



*Office of*  
**INDIANA STATE CHEMIST AND SEED COMMISSIONER**

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Robert D. Waltz, Ph.D.  
*State Chemist &  
Seed Commissioner*

**August 13, 2019**

**CERTIFIED MAIL**

SPARTAN MOSQUITO  
ATTN: JOSHUA MARS  
421 J M TATUM INDUSTRIAL DRIVE  
HATTIESBURG MS 39401

Dear Mr. Mars:

Based on a recent label review, the Office of Indiana State Chemist (OISC) has determined that your pesticide product **SPARTAN MOSQUITO ERADICATOR (PS REG 2018083353)** will not be eligible for annual renewal in Indiana after December 31, 2019.

It has been determined that this product does not currently meet all six of U.S. EPA's list of conditions for minimum risk pesticides required to exempt it from federal regulation. Specifically, this product does not meet EPA condition #1 that the product's active ingredients must be only those that are listed in 40 CFR 152.25(f)(1).

More specifically, the combination of yeast and sucrose in this product produces carbon dioxide, which obviously serves as an attractant in the trap. As such, the carbon dioxide is considered the true active ingredient in the product.

Please be advised that the Spartan Mosquito Eradicator pesticide product will continue to be registered conditionally for the remainder of the 2019 registration year. This conditional registration will expire December 31, 2019.

If you wish to register this pesticide product in Indiana after December 31, 2019, you must first comply with FIFRA Section 3 pesticide registration requirements or the conditions for minimum risk pesticide exemption from federal regulation.

Please contact me at (765)494-1587 if you have questions regarding this matter.

Sincerely,

Sarah K. Caffery  
Pesticide Product Registration Specialist

Office of Indiana State Chemist  
Pesticide Registrations Department  
175 South University Street  
West Lafayette, IN 47907



SPARTAN MOSQUITO  
ATTN: JEREMY HIRSCH  
8 NEMO CLARK DR  
LAUREL, MS 39443  
DATE: November 4, 2019

Mr. Hirsch,

Thank you for your time discussing the workings of the SPARTAN MOSQUITO ERADICATOR (SME) with our office. After our phone conversation, we agreed that, based on the new information you presented, we would review the full application packet as an audit. Outside of the required material, you also provided additional data on CO<sub>2</sub> production for our review. OISC has received assistance from professionals within the industry for this review as well. Our review indicates the following concerns.

## REVIEW

### False and Misleading Claims:

False and misleading claims are a violation of EPA Condition 6<sup>1</sup> and Indiana Code 15-16-4-57(5)<sup>2</sup>. OISC identified the following labeling statements that are in violation:

Company Website: <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/> reviewed on 10/15/19. Statements directly from the website are quoted, italicized and in red.

*“....mosquitoes are drawn to CO<sub>2</sub>, which is released by the fermentation process in the Eradicators (CO<sub>2</sub> is the only thing released into the atmosphere)”*

Per our conversation, you indicated that there is not enough CO<sub>2</sub> generated from SME to attract or “draw” mosquitoes. We posed a question about CO<sub>2</sub> to a Purdue Research Associate Professor in Entomology. His response was:  
*“CO<sub>2</sub> would be produced for a very short time as the yeast would digest the sugar very quickly (I’m guessing within a few hours). The company is right*

<sup>1</sup> EPA Minimum Risk Conditions: <https://www.epa.gov/minimum-risk-pesticides/conditions-minimum-risk-pesticides> The label cannot include any false or misleading statements, as described in 40 CFR 156.10(a)(5)(i) through (viii).

<sup>2</sup> Indiana Code: 15-16-4-57(5) – “...a person may not produce, distribute, display, sell, or offer for sale within Indiana... any of the following... (5) any pesticide product that is adulterated or misbranded”

*in saying that not enough CO2 would be produced to attract mosquitoes. There might be some attraction, but only while CO2 is being produced.”*

Based on the additional, supportive documents we received on 10/28/19 from your company, SME cannot make claims connected with CO2 production. Pesticidal claims connected to CO2 are false and misleading because, according to your own data, the product does not produce enough CO2 to attract mosquitoes.

