

Fumigants & Pheromones

Issue 70
Winter
2004

Routing:

A Newsletter for the Insect Control & Pest Management Industry

New!

Moth Suppression®

The male pheromone attractant for Indian-meal moth and other stored product moth pests (*Family Pyralid*) was identified in 1971. Thirty years later in a laboratory in Stillwater, Oklahoma, Drs. Christian Nansen and Tom Philips discovered the scent that attracts the female Indian-meal moth. This discovery has led to the introduction of the new patent pending product from Insects Limited, Inc. called **MOTH SUPPRESSION®**.

Insects Live in a World of Odors

After 100,000s of years of evolution, this moth species has learned to respond to cues. These cues help them survive and multiply. Insects use odors to communicate. These semiochemicals can be used for mating, egg laying (oviposition site), trails (ants), aggression (wasps), or selection of nesting sites (wasps). Ants have been known to use dozens of different chemical cues to communicate to each other.

The female Indian meal moth has a hard life. Each night (after dark) she lifts off with a cargo of 50-100 freshly fertilized eggs that she needs to find a suitable site to hide



Female Indian-meal moth releases her fertile eggs after being captured by the New Moth Suppression female attractant.

from tiny black wasps and other predators hungry for a moth caviar dinner. Heavy with eggs she looks for cracks and crevices near a food supply. Other, more mature Indian-meal moth larvae will cannibalize these tiny clear to yellowish moth eggs if they find them. She travels during the darkest part of the night so that she will not be eaten by her predators, like birds.

Evolution has taught her not to deposit all her eggs in one place. This would cause undo competi-

tion from hungry larvae. As she detects suitable odors for egg laying, she swoops down to drop one or maybe a few fertilized eggs on a suitable surface.

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VISIT US AT: www.insectslimited.com

New Moth Suppression®

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Start with the Insect First

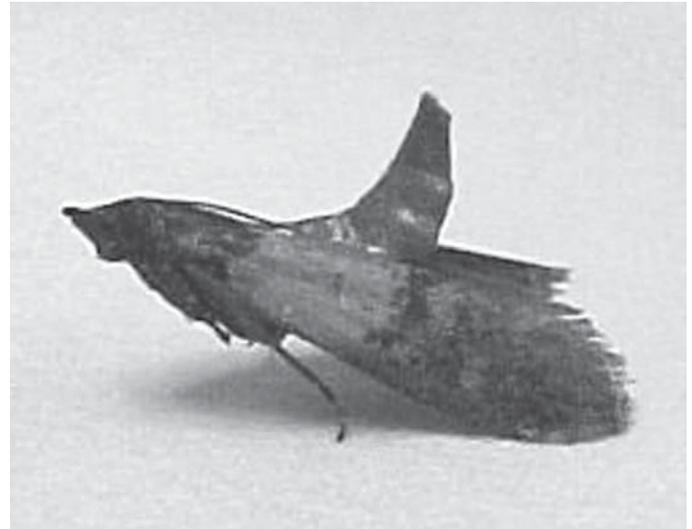
The adult Indian-meal moth and other stored product moths live for only 7-10 days. Their main purpose is not to feed but to survive and mate. Their sex ratio is approximately 50:50. Males can mate multiple times and the females lay 200-400 eggs during their short life. That means she must find a safe and suitable egg laying site to deposit her eggs so they will be protected from predators until they hatch. The small (1 mm) larvae that survive start their destruction by finding an adequate food source. They can detect food odors through small defects in the seam of a package of food or grain. This small opening is where they penetrate to start a potential messy customer complaint and infestation of processed food products in our pantry or on our grocery shelf.

Discovery

After screening many potential attractants, Dr. Nansen and his OSU team found one compound that attracted the female adult IMM more than any other. This attractant was then placed in field trials for the summers of 2002 and 2003 to test in various climates and conditions. Insects Limited's Alain Van Ryckeghem tested this



Dr. Christian Nausen, Stored Product Moth Entomologist, discovered female moth attractant in 2002.



