

# Fumigants & Pheromones

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Autumn  
2002

Routing:

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A Newsletter for the Insect Control & Pest Management Industry



**D**uring a recent career day program at Carey Elementary School in Westfield, Indiana, Dave Mueller, entomologist with Insects Limited, Inc. talks to classes about careers in entomology. Here the fourth grade class examines the large tropical insect display and expresses their varied feelings about insects. With all the popular movies and insect programs, children today think **bugs are cool**. Popularizing entomology with talks, tours, sponsorships, newsletters, extension responsibilities, phone calls, and the web site are a few of the activities that Insects Limited does to promote entomology besides providing pheromone traps, consultation and laboratory services.

## COPENHAGEN

Fumigants & Pheromones  
Conference & Workshop

June 3-5

2003



### IN THIS ISSUE:

- ✧ *Critical Use Exemptions*
- ✧ *Dave's Soapbox*
- ✧ *Food Security*
- ✧ *Food Defect Action Levels*
- ✧ *New Pheromones & Traps*
- ✧ *Copenhagen 2003*
- ✧ *Calendar*

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The poster features a large, detailed illustration of a beetle in the center. Above the beetle, the text 'COPENHAGEN 2003' is written in a stylized, metallic font. Below the beetle, there is a circular inset image of a large, classical building. The background is a dark blue gradient.

**COPENHAGEN  
2003**

6TH INTERNATIONAL  
Fumigants & Pheromones Conference & Workshop  
June 3-5, 2003

*Sharing Through Education — 30 speakers in 3 days*

***Sharing Through Education*** was the first theme for this conference in Lübeck when 130 people came from 27 countries to Northern Germany to learn more about modern stored product protection. Since this first conference in 1993, over 1000 people have attended these practical conferences from 37 countries. Many have attended all five. They came to learn and share their ideas. This conference offers 30 expert speakers, from 10 countries speaking on 33 different topics. You can find out more about this conference and register online at [www.insectslimited.com](http://www.insectslimited.com).

Insects Limited, Inc. and Tanaco will present the 6th International Fumigants & Pheromones Conference and Museum Workshop on June 3-5, 2003 in Copenhagen.

Past conferences have been held in Lübeck, Bologna, Chicago, York, England and Thessaloniki. The organizing of this conference in Copenhagen comes at a very important time. Europe has made great strides to meet their commitment of a 70% phase out of Methyl Bromide in 2003 and a 100% phase out of all non-critical uses by January 1, 2005. However, this meeting is held in Denmark, a country that has already completely phased out of this ozone depleting substance since 1998. Denmark has a good story to tell about how they phased out of Methyl Bromide and how they are coping with the loss of this fumigant. Much can be learned from their experiences.

This conference will share, through education, those experiences, failures, successes and practical knowledge that the speakers have accumulated. Traditionally this conference has been a good place to meet people in related fields and discuss common problems and solutions outside of the lecture hall itself. The various social gatherings at this conference will offer introductions of the newcomers to the industry veterans.

Mr. Jeff Welker, Global Business Leader for Urban Pest Management, Dow AgroSciences, stated about 2000 conference: *Overall the three days were OUTSTANDING. I am extremely glad that my people were there to participate. Great job co-ordinating all the details.*

Other comments from Greece 2000: *Carry on your meetings, they are the best way to spread knowledge of this kind around the world.*

*A valuable meeting presenting a good blend of theoretical and practical information.*

## P R O G R A M :

June 3-4, 2003

***A Stored Product Protection Conference:***

This conference program includes two days of presentations in the famous Børsen building in central Copenhagen near the docks. This building was the center of commerce exchange in Denmark since 1620. Today it is a conference center for learning excellence.

A poster display on stored product protection will be available to scientists, governments, and commercial groups wanting to explain their research and products. This is an excellent opportunity to learn directly from the poster author in a relaxing setting or even launch a new product to this audience.

**Sponsors:**

The organizers are actively seeking sponsors to help financially support speakers, coffee breaks, notebooks, receptions, poster displays, and further conference expenses. Contact [insectsltd@aol.com](mailto:insectsltd@aol.com) if you have an interest in sponsoring.

