

AC2T, Inc. DBA Spartan Mosquito  
C/O Copeland, Cook, Taylor & Bush, P.A.  
PO BOX 18556  
Hattiesburg, MS 39404-8556

November 19, 2019

To Whom It May Concern,

On November 8, 2019, the product Spartan Mosquito Eradicator (25b Exempt) from Spartan Mosquito was re-reviewed. **The product registration for 2020 for Spartan Mosquito Eradicator is suspended effective immediately for the following items that are not compliant to registration requirements for a 25(b) product in Montana:**

- 1) The manufacturer's websites: <https://spartanmosquito.com/2018-06-28-the-most-dangerous-animal-in-the-world/>, <https://spartanmosquito.com/2018-08-07-chemical-free-mosquito-eradication-available-locally/> and <https://spartanmosquito.com/mosquito-control/> make claims that violate condition 6 of the 25(b) exemption of FIFRA:

- a. "...mosquitoes love nectar, and they can smell the sucrose molecules in the Eradicators for up to 100 feet. Eradicators are placed no more than 180 feet apart, so they form a barrier to "catch" mosquitoes entering the area."

This product does not meet the definition of a "barrier" in 40 CFR 152.10(c) which states, "Products that are intended to exclude pests only by providing a physical barrier against pest access, and which contain no toxicants, such as certain pruning paints to trees." Remove this claim from the website.

- b. "When a mosquito ingests the mixture in Spartan Mosquito Eradicators, the Sodium Chloride combined with the CO2 produced by the fermentation process causes the mosquito's stomach to rupture."

No research or studies were found that connect consumption of sodium chloride with a mosquito's stomach rupturing. No published articles were found that confirm that the adult mosquito will die or be unable to reproduce after drinking a combination of sugar-salt water. Remove this claim from the website.

Mosquitoes have evolved to survive and reproduce in salt water. Mosquitoes drink nectar and blood-meal, which are both high in salt. Some information that was found in regard to mosquitoes and their ability to handle salt consumption includes:

"Blood-feeders such as mosquitoes and triatomid bugs are exposed to high loads of Na<sup>+</sup> immediately following the meal but must later deal with K<sup>+</sup> released as the erythrocytes are digested, and so potent mechanisms for elimination of both cations are required."  
(Source - Dirk Weihrauch, Michael J. O'Donnell, Links between

Osmoregulation and Nitrogen-Excretion in Insects and Crustaceans, Integrative and Comparative Biology, Volume 55, Issue 5, November 2015, Pages 816–829,  
<https://doi.org/10.1093/icb/icv013>)

"When a female takes a blood meal, excess salts (Na<sup>+</sup>, K<sup>+</sup> and Cl<sup>-</sup>), which are absorbed across the stomach, are rapidly eliminated by Malpighian tubules/hindgut activity (Clements, 2000)." (Source - Patrick, Marjorie & Aimanova, Karlygash & Sanders, Heather & Gill, Sarjeet. (2007). P-type Na<sup>+</sup>/K<sup>+</sup>-ATPase and V-type H<sup>+</sup>-ATPase expression patterns in the osmoregulatory organs of larval and adult mosquito *Aedes aegypti*. The Journal of experimental biology. 209. 4638-51. 10.1242/jeb.02551)

c. "Chemical-free mosquito eradication..."

The statement "chemical-free" is false and misleading. Remove this claim from the website. According to EPA:

"Minimum risk pesticide products are composed of chemicals that are listed on the product label. The use of the term "chemical-free" may be an attempt to convey that the product does not pose risk. However, the use of such a claim is not based on facts and may be considered false or misleading. Consumers could misunderstand such a claim to be a safety claim." (Source - EPA Minimum Risk condition 6:  
<https://www.epa.gov/minimum-risk-pesticides/conditions-minimum-risk-pesticides>)

d. "The Spartan Mosquito Eradicator is the most effective, longest lasting, continuous mosquito control system."