*“...mosquitoes are attracted to moisture and heat, and Eradicators are filled with water and become warm as the fermentation process and decaying bio-material emit heat and the dark color absorbs sunlight.”*

We shared this statement and your assessment that mosquitoes were attracted to the decaying biomaterial with Joe Conlon, Technical Advisor for the American Mosquito Control Association. Mr. Conlon stated, *“I do not know of any references or studies that would support the contention that the decomposition of trapped insects would serve as a lure to ovipositing mosquitoes or mosquitoes in search of energy.”*<sup>3</sup>

We posed a question about mosquitoes being attracted to biomaterial to the Purdue Entomologist. Our question was specific to if mosquitoes are attracted to dead ants, gnats or other small insects that enter the product and die. The Purdue Entomologist replied:

*“Biomaterial accumulating in the trap: mosquitoes evolved to breed in stagnant water (tree holes, pitcher plants, etc) and are hugely attracted to water that contains decaying material such as leaves, etc. There are many scientific publications on this. Water that contains dead insects wouldn’t be particularly attractive (mosquitoes prefer plant material), but mosquito larvae feed on organic material including dead insects that are trapped in water. Female mosquitoes would be attracted to the trap for oviposition, would lay eggs in the trap and the dead insects would be a source of food for the developing larvae. The larvae would then develop into adults and exit the trap through the entry hole.”*<sup>4</sup>

*“...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.”*

SME cannot claim to be a barrier. The product does not comply with the definition of a “barrier” in 40 CFR 152.10(c) - *“Products that are intended to exclude pests*

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<sup>3</sup> Email quote from 10/14/19

<sup>4</sup> Email quote from 10/9/19

*only by providing a physical barrier against pest access, and which contain no toxicants, such as certain pruning paints to trees.”*

*“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.”*

See previous point related to CO2. We can find no research or studies that connect consumption of sodium chloride with a mosquito’s stomach rupturing. We are also unable to find published articles that confirm that the adult mosquito will die or be unable to reproduce after drinking sugary-salt water.

Mosquitoes have evolved to survive and reproduce in salt water. Mosquitoes drink nectar and blood-meal, which are both high in salt. Here is some information that we did find in regards to mosquitoes and their ability to handle salt consumption:

*“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.”<sup>5</sup>*

*“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).”<sup>6</sup>*

*“The mosquito population in an area protected by Spartan Mosquito Eradicators suffers dramatically in the first 15 days and will be up to 95% controlled for up to 90 days.”*

The Webster definition of “eradicate” is: to do away with as completely as if by pulling up by the roots”. SME cannot state that it eradicates mosquitoes because it does not **completely do away** with mosquitoes from an environment; 95% is close, but not complete.

Please see the concerns related to the efficacy below.

*“Spartan Mosquito Eradicators are extremely effective in controlling and decimating mosquito populations. The Eradicators eliminate active “hunting” mosquitoes, many of which are females preparing to lay eggs.”*

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<sup>5</sup> 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>

<sup>6</sup> 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.

See eradicate notes above and efficacy concerns below.

*“Chemical-free mosquito eradication...”*

See eradicate notes above.

The statement “chemical-free” is false and misleading. 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.”<sup>7</sup>*

*“The Spartan Mosquito Eradicator is the most effective, longest lasting, continuous mosquito control system”*

Exaggerated efficacy claims are also considered false and misleading. 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.

Additional false and misleading claims have been identified; some are included in Appendix A. Spartan Mosquito is responsible to fully review all labeling, marketing and promotional material to confirm that no statements violate this condition, as established by EPA. Your internal review should include revisions to your website, youtube videos and facebook page.

Salt as an Active Ingredient:

According to Cornell Cooperative Extension and the active ingredient profile for sodium chloride, we cannot confirm insecticidal properties against mosquitoes.<sup>8</sup>

Salt is a common inert ingredient in many insecticide formulations, for synergistic functions to increase the buffering, solubility and as a diluent.