**Subjects:**

At this conference, new and innovative fumigation techniques will be presented for insects in food, wood, tobacco, museums, pulses, and grain. The protection of these stored products is of vital importance to the world. The phase out of Methyl Bromide will also be a featured topic.

**Invited Speakers include:**

- **Dr. Melanie Miller**, Specialist on Methyl Bromide Issues, Belgium, *Regulatory Update on Methyl Bromide*
- **Mr. Jeffery Welker**, Dow AgroSciences, USA, *Registration Update and Field Results*
- **Mr. Kim Kemp**, Nestle Purina, USA, Customer Care and Development; *Unique Heat Treatment as an Alternative to Fumigation*

- **Mr. Henrik Lange**, Tanaco, Denmark, *Methyl Bromide Alternatives in Danish Flour Mills*
- **Mr. David Mueller**, Insects Limited, Inc., (2) USA, *Methyl Bromide Alternatives; How to Use Pheromones in a Pest Management Program*
- **Mr. John Mueller**, Fumigation Service & Supply, Inc., USA, *ECO<sub>2</sub>FUME Phosphine Fumigant Experiences*
- **Mr. Vasilis Sotiroudas**, AgroSpeCom Ltd., Greece, *Integrated Commodity Management from "Cradle to Grave"*
- **Lise Stengård Hansen**, Danish Pest Infestation Lab, Denmark, *Danish Research on Stored Product Insects*
- **Dr. Frank Arthur**, USDA/ARS, USA
- Dr. Wendell Burkholder Award Presentation
- **Dr. Christian Nansen**, Oklahoma State University, Denmark, *Stored Product Moths: New Research and Understandings*
- **Mr. Alain Van Ryckeghem**, Insects Limited, Inc., USA, *New Stored Product Insect Pheromones*
- **Ms. Magali Raynaud**, Frito Lay, UK, *Preventative Cleaning and Inspection as an Alternative to Methyl Bromide for Treatment of Food Facilities*
- **Dr. Franciskus Horn**, Fosfoquim, Inc., Chile, *New Fumigation Innovations*
- **Anna Hellakant**, Anticimex, Sweden, *Food Safety Systems*
- **Dr. Christoph Reichmuth**, Germany, *Phosphine Resistance Update*
- **Dr. Jörgen Böye and Dr. Otto Mueck**, BM-Seminar, Germany, *Hygiene in the Food Industry—When the PCO Becomes a Problem*

**Current Stored Product Research Laboratory Review:**

Dr. Niels Bille, Danish Pest Infestation Lab., Denmark  
 Mr. Paul Cogan, Central Science Laboratory, UK  
 Dr. Jane Wright, CSIRO, Australia  
 Dr. Frank Arthur, USDA, USA  
 Dr. Darka Hamel, (ZUPP), Croatia  
 Dr. Christoph Reichmuth, BAA, Germany

## Museum Pest Management

## W O R K S H O P :

June 5, 2003

Copenhagen

This one day museum pest management skillbuilding workshop will share experiences and practical knowledge from a list of international experts. This workshop is for the novice trying to learn a new skill in a particular niche area of stored product pest management and for the seasoned museum professional wanting to share new information.

This workshop can be the third day of the Fumigants & Pheromones Conference or just a one day skillbuilding workshop.

**Invited Speakers:**

David Pinniger  
 Alain Van Ryckeghem  
 Eléonore Kissel  
 Rudiger Plarre, Ph.D.  
 Monika Åkerlund  
 Jan-Erik Bergh, Ph.D.  
 Lise Stengård Hansen

**Topics:**

Integrated Pest Management for Collections  
 Nitrogen Treatment  
 Carbon Dioxide Treatment  
 Freez'em or Fry'em  
 Museum Pheromones  
 Beetles, Belfries, and Basements, IPM in Practice  
 Wood Destroying Insects  
 Mold prevention and cure

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## Dave's Soapbox

...for what it's worth

Let's revisit a topic that we spoke about a few years ago.