Exaggerated efficacy claims are also considered false and misleading. Remove this statement from the website. Efficacy will need to be provided to prove 'most effective' and 'longest lasting'. Without testing the product against every product on the market (section 3, EPA registered products included), these claims are false and misleading.

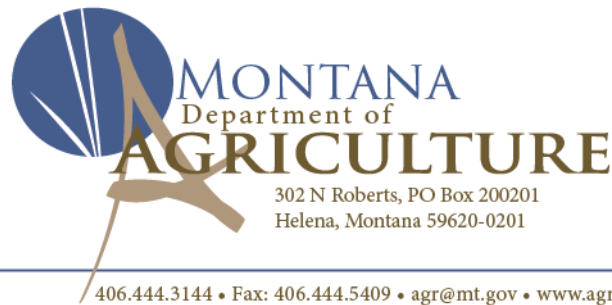
2) The manufacturer's website:

<https://www.facebook.com/spartanmosquito/videos/2247114238678006/> makes false and misleading claims that do not meet condition 6 of the 25(b) exemption of FIFRA. Remove this video or information from the website.

- Emit the same attractant triggers that draw mosquitoes to humans (0:24)
- Feeding mosquitoes leave the tube and perish
- Females are unable to lay eggs

3) Spartan Mosquito is responsible to fully review all labeling, marketing and promotional material to confirm that no statements violate condition 6 of the 25(b) exemption of FIFRA, as established by EPA. Spartan Mosquito's internal review should include revisions to the manufacturer's website, YouTube videos, and Facebook page.

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Director

- 4) Salt is listed as an active ingredient in the formulation. According to Cornell Cooperative Extension and the active ingredient profile for sodium chloride, the insecticidal properties against mosquitoes cannot be confirmed. Salt is a common inert ingredient in many insecticide formulations, for synergistic functions to increase the buffering, solubility and as a diluent. (Source - Baker and Grant, Cornell Cooperative Extension: Sodium Chloride Profile - <https://ecommons.cornell.edu/handle/1813/56140>) Listing sodium chloride as an active ingredient is a violation of condition 1 of the 25(b) exemption of FIFRA. Options could be to change the formulation of this product or list the ingredient accurately as an inert ingredient.
- 5) Condition 4 of the 25(b) exemption of FIFRA states that a product cannot state or imply that the product can or will control or reduce organisms that pose a threat to human health, or insects or rodents carrying specific diseases. There are areas on the manufacturer's website (<https://spartanmosquito.com/category/in-the-news/>), Facebook page, YouTube videos and other marketing materials that make connection between mosquitoes and diseases. These marketing materials refer to mosquito-borne diseases of public health significance. The mentioning of these diseases connects the use of Spartan Mosquito Eradicator to prevention or mitigation the transmission of these mosquito-borne diseases. Remove these claims from all marketing materials.

Respond by December 17, 2019 with how Spartan Mosquito will proceed regarding the product and the required changes noted above. The options available to Spartan Mosquito are:

- 1) Changes: Make the required changes as noted above and provide an acceptable timeframe for when the changes will occur.
- 2) Voluntary Removal: The product will need to be immediately removed from the channels of trade in Montana by Spartan Mosquito.
- 3) Stop Sale: If not voluntarily removed, a stop sale will be placed on any product(s) found in the channels of trade in Montana.

If there are any questions regarding this letter, please contact Ms. Jerin Borrego by email at [jborrego@mt.gov](mailto:jborrego@mt.gov) or by telephone at 406-444-5471.

Sincerely,

**Jerin Borrego**

Montana Department of Agriculture  
Pesticide Product Registration Specialist  
406-444-5471  
[jborrego@mt.gov](mailto:jborrego@mt.gov)





25b Application Review —SPARTAN MOSQUITO ERADICATOR  
SPARTAN MOSQUITO  
JEREMY HIRSCH  
8 NEMO CLARK DR  
LAUREL, MS 39443

ATTN: Ms. Jerin Borrego  
Montana Department of Agriculture  
302 N. Roberts, PO Box 200201  
Helena, Montana 59620  
DATE: December 12, 2019

Ms. Jerin Borrego,

**Thank you and your staff immensely for your re-review of our product.** We would like to take this time to further expound upon your findings and hope that you accept this written petition to reinstate during this holiday season:

1-a. **All mentions of barrier have been removed from our website, our YouTube Channel, and our Facebook page.** Our intention of the word “barrier” was to describe to individuals how to hang their units. We have had numerous people who think that closer is better (like most mosquito control technologies), while our intent was not malicious, nor meant to be misleading (rather as a clarifier so that people would stop hanging our units on their porch, by their grill etc.) the word has been removed.