After the female Indian-meal moth mates, she begins looking for a place to lay her eggs.

special attractant in retail stores, seed warehouses, and under laboratory conditions. Alain discovered that this female attractant could attract as much as 44% of the female moths.

Oklahoma State University contacted Insects Limited, Inc. in late 2002 to discuss possible commercialization of this new discovery. On December 10, 2003 a worldwide agreement was made with the two parties and formal agreements to go forward with patents and trademarks was put in place.

Do the Math

One IMM female moth lays between 200-400 eggs. There are 3-6 generations of IMM in the US each year.

Each female moth you capture could have produced 200-400 offspring in 7-14 days.

One male IMM trap completely full of male moths, holds about 200 moths. Each female moth captured equals 1-2 full traps of moths.

Population Suppression

can occur when you capture both males and female moths. *Example:* If you have 10 male moths and 10 female moths in a room and capture 5 fertile female moths and 5 male moths you have suppressed the population for the next generation. If you bring newly infested product back into this room, you have a potential problem again.

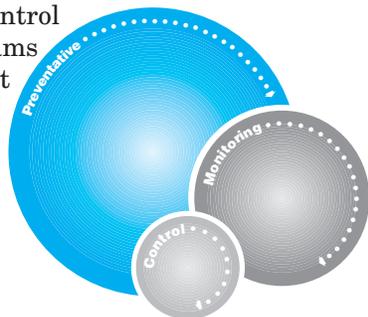
Control

This advanced pest management method can not truly be called control, but in combination with other pest management practices it has the potential to suppress (lower) a moth population to an acceptable level now and next year.

The closer you get to the end consumer the more important it becomes to monitor and capture every pest. Zero tolerance in a package of food is the goal of all food companies. If you can capture egg-laying moths before they infest a finished product, you now can start lowering customer complaints. Customer complaints are the ultimate monitoring tool



for any company. Zero tolerance is possible when good prevention, monitoring and control programs are put in place.



Moth Suppression Limitations

Dirty and unsanitary conditions can offer ideal egg-laying opportunities for the Indian meal moth. When these conditions are cleaned up, the female moth has limited choices to lay her eggs. Moth Suppression works best to attract those unwanted moths when grain and food spillage is limited.

How to Order:

Moth Suppression[®]

**Order by
May 1, 2004 and
receive a 10%
discount off kit price!**

Contains:

- 10 Special Traps with Hangers
- 10 Bullet Lures for Male Attraction
- 20 Female Lures (*oviposition attractants*)
- 1 Male & Female Identification Card
- 1 Magnifying Equipment

Directions: place 1-2 traps per
10,000 ft² (30 m²)
Female attractant lasts 4 weeks
Male attractant lasts 8 weeks

Cost: \$164.00/ kit of 10
(IL - 160-10)
\$1394.00/ case of 100
(IL - 160-100)

**Call 1-800-992-1991
or log on
www.insectlimited.com**

Insects Limited, Inc.



Insects Limited has been a leader in pheromone technology and continued education for stored product protection since 1982. It was founded on a statement made by Dr. John Osmun, a professor of entomology at Purdue University in 1974 while owner Dave Mueller was attending college: *The future of pest control is without the use of toxic chemicals.*

Today, Insects Limited researches, develops, organizes conferences, manufacturers, and distributes pheromones for stored food insects throughout North America and in over 30 countries worldwide. Approximately 15% of its pheromones are sold internationally.

Insects Limited is basic in pheromones—they have a laboratory in Westfield, Indiana (10 miles north of Indianapolis) and Alain Van Ryckeghem is an extraordinary pheromone chemist and entomologist. Alain prides himself for the purity that he can produce with each batch of pheromone he synthesizes. Alain has learned to make the Clothes moth pheromone like no one else in the world. He tackles the complicated chemistry as well as the known recipes.

After the chemistry is completed, Pat Kelley and Alain take the new pheromone compounds to the field to ask the insects what they think of it. Field testing is very important to understand what the expectations of each individual pheromone has to offer. This vital information is available to Insects Limited customers. We believe that people who don't know will buy from people who know. Insects Limited works hard to know as much as possible about each pheromone it supplies.