### Is this cell phone thing ever going to stop?!!!

Cell phones are ruining my life and the lives of millions of people around the world. I believe the devil invented the cell phone to drive everyone crazy or drive them into a tree. The cell phone disease (CPD) has gotten so bad that I notice people coming out of churches and movie theatres foaming at the mouth because they have not been able to be connected for over an hour. CPD has now captured the youth of the world worse than adults. It started out with the parents looking for a longer umbilical cord to stay attached to little *Betsy* or *Johnny* while the Big Bad Wolf was chasing them. Now the phones are such a part of their lives that the thought of living without one would destroy the world, as they know it.

You question whether it is an addiction? Watch someone who has lost his cell phone. Watch someone who has broken their phone and see how fast they buy another one. It is an addiction.

**Advantages:** The safety of having a phone when that vehicle happens to break down in the middle of the downtown at midnight and being attacked by the Big Bad Wolf (chances of winning the lotto may be less) have been overcome by the drivers that turn the corner with their knee with the cell phone in one hand and a 44 ounce Slurpy

in the other while smoking a cigarette while running a yellow light. Please help me here. Where is the safety? How many people have crashed their cars using this safety tool we call a cell phone.

One advantage I hear often is that cell phones save money over expensive long distance calls. *Right.* If this is true why do bills continue to go up with expensive add on charges? This is not to mention the **time** that is wasted with people using these phones for personal use while on the job. (i.e. booking golf reservations, nail appointments, and talking to

Airports full of people talking on the cell phone because the pay phones are always too full. What pay phones? They are disappearing because no one uses them. The ones that are in the airport have spider webs around them from lack of use. What a joy airports have become. Not the security issues. The loud bastards that are telling everyone within 50 feet what business they are in and how great their life really is. I don't care. I don't want to hear about your boring life or your business. I want to read the paper or a book quietly. I want to get caught up on my sleep and not be awakened by



**4700 road accidents were tied to cell phone usage in California alone last year.**

friends and family while traveling down the road). What is the cost to the company for the personal time wasted with the convenience of a cell phone? Big savings here!

Hundreds of millions of people worldwide have become addicted to cell phones. If you don't believe me, look around anywhere. Men walking down the grocery aisle with a phone in their ear asking their wives what brand name product they are to pick up on the way home and chatting on how each other's day was.

the beep of the William Tell Overture or the latest funny ring that we haven't heard yet.

I believe that I may be the last person on this planet that hasn't conceded to this new communication technology. I am sure that there are times when it would be nice to have the convenience of dialing a number and speaking to someone. I do worry about accidents and having to contact emergency equipment. But, I figure everyone else that comes by will surely have a cell phone.

What has our society come to need a phone to contact someone at all times and anywhere? Are we so lonely that we can't spend a few moments with ourselves? Driving down the road listening to music or having an intellectual conversation with yourself is lost to: "Hey everyone, guess where I am."

The new dangling wires that have a handsfree speaker and earpiece are so fashionable. Trotting through airports with one can get you on the cover of *GQ Magazine*. If it is so close to your mouth, why do you still feel like you have to speak so loud?

The toilet: Now we are really addicted to the cell phone when we have to take it into the toilets with us and call friends to chat. I was washing my hands the other day when a voice from behind me started talking to me from the toilet stall. I stood straight up and slowly walked toward the door without looking back. **Get a life.**

Cell Phone Etiquette Classes: It should be required by law to attend cell phone etiquette classes prior to receiving your first phone. If any violations (i.e. ringing or talking in a movie theatre) are noticed by the phone police, your phone will be confiscated and you will be required to attend degenerate phone school. A habitual violator will lose all phone rights for life.