Mr. Conlon also commented on salt as an active ingredient. He stated that, *“Obviously salt marsh breeding mosquitoes are attracted to habitats rich in saline content. But they oviposit in intermittently-flooded marshy areas only inundated when super high tides occur.... Salt water would not kill mosquitoes that breed in fresh water habitats. These species would avoid any salt water and would have nothing to do with traps that utilize salt water as a substrate.”<sup>9</sup>*

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<sup>7</sup> EPA Minimum Risk condition 6: <https://www.epa.gov/minimum-risk-pesticides/conditions-minimum-risk-pesticides>

<sup>8</sup> Baker and Grant, Cornell Cooperative Extension: Sodium Chloride Profile - <https://ecommons.cornell.edu/handle/1813/56140>

<sup>9</sup> Email quote from 10/14/19

By listing sodium chloride as the active ingredient, this is a violation of EPA Condition 1. As stated on EPA's website for minimum risk pesticide conditions, "Active ingredients are the ingredients that kill, repel, or mitigate the pests identified on the product label. If an ingredient does not perform one of these functions, then it is an inert ingredient and should not be identified as an active ingredient on the label"<sup>10</sup>

We posed questions about salt Dr. Buckowski. His response was:

*"The company is right in saying that not enough CO2 would be produced to attract mosquitoes. There might be some attraction, but only while CO2 is being produced. What then attracts mosquitoes to the trap? Salt? That's impossible. Mosquitoes wouldn't be able to sense the salt long distance, they wouldn't know that the trap contains salt unless they entered it. And salt by itself is not attractive to mosquitoes."*<sup>11</sup>

## Health-Related Claims

EPA's Condition 4 for 25(b) minimum risk pesticides states that the product cannot "bear claims to control rodent, insect or microbial pests in a way that links the pests with any specific disease. The label claim may only be for the pest, as a pest, and not as a disease vector"<sup>12</sup>

Per our review, we have found numerous places where Spartan Mosquito via the website, facebook page, youtube videos and other marketing material reference the connection between mosquitoes and diseases. OISC has assembled a variety of examples, some are included in Appendix B.

OISC also believes that through the marketing and references, SME is actively promoting a product in direct contrast to what the CDC recommends for the control of mosquitoes with disease concerns. Here are a few points:

The CDC only references trap like devices in terms of monitoring, not mosquito control.

The CDC lists specific protocol for mosquito control with source reduction. The website states, "Source reduction is the elimination or removal of habitats that produce mosquitoes. This can range from draining and scrubbing water holding containers on a weekly basis to properly disposing of discarded tires, rain barrels, and trash containers that may harbor rain water. This can be difficult to accomplish with the Zika virus vector *Ae. aegypti*, which readily uses very small water containers."<sup>13</sup>

The SME is in fact, a very small water container that the mosquito may use for breeding. The Purdue Entomologist stated that the SME is likely creating a breeding habitat instead of reducing and killing mosquitoes, stating:

<sup>10</sup> EPA Minimum Risk Conditions: <https://www.epa.gov/minimum-risk-pesticides/conditions-minimum-risk-pesticides>

<sup>11</sup> Email quote from 10/9/19

<sup>12</sup> EPA 25(b) Conditions: <https://www.epa.gov/minimum-risk-pesticides/conditions-minimum-risk-pesticides>

<sup>13</sup> CDC Public Health – Vector Control, Mosquitoes: <https://www.cdc.gov/zika/public-health-partners/vector-control-us.html>

*“My understanding is that this is a device for breeding mosquitoes, NOT eradicating mosquitoes! Female mosquitoes would enter the trap would lay eggs, the larvae would feed on decaying matter (ants, etc), newly developed adult mosquitoes would exit the trap and escape into the wild.”<sup>14</sup>*

## Size of the holes

Your patent indicates that the size of the holes on the SME is approximately 3/16". A study of *Aedes aegypti* by Dickerson, Olvera and Luc (2018) confirmed that, *“mosquitoes don’t sneak through 8 mm gaps even though they physically can.”*<sup>15</sup> 3/16 of an inch is approximately 4.76 mm, half the size of the hole that was shown that mosquitoes will not pass through. Therefore, the holes are too small and mosquitoes will not enter.

By changing the size of your holes, you are changing your product. This would require new efficacy as our requirement is that the efficacy is completed with the exact product as sold to the public (formulation, packaging, etc...) The size of the hole would change the amount of mosquitoes that can enter (or exit) and therefore the efficacy of the product. Selling pesticide products into the state that do not match the product provided during registration is a violation of Indiana Code 15-16-4-57(3)<sup>16</sup>.