The formulation and production of the pheromone lures also takes place at the Westfield facility. Care is taken to produce consistently effective pheromone lures. Care is taken to prevent contamination from other pheromones during production. The new Moth Suppression[®] female attractant for the Indian meal moth will also be produced in-house.

Insects Limited, Inc. specializes in a unique niche of pest control that started out as an idea and has developed into a business that provides a range of products and services that are becoming mainstream in protecting stored food, grain, tobacco, timber, museum objects and fiber worldwide.

To learn more about Insects Limited, Inc go to www.insectslimited.com



A full time staff carefully makes each Bullet Lure to exact specification. Each Bullet Lure has seven steps to complete. Approximately one million lures were produced by Insects Limited.

Dave's Soapbox

...for what it's worth



Business Etiquette

We are all judged by the way we behave and treat others. Everyday we represent our company and our company's image. Manners are simply treating others the way you want to be treated. This Golden Rule is the way we can measure ourselves. It is the yardstick that we can use to correctly answering many questions we are confronted with daily in our business and personal lives.

Recently our companies received training, not on insects, methyl bromide alternatives, or better ways to solve problems, but on Proper Business Etiquette. Here is some of what we learned from Mrs. Keltie Domina:

Tips for good handshaking:

- A good firm handshake conveys a powerful message to the recipient. "I'm glad to see you." Always slip your web firmly into their web. Always rise when introductions are being made and you are shaking hands.
- Always smile.
- Never shake across desks, tables or other impediments.
- Try to be the one to extend your hand first—this shows authority and confidence.
- The way you give a handshake says: You are shy, outgoing, bored, selfish, cruel or kind.
- A limp-fish handshake says: You don't impress me.
- A bone-crushing handshake

says: You are trying to take control, or that I am weak.

- Name tags should always be on the right...natural extension of the handshake.
- Introduce a younger person to an older person: A child to an adult.
- Introduce a non-official person to

an official person: Senator Williams, I'd like to introduce you to Mr. Powers of the Boston Globe.

Traveling:

- The person who reaches the door first; opens it for the next two or three behind him.
- When entering a taxi, let the most senior person enter last.
- The savvy houseguest always brings a house gift and writes a thank you note when they get home.
- If you don't see an ash tray, don't ask for one.

Phone Manners:

- You would be amazed how much business is turned away because of bad phone etiquette. First impressions are valuable. What is the first impression of your company or household?
 1. Greet the caller with a "Hello" or "Good Morning"
 2. Identify yourself: state name either first or first and last: Good Morning, Insects Limited (smile), this is David Mueller. How may I help you?
- Repeat all phone numbers when leaving a voice mail: 1.800.992.1991, that's 1.800.992.1991. This one act of phone manners alone will save many people from having to dial a number to return a call only to find out the number was written down or pronounced wrong. If

you only remember one thing from this article remember this one...remember this one.

Cell Phone Manners:

- Oh boy! Know when to turn them off!!
- Get a vibrating option—don't take them into meetings, programs, or shows.
- Ask people around you if they mind if you make a call.
- Don't carry on private calls around other people.
- Talk softly, no need to yell into the phone.
- Airports can be very annoying for people looking for peace and quite. Please look around you before you start a call.
- Please don't make calls in the public bathroom stalls.

E-Mail:

- Return all messages within 24 hours.
- Always respond: Junk mail and SPAM are one thing, but you should always respond to real business messages as soon as possible. People expect it.
- Keep it short: Keep your messages brief, a paragraph maybe two at most.
- Don't get emotional: Just say it.
- Identify yourself in the message. Use the subject heading: People may not open this message unless they know who it is from.
- Always end your e-mail message with a professional salutation: Sincerely, Thank You, Regards, See You Soon, etc.

Knowing proper business etiquette and good manners is reflected in you personally and in business life every day at every meal, party, business meeting, and reception. It will also reflect the way your company does business and is perceived by others.

