproducible, and replicated.**

Basic scientific method, experimental procedure, and adequate reporting are necessary to meet these requirements.

To be credible, the results of the research must be believable. This encompasses many factors, including use of a reasonable sample size, adequate control (addressed in requirement #8), lack of errors in the recorded data and report, lack of unsupported conclusions, etc.

Sample sizes must be justified statistically, taking into account the characteristics of the research and the necessary accuracy and precision of the results. Sample sizes of less than 10 individual bed bugs will not be accepted. The report should fully describe how sample size was determined.

Studies should be independently conducted. The report should clearly document how the study was conducted to guarantee its objectivity. In-house studies will be accepted only if conducted in accordance with Good Laboratory Practice Standards as described in 40 CFR 160.

Reports must include enough documentation and information for the studies to be reproducible. This includes a detailed description of the experimental procedure, including materials and methods as specified under requirement #9.

Studies must include replicates as specified under requirement #7.

**Studies must include a minimum of three replicates per test.**

**Studies must include an untreated control.**

The control population must subjected to the same conditions as the experimental population so that the only variable being tested is the application of the pesticide. A description of the control population and the conditions they were subject to must be included in the report. Each replication of a test must include a control population.

**Reports must describe the full experimental design including materials and methods.**

Reports must include a detailed account of the procedure that was followed with enough specific detail to allow the study to be replicated by others.

**Studies must include full results using standard scientific statistical procedures.**

The report must include a copy of all raw data. The report must also include a full description, explanation, and justification for the statistical methods used to analyze the data and determine if treatment effects were significant.

**Studies must include interpretation and conclusion of the results.**

Conclusions should state why and how the study results do or do not support the tested hypothesis.

 **Studies must include the names and addresses of researchers conducting the study.**

**Studies involving humans, such as repellency testing, must be double blind studies in which neither the participants nor the experimenters know who is receiving treatment.**

**Efficacy Data Submission**

Studies that meet the criteria above may be submitted by mail or email to the addresses listed below:

Email: karen.davidson@alaska.gov

Mail: Alaska Pesticide Control Program, 1700 E Bogard Rd. Suite B103, Wasilla, Alaska 99654