THE SCIENCE BEHIND VAMA ECOBARRIER

INNOVATION TO END INFESTATION

Bed Bugs infest 77% of commercial facilities each year. VAMA EcoBarrier can help you avoid being one of them.

Senior living, multi-family residential, hospitality, and medical facilities spend almost $5B every year to treat these infestations, but that is only the tip of the iceberg. Rooms and beds may be unavailable to generate revenue while waiting for independent contractors to show up and finish treating the issue, reducing overall revenue potential. The potential for a damaged reputation compounds the situation. Even worse, frequent infestations put you at increased risk of fines, lawsuits,[1,2,3,4] or loss of licensing by state and local authorities, the Department of Health and Human Services, or the Center for Medicare and Medicaid Services.[5,6,7,8]

While bed bugs are the most frequent cause for complaints, spiders, mosquitos, ticks, fleas, flies, mites, lice, and other insects can also invade these facilities and impact operations. Bed bugs remain the most significant concern because of their unpredictability; one bed bug can easily hitchhike into the facility on a resident, guest, staff member, or vendor. Once on-site, a single pregnant bed bug can produce 30,000 offspring in just six months. Bed bugs' uncanny ability to arrive at any time and reproduce rapidly makes it impossible to prevent infestations. Thus, facilities should implement a fully integrated program of treatment and prevention to best protect the health and comfort of their residents, guests, and staff.

COMPANIES BELIEVED DDT WAS SAFE UNTIL MULTIPLE STUDIES EMERGED PROVING ITS TOXICITY TO HUMANS, RESULTING IN ITS BAN IN 1972 BY THE DEPT OF AGRICULTURE.

THE TOXIC STATE OF THE ART

Most organizations respond to bed bug infestations by bringing in outside exterminators with daunting hazmat suits and artificial chemicals that are assumed to be safe. This scenario is no different than how companies believed DDT was safe until multiple studies emerged proving its toxicity to humans, resulting in its ban in 1972 by the Department of Agriculture.[9]

Besides scaring your guests, this approach has multiple drawbacks, including the high cost of bringing a technician on-site for applying these chemicals. As you wait for them to arrive, the insects are spreading, infesting the surrounding rooms and common areas, while your contaminated spaces are losing revenue. When the technician finally arrives, they may be using chemicals that have active ingredients that are toxic. Furthermore, every additional person entering the facility increases the risk of introducing the COVID-19 virus into your facility.

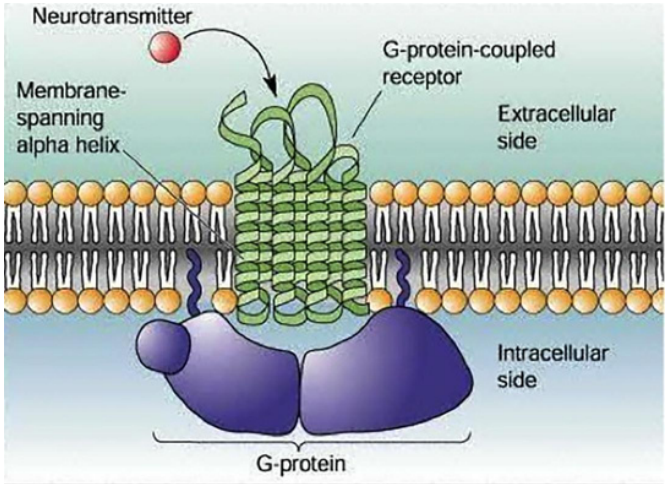
Along with these risks, the toxic chemicals they use only treat any pests that are currently present. Even worse, these chemicals cause these insects to evolve and develop resistance. Over generations, bed bugs have developed thicker cuticles to reduce the effect of these same external chemicals.[9] When bed bugs ingest the chemical into their system, their natural evolutionary process is activated and they develop a resistance to the chemical. If they survive initial exposure to pesticides and then reproduce, it leads to even more resistant offspring.