D. K. Mueller

Using Nitrogen to Disinfest Museum Objects



M. Åkerlund and J.-E. Bergh

Among the alternatives to chemical treatment of museum pest infestations, anoxic control methods now are used in many countries. For many species, dose-response experiments have been performed, but as many variables are important for a successful control further research is needed. The treatment result depends on the species, the development stage (egg, larvae, pupae, adult), the oxygen concentration, the temperature, the relative humidity and exposure time.

Larvae of various pest insects were exposed to 0.3% oxygen within an EC (European Community) project called "Save Art". Larvae of the Woodroff's fur beetle, *Attagenus woodroffei*, showed to be the most tolerant species.

Skokloster Castle in middle Sweden was built in the 17th century and serves now as a museum with unique collections. An infestation by the common clothes moth, *Tineola bisselliella*, in old saddles was successfully treated with the help of the VELOXY nitrogen generator. The saddles were enclosed in low diffusion barrier films. The best results were obtained when the nitrogen treatment was combined

with an oxygen scavenger, Ageless®.

Natural history collections are frequently attacked by pest insects. Dead plants and animals are the natural food for pest species like dermestid beetles and moths. For small items such as pinned insects, a pest infestation will have a devastating effect on the collection in a very short time. Also, plants in herbaria are at high risk. In experiments with differently designed insect cases, we found that the low oxygen treatment is an effective and mild method. Barrier film was also used in this situation as an enclosure and Ageless® was added to further reduce the oxygen level and compensate for diffusion from the insect cases. Modern, tight cases, however, need a rather long exposure time. The result also confirmed the *Attagenus woodroffei* was the most tolerant species among those investigated.

VELOXY®, developed under the European project "Save Art," is a nitrogen generator system for anoxic treatment of museum objects to control insect pests. It produces an almost oxygen free (<0.1% O₂) flow of 200 l/h that is used to modify the atmospheric composition inside enclosures tailor-made from the gas-proof barrier film. The nitrogen generator is based on the use of tiny semi-permeable hollow fibers that are connected to a manifold to which pressurized air is applied. Oxygen permeates through the walls of the fibers leaving a stream of nitrogen and other constituents of air.



Decision on Exemptions for Methyl Bromide Deferred into 2004

A decision on whether to grant so called Critical Use Exemptions for methyl bromide, the fumigant and ozone layer depleting chemical, was deferred. Delegates attending meeting at the headquarters of the United Nations Environment Programme (UNEP) in Nairobi, Kenya, agreed that they needed more time to discuss the complex questions of how big such exemptions should be for developed world farmers. The 'extraordinary meeting', to be hosted by UNEP in Montreal, Canada, in March 2004, continues the process towards a total phasing out of methyl bromide which began in 1996... Klaus Toepfer, UNEP's Executive Director, said: "Unfortunately and despite a great deal of discussion, governments could not find consensus on this complex issue at this week's meeting. They felt they needed more time to find an agreement which balances the interests of farmers and other users of methyl bromide with international agreements to repair the Earth's protective shield" ... "The Montreal Protocol has so far been one of the great environmental success stories. Developed countries have already phased out Chlorofluoro-carbons (CFCs) once commonly used in products like fridges and hair sprays along with several other chemicals with high ozone depleting potential. Consumption of methyl bromide, one of the last key chemicals that needs to be phased out, in developed countries has also been reduced by 70 per cent since the mid-1990s," said Mr. Klaus Toepfer.

Source: The UNEP, Press Release, 14 November 2003

Taken from the Fumigants & Pheromones conference notebook in Copenhagen, Denmark, June 2003 Day 3, Museum Workshop.

The Next Phosphine Generation

VAPORPH₃OS and the Horn Diluphos System...



by John Mueller

A new fumigation system is on the block and proving to move cylinderized phosphine products to broader markets. VAPORPH₃OS® is the new cylinderized form of phosphine made by Cytec Industries the manufacturer of ECO₂FUME®. The principle difference between VAPORPH₃OS and ECO₂FUME is that VAPORPH₃OS contains 30 times more phosphine than ECO₂FUME. Although each of these products contains phosphine gas fumigant they have many differences.