A study performed on SME found that the product provided a breeding location where spotted-wing drosophila larvae can develop, crawl out and pupate on the inside of the cap. This is a pest in many states and would negatively impact orchard and berry farmers. Per Cornell, this pest can cause 80% crop loss.<sup>17</sup> The drosophila species, according to Yang (2018)<sup>18</sup> *“studies have shown that this insect can use fruits, yeasts and insect carcasses as its food sources. In this study, we demonstrate that this species is an omnivore, that its larvae can exploit not only fruits and yeast but also foods of animal origin (FAOs), and that larvae consume adult carcasses regularly.”* The study continues by stating that *“yeast foods are better for Drosophila development than are foods of plant origin because in yeast foods, more eggs complete their life cycle, and the body size of emerged flies is much greater.”* By providing a location that includes both yeast and biomaterial, the SME is providing an ideal breeding location for this pest.

<sup>14</sup> Email quote from 10/9/19

<sup>15</sup> Andrew K Dickerson, Alexander Olvera, Yva Luc, Void Entry by *Aedes aegypti* (Diptera: Culicidae) Mosquitoes Is Lower Than Would Be Expected by a Randomized Search, Journal of Insect Science, Volume 18, Issue 6, November 2018, 9, <https://doi.org/10.1093/jisesa/iey115>

<sup>16</sup> Indiana Code 15-16-4-57(3): – “...a person may not produce, distribute, display, sell, or offer for sale within Indiana... any of the following...(3) A pesticide product if the composition of the product differs from the composition as represented in connection with its registration.

<sup>17</sup> Cornell Education, Spotted Wing Drosophila: <http://fruit.cornell.edu/spottedwing/>

<sup>18</sup> Daxiang Yang Carnivory in the larvae of *Drosophila melanogaster* and other *Drosophila* species, Scientific Reports (2018) 8:15484, doi:10.1038/s41598-018-33906-w

## Efficacy Review

OISC uses label guidance and efficacy guidance that has been provided by the AAPCO 25(b) workgroup<sup>19</sup> to set standards for all 25(b) products that are registered in Indiana. The efficacy received does not meet the following standards for efficacy data:

Point 2: The data provided is not independently collected, reproducible or replicated. The study provided only had one human test subject, with an exposure time within the field for one minute.

Point 2 (c): The data was conducted, performed, reviewed and assembled by the same person – Jeremy Hirsch, the President of the company. Mr. Hirsch's signature is for the company agent, as well as the study's submitter, sponsor and study director. The study subject within the report was also Mr. Hirsch.

Point 2 (e): The data did not use a comparative product and was not double-blind

Point 3: The data from Bonner is not complete. Neither study describes the full experimental design. For example, notes and raw data are not provided. For more details, please review the Q&A document for the efficacy guidance.

The Purdue Entomologist continued his review by stating that the Spartan trials do not provide enough information on the methods to be properly evaluated. They also stated that there was not enough detail to evaluate the appropriateness of the design and the conclusions.

There is also concern that the field trials were produced during times that Lamar County performed mosquito control due to concerns of Zika outbreak.

Per Wendy Varnado, State Public Health Entomologist, Mississippi Department of Health, in 2016 SME was involved in an area that was also treated for mosquitoes with a section 3, EPA registered products due to a Zika outbreak. The document provided to OISC confirmed that the area was fogged four times with a conventional pesticide product prior to adding the SME. Since specific locations for that data cannot be shared, we cannot confirm if the data provided to OISC as efficacy was influenced by the use of traditional pesticides. Document provided in Appendix C.

We also received documentation from Dr. Varnado that in 2017, Spartan provided promotional material and traps that used boric acid. Boric acid is not an acceptable ingredient for a 25(b) minimum risk pesticide product. Since the ingredients, nor the specific product in the study cannot be confirmed from 2016 or 2017 (since Mr. Hirsch was the sole conductor of the study), OISC cannot confirm that the product is in fact identical to the product within the efficacy. Images provided in Appendix D.

Therefore, based on the statements above, the efficacy provided is not acceptable.

Per the review above, SME does not qualify for 25(b) exemption, as such; SME also does not qualify for registration in Indiana as a 25(b) minimum risk pesticide product. The product is in violation of Indiana

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<sup>19</sup> AAPCO 25(b) workgroup material: <https://aapco.org/2015/07/02/fifra-25b-workgroup/>

Code 15-16-4-57(9)<sup>20</sup> and is an unregistered pesticide. As originally stated in our letter to Spartan Mosquito (August 13, 2019), if you wish to register this pesticide product in Indiana after December 31, 2019, you must first comply with FIFRA Section 3 pesticide registration requirements.