1-b. There are several parts to the phrase “When a mosquito ingests the mixture in Spartan Mosquito Eradicators, the Sodium Chloride combined with the CO<sub>2</sub> produced by the fermentation process causes the mosquito’s stomach to rupture.” This phrase was initially used to describe for the layman how our product works while internally trying to train a customer service staff of over 30 people at our company. We wanted them to use factually true statements, where all other questions could be diverted to our scientists. If you believe this is still false and misleading based on the below, please let us know and we will amend the description to your approval. There are numerous scientific studies that suggest increased sodium chloride levels between 1 and 1.5% stop most mosquitoes (not all 3,000 + species, certainly not the 7 or so salt marsh mosquito species) from egg raft development to adulthood. Please see “Effects of Sodium Chloride Concentrations on Larvae and Pupae of *Aedes Aegypti*” Animal Research International (2011) 8(3): 1467-1472 (1% NaCl solution yields a 6.7% mortality in First larval instars, 1.5% NaCl yields 100% mortality in First larval instars). Please also see, “The Adaptation of Mosquito Larvae to Salt Water”, V.B. Wigglesworth, M.A., M.D. (From the Department of Entomology, London School of Hygiene and Tropical Medicine-(received 15<sup>th</sup> April, 1932) pages 27-37—“...In 1.0 per cent. solutions many larvae die within about a week (although a few may survive permanently), and the mortality increases with rising concentration. At 1.1 and 1.2 per cent. the larvae nearly all die in 4-7 days. At 1.3 per cent. they die within 72 hours, and at 1.4 per cent. within 48 hours”. Separately, and according to the same source, prior to evolving to deal with NaCl water cells in the epithelium of the mid-gut are caused to swell up and become detached from the basement membrane. Lastly, please see “Effect of Common Salt on Laboratory Reared Immature Stages of *Aedes aegypti*”, Asian Pacific Journal of Tropical Medicine (2010)173-175, 1.0% NaCl, 90% mortality in 120 hours, 1.25% NaCl, 100% mortality in 84 hours, 1.5% NaCl, 100% mortality in 36 hours. From the same source, “...the findings of the present study showed that common salt concentration more than 1% in water would kill majority of larva and pupa of *Ae. Aegypti*”. From Spartan’s perspective this is a very difficult solution to reach. We have found that if sodium chloride levels are below 1% there is usually no effect on the mosquito whatsoever—and the solution turns in to a feeder. Additionally, we have found that most solutions in excess of 1.5% sodium chloride are not attractive to mosquitoes and they will steer away from it altogether. When our units are first deployed the sodium chloride present is roughly 1.26%, that allows for some increased concentration due to evaporation, and it allows for some dilution due to rainfall. USEPA guidance, not law is 20Mg/L or .002% Sodium--levels that would never impact the efficacy of our product. We believe that (all but 7 species of mosquitoes) larvae that are reared in NaCl solutions of 1-1.5% will either die before reaching adulthood, have swollen cells of the epithelium of the mid-gut causing detachment from the basement membrane, or have decreased lifespans based on the aforementioned information, to include—but not limited to consumption of the concoction. **We also have conjectured that the continual production of CO<sub>2</sub> from fermenting biomaterial inside the abdomens of some species causes the stomach to rupture based on mosquito’s inability to quickly expel excess gas and the cells detachment from the basement membrane of the mid-gut.**

We are completely open to changing the layman’s explanation of how mosquitoes die because of our devices, but based on known science, we figured this was a fair and balanced explanation for the average consumer, “When a mosquito ingests the mixture in





Spartan Mosquito Eradicators, the Sodium Chloride combined with the CO2 produced by the fermentation process causes the mosquito's stomach to rupture". Please provide us with alternative guidance if you feel that this description needs to be amended.