So, stand up and take control of your lives you cell phone addicts. Toss them in the trash can and repeat after me: *I am a human being with freedoms and rights. I can resist the temptation of staring blankly into a small phone screen hours on end wondering if anyone is going to call me. I can resist the temptations of the billions of dollars of advertising I receive daily. I will no longer be the embarrassed person who forgets to*

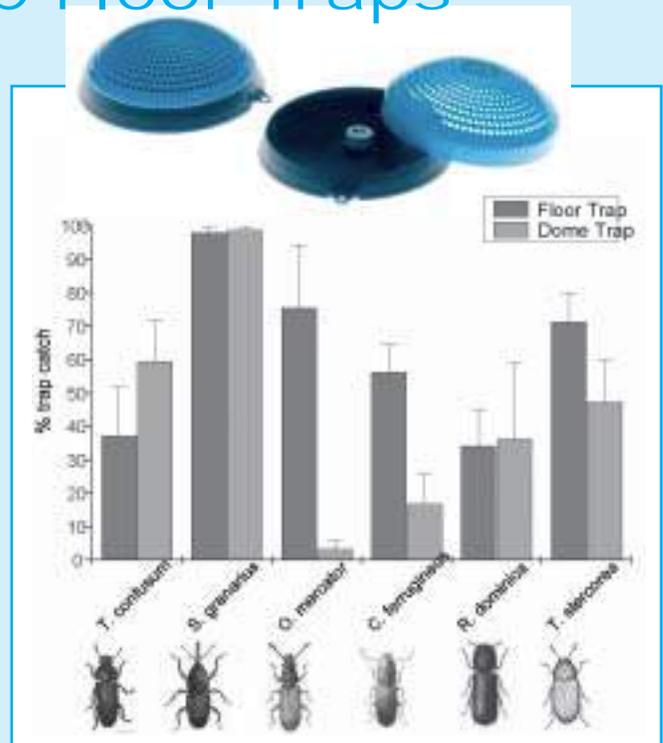
*turn my phone off during a meeting so everyone can see how fast my reflexes are to grab my phone to shut it off only to look at my fellow colleagues casting darts my way. I will drive my car with two hands again. I will read the paper in the toilet like I used to. I will read a book in solitude for pleasure. I will carry 50 cents in my pocket or a*

*credit card at all times just in case I need to call someone. I will learn to speak softly again in the phone and not yell: **Are you there? Can you hear me?** Over and over again.*

*W. K. Mueller*

## New PC Floor Traps

Insects Limited, Inc. offers a new insect monitoring trap for stored product beetles. The new **PC Floor Trap** uses scientifically proven attractants for troublesome stored product insect beetles. This trap can be used in all types of storage areas and retail shops. The powerful lure pulls from a 15 feet radius. Traps may be tethered to prevent being lost.



Most importantly, the **PC Floor Trap** is especially good at capturing the Saw-toothed grain beetles and flour beetles. Up until now, there hasn't been a good monitoring device for the elusive saw-toothed grain beetle (*see chart*). This specially designed and patented trap allows the beetles to go in but doesn't allow them to escape the PC Floor Trap. Scientists from the Central Science Laboratory (CSL) in York, England designed this trap. CSL is an independent, internationally recognized center for storage research for over 60 years.

Paul Cogan, the inventor, stated: "We have spent years at CSL developing this trap and lure for stored product insects. This important trap and lure combination allows, for the first time, effective insect trapping in agricultural produce, feedstuffs, and retail and manufacturing premises."

Cost: \$70.00 for 10 traps & 10 lures; \$595.00 for 100 traps & 100 lures.  
Replacement lures \$24.50 for 10 lures; \$195.00 for 100 lures.  
Lures should be changed monthly.

For more information go to:  
[www.insectslimited.com](http://www.insectslimited.com) or call 1-800-992-1991

## Fumigation Efficiency



**John Mueller**

**F**or the past two years fumigation budgets have been strained under the weight of perverted fumigant costs. Companies want to know what can be done to control these costs.

In the coming years professional fumigators will answer these cost questions with a focus on fumigation efficiency. Better sealing strategies, creative gas application methods, gas monitoring and documentation are some of the methods for solving this problem. Fumigations have always been viewed as an economic alternative to proper sanitation whether managers want to admit it or not...but current fumigation costs have challenged these economics.