#### **LEGAL LANGUAGE**

According to the Indiana Code - IC 15-16-4-64 (e)<sup>21</sup>, OISC has determined that Spartan Mosquito Eradicator does not comply with the conditions outlined by EPA for 25(b) minimum risk pesticide products or the Indiana Pesticide Registration Law.

As provided by the Indiana Code - IC 15-16-4-57, IC 15-16-4-61 and IC 15-16-4-66 - it is unlawful for any person to distribute an unregistered pesticide product in the state of Indiana. Therefore, any unregistered pesticide products detected in the marketplace are subject to immediate STOP SALE, USE OR REMOVAL ORDER by our field investigators.

In addition, you are hereby advised IC 15-16-4-64.5 provides that any person regulated under this chapter, who is aggrieved by any decision of the state chemist, may obtain a review by the Indiana Pesticide Review Board by filing a written request. To obtain a review, submit a written petition or request within thirty (30) days of your receipt of this letter to board secretary David Scott at scottde@purdue.edu or Indiana Pesticide Review Board, 175 South University St., West Lafayette, IN 47097.

If you have any questions, please contact our office at (765)494-1587 or scaffery@purdue.edu.

Sincerely,

Sarah K Caffery  
Pesticide Product Registration Specialist

cc: David Scott, Pesticide Administrator, Office of Indiana State Chemist

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<sup>20</sup> Indiana Code 15-16-4-57(3): "...a person may not produce, distribute, display, sell, or offer for sale within Indiana... any of the following...(9) Any pesticide that violates the Federal Insecticide, Fungicide, and Rodenticide Act (7 USC 136 et seq.) or regulations adopted under the Act."

<sup>21</sup> Indiana Code 15-16-4-64 (e): "The State Chemist, in accordance with the procedures specified in this section, may deny, suspend, or cancel the registration of a pesticide whenever the state chemist determines that: (1) the pesticide product; (2) the pesticide product's labeling; or (3) the person submitting the application for registration of the pesticide product; does not comply with this chapter."

## Appendix A Additional False and Misleading Statements

<https://www.facebook.com/spartanmosquito/videos/2247114238678006/>

how it works

- 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

<https://spartanmosquito.com/spartan-mosquito/>

### Effectiveness

Spartan Mosquito Eradicators are extremely effective in controlling and decimating mosquito populations. The Eradicators eliminate active "hunting" mosquitoes, many of which are females preparing to lay eggs. Once deployed, the Eradicators will work together to form a barrier 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 the first 15 days and will be up to 95% controlled for up to 90 days.

If the Spartan Mosquito Eradicators are placed after the mosquito population has become established, it may take a little more time to bring the population under control. Use two boxes per acre for the first deployment if the mosquito population is established.

Fill levels are marked on the Spartan Mosquito Eradicators. Eradicators placed in dry climates may need to be monitored more often due to excess evaporation. Water evaporating will not harm the effectiveness of the Eradicators so long as water levels are returned to the fill levels marked on the label. Placing Eradicators in shade will reduce water evaporation.

<https://www.facebook.com/spartanmosquito/videos/633544037089609/>

- Create a mosquito barrier – cannot use barrier claims: does not comply with the definition of a barrier – 40 CFR 152.10(c)

To be considered a barrier product as contemplated under 40 CFR 152.10(c), the following must be true:

- The product is not intended to prevent, destroy, repel, or mitigate a pest, or to defoliate, desiccate or regulate the growth of plants.
- The product or article does not make a pesticidal claim on the labeling or in connection with sale and distribution.
- The product is intended to exclude pests only by providing a physical barrier against pest access, and contains no toxicants (i.e., certain pruning paints for trees).

## THE SPARTAN MOSQUITO ERADICATOR

Take back your outdoor space with the Spartan Mosquito Eradicator. Deploy Spartan Mosquito Eradicators as soon as the weather begins to warm to create a barrier to "catch" hunting mosquitoes by emitting the same attractant triggers that draw mosquitoes to people and animals. Once mosquitoes feed on the water solution, they will perish before they can breed again.