1-c. While our team conducts a yearly review of materials, we have now increased that to quarterly, **"Chemical-free mosquito eradication..." is purged from our systems.** This is something that was written by a former employee and overlooked at our last review. Our sincerest apologies for missing it.

1-d. **We have purged "The Spartan Mosquito Eradicator is the most effective, longest lasting, continuous mosquito control system", from our systems based on your review.**

2. **The video has been removed.**

3. **We have increased our reviews to quarterly vs. yearly.**

4. Salt as an active—**please see the few cited articles in 1-b. regarding salts impact on larvae and/or the ingestion lifecycle.** Salt may be listed as inert on many other pesticides, but pesticidal registrations must be made as shipped, sold, or manufactured vs. diluted. For example, the labeling of all pesticides currently sold in your state are not based on what happens after they are diluted with water, rather those registrations and labeling are made as they "appear" in the store. As sold, the only material in our devices that can kill a mosquito is salt. EPA condition 1 "Active ingredients are the ingredients that kill, repel, or mitigate the pests identified on the product label", we believe we have demonstrated that salt is the only active ingredient in our product.

5. **All health claims made inadvertently by us, or by any third party shared by us, are purged from our system and protocols are in place to prevent that from happening in the future.** We do have one issue with Facebook. Facebook only allows Page managers to review comments to a historical point (We have yet to get a clear answer from our representative on how far back this process goes). When in doubt, about where a comment (someone externally or someone internally) violates and makes a "health claim" we have deleted the entire post due to Facebook's algorithm limits. We are currently working with Facebook to ensure we stop this before it starts again. Please understand we do our absolute best at correcting news anchors, magazine and newspaper editors, radio station hosts, our Facebook administrators, our authors, and the world wide web. We appreciate you bringing this to our attention as our last review obviously missed several of these.

I cannot thank you enough for taking the time to review this petition and wish we had more people and more time to fully explain each aspect of how our devices work. We are a small Mississippi company, that manufactures a 100% American made product—facing giants on a daily basis. We rely on people like you to point out our deficiencies and make our work better. Your review has made all of us realize the gaps in our reviews and the data that we do need to share with the world to better enhance everyone's understanding of the mosquito. Thank you once again for your consideration in this matter.

All the Best,

Jeremy Hirsch

AC2T, Inc. DBA Spartan Mosquito  
C/O Jeremy Hirsch  
8 Nemo Clark Drive  
Laurel, MS 39443

January 7, 2020

To Whom It May Concern,

On November 9, 2019 the Montana Department of Agriculture (MDA) sent a letter to Spartan Mosquito noting that the product registration for 2020 for Spartan Mosquito Eradicator was suspended. A response was received by MDA from Spartan Mosquito on December 12, 2019 noting actions that Spartan Mosquito was taking to bring their product, Spartan Mosquito Eradicator, into compliance.

After a review of the materials provided on December 12, 2019 by Spartan Mosquito, the product registration for Spartan Mosquito Eradicator is denied for 2020 in accordance with the Montana Pesticide Act, 8-8-201(7). Denial is based on the following reason(s):