**What gas loss rates are we targeting?** In my opinion, consider the following half loss rates:

Excellent gas retention	= 20-24hrs
Very good gas retention	= 15-20 hrs
Good gas retention	= 12-15 hrs
Acceptable gas retention	= 10-12 hrs
Poor gas retention	= 8-10 hrs
Must improve gas retention	= 4-8 hrs
Do not fumigate	= below 4 hrs

### Sealing Strategies

Sealing for fumigation can become overly routine. Step back for a moment and ask yourself how can sealing be improved. We have shown that 30 extra man-hours in non-traditional sealing may cost \$1,000 but could save \$4,000 in add gas costs. At another site we used about \$75 in materials and three man-hours and saved \$6000 in add gas costs.

In this case a small 10,000 cubic

foot building attachment on the roof [doghouse] was causing 90% of the gas loss in a one million cubic foot mill.

***If you are adding more than 20% gas back into the structure you are treating, you need to perform a thorough review of the area being treated to improve gas retention.***

Review historic gas monitoring data to determine what areas have the highest loss rates. Examine these areas closely and consider permanent sealing methods like, foam sealants, caulking, tar or other sealing materials and methods. Clear spray-on sealants are available for larger sealing tasks.

Try to determine if the loss is *regional* or from thermal rise [chimney effect]. Regional or local loss is one specific area with significantly lower levels than the majority of the structure. Usually there is some small structural flaw missed because we are trained to seal the obvious—windows, vents and doors. These types of situations are much easier to solve than mass gas loss due to thermal rise. Thermal rise is created when you have gas loss at the top and fresh air entering the bottom of a structure. To break this process, start sealing the lower areas with great detail.

One way to find these leaks is to draw a heavy and constant vacuum on the building and use smoke tubes to find where fresh air is entering the building. Identify these loss points with colored hair spray [washable] and then come back through and permanently seal these areas.

Most mills and cereal food processors have vertical shafts everywhere. It may be futile to completely isolate individual floors but maybe you can greatly restrict

thermal rise by restricting this upward flow by using cardboard restrictions and even temporary plywood doors and walls. If you restrict this airflow you will isolate and expose problematic areas.

Limited tarping is being performed where never considered before. Corrugated metal and fiberglass structures usually lose gas the worst. How much would it cost to tarp these structures? The efficacy results and gas cost savings could pay for the tarping process.

### Gas Application

Increased add gas points will allow delivery of smaller and more accurate re-dosing. This will reduce the total amount of gas added under most circumstances.



### Gas Monitoring and Documentation

To learn the most about your facility's capacity to retain fumigant, perform a comprehensive gas observation on your next fumigation. Observe gas concentration during introduction. Watch how the gas disperses and in what direction [take detailed notes]. If you need to add gas, track the add gas throughout the structure. You will get clues to where the gas is going and where the fresh air is entering.

In summary, we must continue to improve—we must become more efficient. We will do better with less.

## Critical Use Hurdles

The Montreal Protocol may allow limited, temporary exemptions from phase-out for ODS (Ozone Depleting Substance) uses that are deemed **essential** or **critical** as defined by the Protocol. At present, some methyl bromide (MB) users in industrialized countries are applying for Critical Use (CU) exemptions for MB because the phase-out date is approaching. The CU exemption process applies only at the time of phase-out, so it is not relevant to MB users in developing countries at present.

CU applications/requests will have a lot of hurdles to overcome before any approval is given. In addition, exemptions would be time-limited, ie. temporary, so the CU process is not a substitute for the adoption of alternatives.

Applicants will have to demonstrate that no viable alternatives are available and that lack of MB would result in significant market disruption for a crop or use area. It will be necessary to provide a detailed rationale (technical information), demonstrate that research programs are in place to develop and deploy alternatives, and show that efforts are being made to commercialize and secure regulatory approval of alternatives.

Applications for CU exemptions will be reviewed first by the national government. Applications that pass that hurdle will be submitted to the Ozone Secretariat by the end of January. Applications (technically called *nominations* at this stage) will be reviewed by MBTOC (Methyl Bromide Technical Options Committee), then by TEAP (Technical and Economical Assessment



Panel). Applications that pass those hurdles will be reviewed by the Open Ended Working Group (OEWG) of the Montreal Protocol. Finally, governments at a Meeting of the Parties of the Protocol will make a decision.