The Spartan Mosquito Eradicator is a uniquely effective, long-lasting, continuous mosquito control system. The Spartan Mosquito Eradicator also doesn't require batteries or electricity, just water! The mosquito population will suffer dramatically in the first 15 days and will be up to 95% controlled for up to 90 days.

Help protect yourself from mosquito bites. Invest in Spartan Mosquito Eradicators and take back your outdoors the Spartan way!



### *Bad News for Mosquitoes*

Out of frustration, and then inspiration, came innovation. After many months of researching and prototyping new device ideas, Hirsch invented the Spartan Mosquito Eradicator. This device stands to revolutionize the mosquito control industry world-wide. The Spartan Mosquito Eradicator attracts hunting mosquitoes by emulating attractors of their natural prey — animals and people. Once the mosquitoes feed, they die. Female mosquitoes feed just before they lay eggs, which means the breeding cycle is also broken. The result is a solution that decimates the mosquito population within the range of the devices, with two devices covering about an acre. This innovative concept stands to change the way people manage mosquitoes.

## Appendix B

### Examples of health related claims

<https://www.facebook.com/spartanmosquito/videos/2274226699458392/>

Discussion about West Nile disease (2:27)

## Our Story



SPARTAN MOSQUITO · WEDNESDAY, APRIL 25, 2018 ·

One summer afternoon in Hattiesburg, Mississippi, a husband decided that he was not okay with his pregnant wife having to soak herself in bug repellent. He had cause to be worried about mosquitoes. West Nile disease was actively being spread by mosquitoes in Mississippi.

Jeremy Hirsch, founder of Spartan Mosquito, began reading about mosquito control techniques being pioneered in Africa by the Gates Foundation and others. He had noted the criticisms of the solutions being temporary. In many cases, product duration was determined by the next rain since it washed the products away.

Later, Hirsch watched a hearing in congress where a repellent company's response to the Zika outbreak was to ramp up the manufacturing of its existing repellent to 24 hours a day (and sell more product). Keep in mind that repellents do not kill mosquitoes, they only hope to keep mosquitoes at bay.

He thought to himself, "I can do better." And, he did.

### ***Success Criteria***

According to Hirsch, the solution had to be effective, easy, affordable, long-lasting, and as safe as possible. The inventor created a device that only requires the user to add warm water and hang it in the shade. Studies show that the device, once activated, provides greater than 95% mosquito control for 90 days.

To date, the device has been tested in both formal and informal environments from the swamps of Florida to the bayous of Louisiana, on the Mississippi coast, in the Mississippi delta, and even in a Zika control area. In every case, mosquito "hits" (mosquito bites or landings) are reduced to near zero, or zero, within weeks or even days.

The biggest wins for the customer are the effectiveness and the price point, making it a product for the masses. Consumers get one kit (two Eradicators) for around \$20, which control approximately one acre and last up to 90 days. That is a fraction of the price of many mosquito control services and solutions.

### *Getting to Market*

Spartan Mosquito is working diligently to make the Spartan Mosquito Eradicators widely available to the public in major retail outlets and to world health organizations, government organizations, and nongovernment organizations worldwide, but they have to go through all of the channels for approval both at home and abroad. Hirsch is attempting to get an early greenlight because mosquitoes are so dangerous and his product has ingredients at levels that have already been deemed safe by the EPA in other products.

In the meantime, mosquitoes are carrying viruses, parasites, and diseases including the Zika virus, West Nile virus, and Malaria, and are actively transmitting them to people.

"Purchase the Spartan Mosquito Bomb and fight the Zika virus!"



If the Spartan Mosquito Bomb is not the same product as the SME, all posts related to it should be removed. Otherwise, the association and connection with Zika claims is available to the consumer.

**PDF #1 – Documentation of website:** <https://spartanmosquito.com/category/in-the-news/>  
(website visited 10/16/19)

Summary of the violation: The web page makes numerous references to mosquito-borne diseases of public health significance. The obvious intent of mentioning these diseases is to imply that USE OF the SPARTAN MOSQUITO ERADICATOR can prevent or mitigate the transmission of these mosquito-borne diseases. See highlighted text marked with red arrows.

**PDF #2 – Documentation of Facebook:** <https://www.facebook.com/spartanmosquito/>  
(website visited 10/25/19)

Claims and statements connected to disease. Some concerns are highlighted on the document.