- 1.) **False and Misleading Claims:** False and misleading claims are a violation of EPA Condition 6 (<https://www.epa.gov/minimum-risk-pesticides/conditions-minimum-risk-pesticides>) which states that the label cannot include any false or misleading statements, as described in 40 CFR 156.10(a)(5)(i) through (viii). As of 1/7/2020 Spartan Mosquito Eradicator makes false or misleading statements such as the following:
  - a. <https://spartanmosquito.com/enjoy-the-summer-without-dealing-with-pesky-mosquitoes/> states, "the mosquitoes fly in here, they fly off, and then they die....they're going to go in, eat the material, and then die." "That sugar and yeast start to ferment so you have CO2 and heat that mosquitoes are attracted to. When they fly in, they eat the material, they fly off, and they die." No supporting documentation has been submitted that sufficiently supports these statement. Efficacy data submitted must meet the Montana Efficacy Data Requirements for 25(b) products.
  - b. <https://spartanmosquito.com/spartan-mosquito/> states, "Eradicators eliminate active "hunting" mosquitoes, many of which are females preparing to lay eggs." "Once deployed, the Eradicators will work together to form overlapping zones to "catch" hunting mosquitoes by emitting the same attractant triggers that draw mosquitoes to people and animals. Mosquitoes that feed will perish and are not able to reproduce. The mosquito population will suffer dramatically in approximately the first 15 days and will be up to 95% controlled for up to 90 days." No supporting documentation has been submitted that sufficiently supports these statements. Efficacy data submitted must meet the Montana Efficacy Data Requirements for 25(b) products.

- 2.) **Salt as an Active Ingredient:** EPA Condition 1 (<https://www.epa.gov/minimum-risk-pesticides/conditions-minimum-risk-pesticides>) states that the product's active ingredients must be only those listed in 40 CFR 125.25 (f)(1). Efficacy data that meets the Montana Efficacy Data Requirements must be provided to support sodium chloride as the only active ingredient in this product. It must support that mosquitoes ingesting the active ingredient (sodium chloride) at the formulation percentage without the inert ingredients causes the efficacy claims of this product.
- 3.) **Yeast and Sucrose are Active Ingredients:** EPA Condition 1 (<https://www.epa.gov/minimum-risk-pesticides/conditions-minimum-risk-pesticides>) states that the product's active ingredients must be only those listed in 40 CFR 125.25 (f)(1).
- a. The yeast and sucrose with warm water create carbon dioxide which indicates that yeast is an active ingredient, not an inert ingredient. The function of the yeast is to create an attractant that lures the mosquito to the product. Since yeast and sucrose are not approved active ingredient for 25(b) products, revise your formula or provide data that shows that the product works without the inert ingredients.
  - b. There are several Section 3 FIFRA regulated products that have yeast as an active ingredient. For example, Bull Run Fly Attractant (EPA Registration Number 84565-2) has both sucrose and yeast listed as active ingredients as attractants. The inclusion of yeast and sucrose as active ingredients disqualify this product for exemption under FIFRA 25(b) and this product will need to be registered with the U.S. EPA.
  - c. In your response letter you stated that, "We also have conjectured that the continual production of CO<sub>2</sub> from fermenting biomaterial inside the abdomens of some species causes the stomach to rupture based on the mosquito's inability to quickly expel excess gas and the cells detachment from the basement membrane of the mid-gut." This conjecture has not been supported with sufficient supporting documentation. If accurate though, it would further support that yeast and sucrose are acting as active ingredients in this formulation.

You have the option to submit your product to the U.S. Environmental Protection Agency for them to decide if your product meets the criteria of a 25(b) FIFRA exempt product. Information can be found at (<https://www.epa.gov/pria-fees/m009-pria-fee-category>). Your product would need to be reviewed under PRIA 4: Fee Determination Decision Tree: Non-FIFRA Regulated Determination: Applicant Initiated, Per Product. "A request for a determination of whether FIFRA registration is required for a proposed product. Includes but is not limited to determinations for treated articles exemptions, 25b minimum risk pesticides, and pesticidal device(s). This determination is not required by the Agency, and such a request is at the discretion of the applicant."



**Steve Bullock**  
Governor



**Ben Thomas**  
Director

Please see the Montana Requirements for 25(b) registrations and the Montana requirements for Efficacy Data for further information. Please respond by February 6, 2020 if you wish to pursue administrative remedies under the Montana Administrative Procedure Act and rules of the department.

Additionally,

If you have further questions, please contact me using the information provided below.

Sincerely,

**Jerin Borrego**

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CC: Cort Jensen, Attorney, Montana Department of Agriculture