Traditionally, the Protocol has been strict and has permitted few exemptions from the phase-out schedules set for CFCs and other ozone-depleting substances (ODS). A number of countries believe strongly that MB CU exemptions should be kept to a minimum as other ODS MB alternatives have been identified and many are in commercial use.

When exemptions are permitted, they are temporary. Methyl bromide Critical Use exemptions would be granted for only 12 months. Applicants would have to apply again if they wanted exemptions again in the future. In limited cases certain special uses could possibly be granted an exemption for more than 12 months but it would be subject to annual reviews that would consider progress in the availability of

alternatives.

Conditions will be placed on any exemptions granted. For example, users will be required to minimize any MB emissions, which is likely to be expensive.

When the Protocol grants a CU exemption to a MB user group there is still no guarantee that the users will get some MB. After the Protocol decision, the national government would need to issue a license for MB imports or production so that the MB can be available to users. If an alternative becomes available before licenses are issued the exemption can be turned down.

In the European Union, for example, the Regulation allows the EU to license ODS imports and production for critical/essential uses only if alternatives are not available. In the case of CFCs, there is typically at least 13 months between applying for an exemption and final licensing by the EU. During this period some new alternatives have been developed and marketed, so the EU actually licenses less 'essential use' CFCs than was authorized by the Protocol. It is expected that MB critical uses will follow the same pattern, especially as the period between CU application and licensing will be from 2002 to 2005, which gives time for more alternatives to be available. Under the EU regulation, licenses cannot be issued for MB in cases where alternatives are available, even if the Protocol has granted an exemption.

### QUOTABLE QUOTE

***History is caused by a series of surprises.  
We study history to be prepared for surprises.***

—Kurt Vonnegut, Jr., *Slapstick*

## New Monitoring Tool for Dermestid Larvae

By Alain Van Ryckeghem,  
Technical Director

For all the great uses that pheromone lures and traps have, the one great disadvantage in their use is that most are unable to monitor the activity of the immature stages. Larvae are often the most damaging stage and it is only after detection of the adults when people realize they have been there long before munching on valuable materials.

Insects Limited Inc. recently produced a larval monitoring device for the purpose of detecting the immature stages of a wide variety of Dermestid beetles (Figure 1). The main target species are the different carpet beetles (*Anthrenus* spp., *Attagenus* spp.), hide and larder beetles (*Dermestes* spp.), warehouse and cabinet beetles (*Trogoderma* spp.), and other minor known species such as the odd beetle (*Thyodrias contractus*), and the American wasp beetle (*Reesa vespulae*).

Results from summer field-testing have been encouraging and interesting. Originally two types of diets were compared. In one museum, the Varied carpet beetle (*Anthrenus verbasci*) was the insect of most concern. Twenty-nine pairs (total = 58) of Larval Dermestid Monitors (LDMs) were placed in different locations ranging from display cases, to storage shelves, within folds of artifacts, floors, and window-sills. After a 30-day exposure, a total of 51 larvae were collected from 10 of the 29 different locations. The monitors contained a range of 1 to 14 larvae. In this site all larvae were *Anthrenus verbasci*. There was no significant difference between the diets so the final product has a blend of these materials.

In another museum, the target pest was also thought to be Varied carpet beetle. After setting out 5 pairs of Larval Dermestid Monitors for 6 weeks, 2 larvae of the Odd beetle (*Thyodrias contractus*) were found from two of the five locations. In other sites, Larder beetles (*Dermestes lardarius*) have been found feeding and laying eggs in the monitors.

It is important to note that unlike pheromone monitors, these Larval Dermestid Monitors must be retrieved in approximately 30 days after placement to prevent the possibility that the monitors themselves become infestation sources. It is logical that the blend of attractants for the larvae would encourage adult females to visit the monitors and lay eggs. This makes the monitors additionally significant in that they can detect female beetle activity. Pheromones are usually limited to attracting males. These LDMs would be a good addition to a monitoring program during the late spring and summer to fall period to detect larval activity, after the peak of adult activity has ended.