VAPORPH₃OS is highly flammable without the assistance of a device called the Horn Diluphos System (HDS). The HDS blends VAPORPH₃OS [pure phosphine] with ambient air. The HDS was developed by Fosfoquim [Dr. Fransiscus, Pedro, Fransisco Horn and Dr. Jerry Sullivan]. This new process is a very different and complex method of treatment and only the Horn Family would be capable of making this process this easy to use.

System requirements are a nitrogen supply, electrical connection and of course VAPORPH₃OS. The nitrogen is for purging the phosphine from the system and activates valves within the unit. The electrical supply requires either 240 single phase or 208 three

phase. A PLC runs the unit and a graphic screen guides you through the application process.

The HDS comes in two sizes—the HDS 80 and 200. The HDS 80 requires 240 single phase electrical connection and produces 19 grams of phosphine per minute. The HDS 200 requires 208 three phase electrical connection and produces 47 grams of phosphine per minute.

Fumigation Service & Supply, Inc. has been using this new process with a variety of fumigations with excellent results. The HDS system has provided a great deal of information about the structures being treated and has led to more effective treatments for our customers. This is an excellent option for methyl bromide in structure fumigations and other precision fumigations.

For more information about this new phosphine delivery



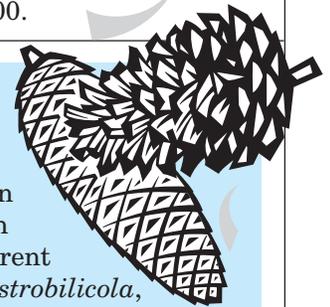
This new HDS phosphine delivery system has several advantages over solid formulations and ECO₂FUME.

system, contact John Mueller at fumig8r@aol.com or call 1-317-896-9300.

National Recall

APHIS (Animal and Plant Inspection Service) has issued a national recall on pine cones originating in India. These pine cones are sold both singly and in potpourri. The recall was issued because two different insect pests have been intercepted: *Chlorophorus strobilicola*, a wood-boring beetle native to India, and larvae of a seed-feeding moth belonging to the genus *Cydia*. Neither pest is known to exist in the United States.

Some states have reported that live beetles have been emerging from pine cone packages. A homeowner with infested pine cone potpourri may notice small (0.5 inch long) *Chlorophorus strobilicola* beetles, especially along window sills and ledges. The beetles are black with silver grey lines, and have very long antennae. Potpourri and pine cones with any indication of insect activity should be double-bagged and tied securely, and then placed in the freezer for a minimum of 6 days. After that time, the bags can be disposed of in the trash.





New Pheromone Badge

Insects Limited announces the introduction of a new product to help you with your inspections. Identification is important in today's unsafe world. People want to know who you are when you walk into a facility or a home. The PHEROMONE BADGE has three lines of information about you and an option to attach your photo. It has a 'Gator Clip' and a pin on the back to attach to your clothes or below your belt in food operations.

As you walk through the facility, pheromone from two Bullet Lures

attract up to 20 species of moths and beetles to the area you are walking. If you stand in one place for a few minutes the moths and beetles may even land on you! In a household inspection the Indian meal moth and clothes moth pheromones have proven to be effective in attracting pest insects and showing the homeowner what their problem looks like.

- This advanced inspection tool can help save hours of inspection time.
- The PHEROMONE BADGE is safe, reusable, and non toxic.
- Each Bullet Lure lasts for 6-8 weeks and can be placed in a resealable aluminum pack when not being used.
- The Bullet Lures are interchangeable.
- The name badges are custom made to your specifications.

The cost for the PHEROMONE BADGE and a one year supply of Bullet Lures is \$ 64.00. Order badges for your company today!

One Way or Another?