1 https://www.bedbuginjuries.com/bed-bugs-in-assisted-living-facilities/
2 https://www.bedbuglaw.com/
3 http://mybedbuglawyer.com/
4 https://whitneyfirm.com/bed-bugs/
5 https://www.after55.com/blog/senior-housing-regulations/
6 https://www.aplaceformom.com/caregiver-resources/articles/assisted-living-violations
7 https://aspe.hhs.gov/basic-report/assisted-living-policy-and-regulation-state-survey
8 https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandComplianc/NHs
9 https://www.epa.gov/ingredients-used-pesticide-products/ddt-brief-history-and-status#
10 https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0153302

Even in cases where these toxic chemicals successfully kill the bugs, they have limited residual effects and do nothing to prevent recurring infestations. So, after the technician clears the room, another bug could be introduced immediately. With no residual effectiveness, the area becomes reinfested and the facility is forced to call the exterminator for another set of treatments. This constant cycle of infestation followed by reactive treatments is very costly to maintain operationally and negatively impacts residents, patients, tenants and staff.

THE SCIENCE BEHIND VAMA ECOBARRIER

Insects have extremely sensitive olfactory receptors that drive many of their behaviors, including feeding and mating. Universities and scientists have been studying these in recent years to understand the mechanism of how certain plants and their oils affect insects. Some of these target receptors include G protein-coupled receptors (GPCRs).[11] Responsible for transferring external signals across the cell membrane, GPCRs are cell surface receptors that act like an inbox for messages in the form of light energy, peptides, lipids, sugars, and proteins. Components of certain plant oils bind to these receptors and inhibit vital activities in insects, such as seeking food, mating, and neurological activities.



ECOBARRIER BINDING OVERLOADS THE INSECT'S NORMAL NEURAL FUNCTIONS CAUSING IMMEDIATE DEATH.

Our patented ecotechnology[12] took 8 years of R&D to develop and uses these plant components to bind to these receptors, permanently deactivating them. As a result, bed bugs and other insects are unable to seek food or mates for nutrition and reproduction. The individuals die and the colony is eradicated.

Our proprietary process uses natural nanotechnology that, in specific concentrations, overloads[13] the insect's normal neural functions, causing immediate death. The EcoBarrier binding also disables the insect from carrying out its normal functions such as feeding, mating, traveling and nesting. Bed bugs and other pests do not build a resistance to these plant components, as they do not need to be ingested by the insect unlike traditional pesticides.

VAMA's EcoBarrier kills insects in 3 ways:

1) **Primary Exposure -** During the application process, EcoBarrier may be sprayed directly on the insects, immediately binding to their olfactory receptors.

2) **Secondary Exposure -** Insects can pick up the formula by crawling over surfaces that have been spray-treated, binding to their olfactory receptors at that time.

3) **Airborne Exposure -** The oils in EcoBarrier slowly oxidize into the air for 30 days, binding to the insects' olfactory receptors anytime they are in the general vicinity of a treated area.

11 https://en.wikipedia.org/wiki/G_protein-coupled_receptor
12 https://bit.ly/uspto-vama-eco
13 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4928593/

100% Natural, Non-Toxic and Biodegradable – VAMA EcoBarrier is chemical free and safe. It is composed of plant proteins derived from essential oils, has a pleasant fragrance, and our biodegradable formulation is safe for the environment. VAMA EcoBarrier is certified by Green America, accepted by State Health Departments and the Centers for Medicare and Medicaid, and is an EPA-Approved FIFRA Section 25B pesticide.[14]

Synergistic Action – VAMA EcoBarrier has multiple modes of action. The essential oils are synergized in a manner where the action of the combined formula is greater than the subtotal of individual subcomponents. This is reflected in our solution's ability to kill bed bugs at a higher rate and a faster pace than other products.

Receptor Binding Technology – Bed bugs are less susceptible to building resistance to our solution because it does not rely on penetrating the cuticle, wherein their cells will then begin adaptation for survival. Our formulation binds permanently to bed bug neuronal receptors on the outside of the bug, disabling their vital functions.

Shelf Stability – Variations in product chemistries, caused by any combination of a number of pre and post-harvest biotic and abiotic factors, may result in dramatically altered bioactivity of the 'end product' to target pests. Our proprietary sourcing, manufacturing, heat-sealed bottling and storage processes gives EcoBarrier an extended shelf life which ensures longer and more consistent efficacy.