## Appendix C Fogging Dates / Mosquito Counts / Zika Claims

**From:** [REDACTED]  
**Sent:** Wednesday, March 8, 2017 8:31 AM  
**To:** Varnado, Wendy <[Wendy.Varnado@msdh.ms.gov](mailto:Wendy.Varnado@msdh.ms.gov)>; Chris Bonner <[cmbonner@batco.com](mailto:cmbonner@batco.com)>; Spartan Mosquito <[info@spartanmosquito.com](mailto:info@spartanmosquito.com)>  
**Subject:** Mosquito control count using Spartan Mosquito control product

On September 30, 2016 Lamar County Mosquito Control was notified of a Zika Virus brought into the county. This is the data I collected from using the Spartan Mosquito Eradicator

DATE:	LANDING COUNT:
SEPTEMBER 30, 2016	30 MOSQUITOES IN 2 MINUTES
OCTOBER 1, 2016	24 MOSQUITOES IN 2 MINUTES
OCTOBER 5, 2016	10 MOSQUITOES IN 2 MINUTES
OCTOBER 12, 2016	1 MOSQUITO IN 2 MINUTES
OCTOBER 19, 2016	0 MOSQUITO IN 2 MINUTES
OCTOBER 26, 2016	0 MOSQUITO IN 2 MINUTES

We fogged the area for 4 days and Spartan traps were hung around the area for several weeks. Using the Spartan product helped greatly in reducing the number of Mosquitoes in this area.

**From:** [REDACTED]  
**Sent:** Wednesday, March 8, 2017 10:39 AM  
**To:** Varnado, Wendy <[Wendy.Varnado@msdh.ms.gov](mailto:Wendy.Varnado@msdh.ms.gov)>; Chris Bonner <[cmbonner@batco.com](mailto:cmbonner@batco.com)>; Spartan Mosquito <[info@spartanmosquito.com](mailto:info@spartanmosquito.com)>  
**Subject:** Dates

The dates on the data email for Spartan are incorrect those dates where from a case of west nile in Lamar county. The count was correct but the dates are as follows:

AUGUST 26, 2016 Lamar County was notified by the State Department of Health of a Zika Virus brought into the county.

DATES	LANDING COUNT
AUGUST 31, 2016	30 MOSQUITOES IN 2 MINUTES
SEPTEMBER 7, 2016	24 MOSQUITOES IN 2 MINUTES
SEPTEMBER 14, 2016	10 MOSQUITOES IN 2 MINUTES
SEPTEMBER 21, 2016	1 MOSQUITOES IN 2 MINUTES
SEPTEMBER 28, 2016	0 MOSQUITO IN 2 MINUTES
OCTOBER 5, 2016	0 MOSQUITO IN 2 MINUTES

## THE MOSQUITO ERADICATOR

### CASE STUDY: CSL4GOV-ZIKA

**Who:** Lamar County Administrator Joseph Waits  
Mississippi Department of Health Etymologist

**What:** Lamar County officials requested Spartan Mosquito response to  
Lamar County Zika Case

**Where:** Oak Grove (Hattiesburg Metropolitan Area) Lamar County  
Mississippi

**When:** Late-August through late-November 2016

**Why:** To prevent the possible spread of Zika in Lamar County

**Discussion:**

The only proven scientific method for deducing mosquito activity is to count mosquito bites. The number of mosquito bites (or landings) and their times are recorded over a certain period of time by a certified researcher.

The mosquito count at the central point in a Lamar County 25 acre Zika project was 27 mosquito bites (or landings). This count was conducted by Lamar County and accepted by the Mississippi Department of Health.

Spartan Mosquito deployed enough eradicators to effectively control mosquitoes for 25 square-acres. After deploying the Spartan Mosquito Eradicators, further mosquito counts were conducted by Lamar County at two week intervals. Lamar County mosquito counts at the central point (ground zero) were reduced to zero mosquitoes for the duration of the test period.

To date, this is the most effective, longest-lasting Zika control response on record anywhere.