After not getting its way in Nairobi in November, the United States has decided to try another approach, adding a new amendment to the Clean Air Act to include excessive critical use exemptions for methyl bromide. HR 3403 has been set in motion in the House of Representatives in Washington, DC and assigned to the Committee on Energy and Commerce.

If you have an opinion on whether the United States needs excessive (10,000 tons) Critical Use exemptions for methyl bromide, contact your Congressman and voice your opinion in writing.

If you would like to join the group called Pest Managers for a Better Environment. Find out more about how your voice and views can be represented in Washington and at the United Nations "extraordinary" meeting in Montreal in March by contacting John or Dave Mueller at 1-317-896-9300.

Meet Barb Bass



Barb Bass has been with FSS and IL for ten years. She is the Vice President and Financial Officer for the companies. But that is not her only job...

Barb helps run every detail of the office from A to Z. She is the

first one in the office in the morning and turns out the lights and locks the doors on the way out.

Barb has been the coordinator of registration for educational workshops and international technical conferences also. She and her husband Dave have been to Europe several times to help set up programs and conferences.

Barb is married to Dave, who works for HP as Procurement Solutions Architect, and has a daughter Shanna, who recently graduated from Ball State University in Education. Shanna works as a case manager in the special education field.

Barb enjoys bowling with her daughter, reading, and movies.

Dave Mueller, president, stated: *"Barb is an amazingly organized person. She helps me examine the financial condition of our companies on a weekly basis and we make decisions based on confident accounting and experience. We are truly blessed to have such a dedicated person as Barb to work with. When the summer gets busy and very crazy, Barb remains calm, focused, and level headed. In 2003, I felt that Barb deserved to be an owner in our company. Barb is now a shareholder and a member of the board of directors."*

When you call our companies and you hear: *"This is Barb Bass, May I Help You."* You've got the best!



ON-SITE TRAINING

If you would like to have a speaker or complete training session tailored to your needs, call Insects Limited at 1-800-992-1991

February 24, 2004*

Pest Management for the Bird Food Industries, Targeted Skill Building Workshop, Westfield, IN, continued education credits, Call: Barb Bass 1-317-896-9300.

February 25, 2004*

Pest Management for the Popcorn and Snack Food Industries, Targeted Skill Building Workshop, Westfield, IN continued education credits, Call: Barb Bass 1-317-896-9300.

February 21-24, 2004*

75th GEAPS Exchange 2004, Minneapolis, www.geaps.com

March 14-16, 2004

National Feed and Grain Association Annual Convention, San Antonio, Texas, www.ngfa.org

May, 2004*

Eurocido, Dartmund, Germany, European Pest Control Meeting

August 8-13, 2004*

Sustainable Fumigation Alternatives, International Conference on Controlled Atmosphere and Fumigation in Stored Products, CAF2004, Gold Coast, Queensland, Australia, www.caf2004.com

**See you there!*

Fumigants & Pheromones INTERNATIONAL CONFERENCE:

Monterrey Technical
Institute

Monterrey, Mexico

March 2005

Co-hosted by
Pheromones Service & Supply
and
Insects Limited, Inc.

www.insectslimited.com
Barb Bass (317) 896-9300

Winter Fumigation

Chamber fumigations are frequently needed during the cold months. There are three heated chambers at Fumigation Service & Supply in Westfield, IN. These fumigation chambers offer perfect conditions for fumigating antiques, wood pallets and dunnage, commodities for export, and other stored products that need a professional fumigation and documentation.

Call DW Bennett today to schedule your next fumigation:

1-800-992-1991

"The Fumigation Specialists"

NEWSLETTER

Fumigants & Pheromones is published by Fumigation Service & Supply, Inc. and Insects Limited, Inc. We hope that the information that you receive from this newsletter will help you in your business, and you, in turn, will support our business efforts. If you have an associate who would be interested in receiving this newsletter, please contact the address below. We would welcome any comments or suggestions for topics. Address correspondence to: David K. Mueller, Fumigation Service & Supply, Inc., 16950 Westfield Park Rd., Westfield, IN 46074 USA.



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