VAMA ECOBARRIER IS CERTIFIED BY GREEN AMERICA, ACCEPTED BY HEALTH DEPARTMENTS AND THE CENTERS FOR MEDICARE AND MEDICAID, AND IS AN EPA APPROVED FIFRA SECTION 25B PESTICIDE.

COVID-19 Resistant – VAMA EcoBarrier contains geranium, peppermint and cedar essential oils. These have been shown to combat COVID-19 infections.[15]

Positive Health Effects – The EcoBarrier essential oils have antiviral, antibacterial, and antifungal properties. In addition to the absence of negative effects on humans, our formulation can even boost the performance of the human immune response system, providing additional health benefits.[16]

VAMA ECOBARRIER CONTAINS ESSENTIAL OILS SHOWN TO RESIST COVID-19 INFECTIONS AND TO HAVE ANTIVIRAL AND ANTIBACTERIAL PROPERTIES.

Target Specific – VAMA EcoBarrier is designed by our team of scientists to target the specific receptor sites of bed bugs, but also kills most crawling insects that share them such as fleas, ticks, spiders, mites, ants, and more. EcoBarrier does not harm humans and pets because we do not have the same type of olfactory receptors.

High Potency – Our natural solution is highly potent against bed bugs and other insects, more so than the toxic vector control chemicals that are commonly used. EcoBarrier efficacy has been verified independently by Iowa State University's Entomology Department.[17]

Residual Efficacy – The active ingredient in VAMA EcoBarrier is our unique blend of essential oils. Due to its potency via secondary and airborne exposure, this system will continue to eradicate insects for 30 days after application.

Product Consistency – VAMA EcoBarrier goes through proprietary procedures to mitigate the effect of these chemical variations and ensure consistency and stability. All our samples demonstrate a 100% kill rate for bed bugs within minutes while maintaining a high efficacy even after storage times over 36 months.

14 https://www.epa.gov/minimum-risk-pesticides
15 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7279430/
16 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6943609/
17 http://bit.ly/EcoBarrierTestReportISU

INTRODUCING MOTHER NATURE'S PEST MANAGEMENT SYSTEM

VAMA's innovative scientists not only pioneered a formulation with all of the health, financial, and environmental advantages listed above; but also developed a complete system for you to effectively and efficiently implement this ecotechnology. The system consists of these four components.

1. **VAMA EcoBarrier Prevention** is based on our patented blend of essential oils formulated into a solution that is economical enough to use every month. It can reduce infestations up to 90%, significantly decreasing pest issues and all the costs and risks that come with them.

2. **VAMA EcoBarrier Eliminator** is a more concentrated blend of the same essential oils. This higher strength formula is the ideal way to end any infestation while maintaining all of the financial and health advantages of the EcoBarrier system.

3. **VAMA EcoBarrier Program** is our documented and university-proven protocol that teaches you how to use EcoBarrier Prevention and EcoBarrier Eliminator to give your residents and guests the most pest-free experience possible. We provide a complete training program that enables you to apply our all-natural formulations as part of your standard housekeeping activities. This eliminates extra costs, delays, and the introduction of toxic chemicals into your facility while providing a variety of health benefits to residents, guests, and staff.

4. **VAMA EcoBarrier Consulting** Our team is always available to provide you with professional guidance, helping you determine the best way to respond to any insect situation.

THE BOTTOM LINE

The VAMA EcoBarrier System provides you with three key benefits.

Safer: Our all-natural formulation is deadly for bugs but completely safe for humans and pets. In fact, our essential oil formation has positive health effects. Even more, our treatments are entirely biodegradable, rendering them safe for our planet.

Reduced Risk: Infestations pose a substantial risk to the health of your residents, guests, and staff. As we all know, bad news travels faster than good news; thus, those health risks can quickly lead to a damaged reputation and decreased revenue. Infestations also pose significant legal risks to your company, leading to fines, lawsuits, and suspension of your operating license. VAMA EcoBarrier significantly reduces all of these risks by taking a proactive approach to protecting your brand and business.

Improved Bottom Line: At the end of the day, your business is only as strong as your bottom line. VAMA EcoBarrier helps out by eliminating the cost of outside exterminators, reducing the number of infestations you will experience, and returning your beds and rooms to full serviceability as quickly as possible - helping you run a safer, more profitable business.