SPA  
MOS  
ERAD

**Appendix D**  
**Boric Acid Pictures**



Pictures provided by Dr. Varnado, State Public Health Entomologist, Mississippi Department of Health. Note date on the calendar – St Patrick's Day (March 17 was on a Friday in 2017)

Office of Indiana State Chemist  
Pesticide Registrations Department  
175 South University Street  
West Lafayette, IN 47907



SPARTAN MOSQUITO  
ATTN: JEREMY HIRSCH  
8 NEMO CLARK DR  
LAUREL, MS 39443  
DATE: January 15, 2020

Denial of Registration – Spartan Mosquito Eradicator  
In response to letter and data dated December 3, 2019.

Mr. Hirsch,

We have reviewed your letter and data within the Office of Indiana State Chemist (OISC) and also supplied the data to our specialists to confirm if the data was acceptable. In addition to the new data, we reviewed the website to confirm if data was provided to support claims.

**Concerns with claims within the letter**

We do not agree with many of the statements within the reply letter. Claims, related to your product, are considered false and misleading when they are not supported by data directly connected to your product. There are some additional statements that do not accurately portray our review and/or communications that we have had with your company. We have outlined some of the concerns in the attached document (Attachment #1).

Without adequate data to support your claims, our assessment, as stated in the letter from November 4, 2019 stands.

**Concerns with the data**

We have not received adequate efficacy to support the claims made through your labeling. The data submitted in December is still lacking and would not pass peer review. Basic comments on the data are consistent with the data originally received. Per the specialists:

- Efficacy standards are not met
- Data is not independently collected, or adequately replicated
- Lack of independent assessments
- Lack of a controlled study comparison
- Lack of proper experimental design

With the raw data provided, it is doubtful that there is enough information to provide a statistical analysis of 'luring counts' to thus provide any conclusion on the efficacy of the

product. The data did not include sufficient replications and there appears to be problems with variation for the application and data acquisition methods.

**Concerns with claims on labeling**

We have also provided a list of claims that will need to be supported by efficacy data with your future application (Attachment #2). Please note that this list is not exhaustive and your organization will need to fully review all labeling, advertising, and promotional material for any claims that are not supported by data.

**Conclusion**

OISC provided you the opportunity to make necessary corrections and provide adequate efficacy data, however SPARTAN MOSQUITO ERADICATOR appears to remain non-compliant to date. Therefore, OISC is refusing to register the pesticide product for 2020.

If you intend to submit a new application for registration for SPARTAN MOSQUITO ERADICATOR, please refer to the application requirements at [http://www.oisc.purdue.edu/pesticide/pesticide\\_products.html](http://www.oisc.purdue.edu/pesticide/pesticide_products.html) and review the guidelines provided at <https://aapco.org/2015/07/02/fifra-25b-workgroup/>.

When you submit a new application, our specialists have recommended that Spartan Mosquito provides efficacy that is produced by an independent researcher who has done mosquito efficacy studies or consult published pesticide efficacy reviews to learn how such studies are conducted.

This letter is also to advise you that the Indiana Pesticide Registration Law, specifically sections IC 15-16-4-57 and 66, states that it is unlawful for any person to distribute, display, sell, or offer to sell any unregistered pesticide product in the state of Indiana.

OISC will provide consideration to Spartan Mosquito with product that was distributed in the state of Indiana prior to 2020:

OISC will not actively seek your product to implement additional enforcement actions. If your product is found while performing routine inspections, we will request distribution records. Our enforcement department will not be implement civil penalties or additional fees for product that was distributed into the state before 2020. If it is determined that product was distributed into Indiana in 2020, or any subsequent year while the product is unregistered, the product will be subject to an immediate ACTION ORDER issued by OISC and appropriate enforcement penalties will be assessed.

In addition, you are hereby advised that IC 15-16-4-64.5 provides that any person regulated under this chapter, who is aggrieved by any decision of the state chemist, may obtain a review by the Indiana Pesticide Review Board by filing a written request. To obtain a review, submit a written petition or request within thirty (30) days of your receipt of this letter to Board

Secretary David Scott at [scottde@purdue.edu](mailto:scottde@purdue.edu) or Indiana Pesticide Review Board, 175 South University St., West Lafayette, IN 47097.

If you have any questions, please contact our office at (765)494-1587 or [scaffery@purdue.edu](mailto:scaffery@purdue.edu).

Sincerely,

Sarah K Caffery  
Pesticide Product Registration Specialist

DRAFT