## The Pillsbury Company

The United States Environmental Protection Agency awarded The Pillsbury Company of Minneapolis the **Stratospheric Ozone Protection Award** in a ceremony in Washington, D.C. This award is "In recognition of exceptional contributions to global environmental protection."

In December 1997, the Board of Directors of The Pillsbury Company made a landmark decision in their company and in their industry. They decided to phase out methyl bromide. They immediately explored the use of heat for disinfecting food plants and flour mills. This environmentally friendly alternative has been very successful. In 2000, they explored the use of the fumigant phosphine, heat and carbon dioxide in combination to replace the use of methyl bromide and of costly heat treatments.

The Pillsbury Company is a champion of phasing out methyl bromide in a sector that has filed for a critical use exemption. The flour milling and food processing industries use about 4% of the methyl bromide in the United States. The Pillsbury Company should be congratulated for environmental leadership. Pillsbury has recently been purchased by General Mills.

## PHEROMONES

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## Food Security=Insect opportunity?

By John Mueller

The events of 9/11 have changed all of our lives in many ways. Recently a public poll taken showed 53% of Americans were

concerned about the safety of our food supply. This was the greatest of all American terrorism concerns. What does this mean for the insects—new opportunity? Insects may find added protection under the Food Security steamroller.

Some of the initial issues are, increases in exterior lighting and a decrease in accessibility.

We all know that added exterior lighting will attract insects to food plants. But will we stop the security consultants before they turn our plants into a “radioactive glow.”

Remember that if extra lighting is required, position the lights well away from the building and cast light at the building.

If lighting must be placed on the building, use sodium vapor light-

ing instead of mercury vapor lighting.

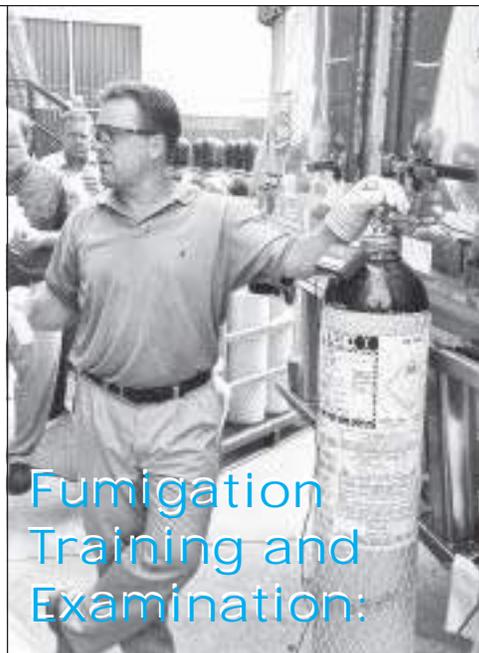
Another focus of security is limiting the access into facilities as well as access into product stream.



From an inspection standpoint this is a real concern. As food safety professionals we are focused on another type of security and that is the integrity of a pest free product. By

locking down screw conveyors, product bins and transfer systems we will be limited in accessibility. Maneuvering will be greatly restricted and the amount of area we can cover in the same amount of time reduced.

It happens all too often—in an effort to correct one problem we create opportunities for pests. Sanitation managers should become closely involved with security reviews and sanitation must be considered before security plans are confirmed. I am sure that both security needs can be accomplished without compromise to either.



## Fumigation Training and Examination:

January 21, 2003

This one-day training program is for those people looking to obtain fumigation training. It is also for those needing to take their fumigation examination for the state of Indiana (Category 7D). The Fumigation training will be beneficial for anyone in any state wanting to learn more about fumigation. This training will prepare you for any state examination and especially for the Indiana fumigation test. Instructors include John Mueller, Alain Van Ryckeghem and David Mueller.

In the past, Purdue University's Pesticide Training Office has offered the training for this fumigation category. People looking for initial training in fumigation to help take the fumigation examination can now come to this fumigation training workshop. This workshop is designed to offer you the knowledge and review needed to help pass this certification examination. Anyone wanting to just take the exam without training from the Indiana State Chemist office can also take it at this time. For more details, go to [www.insectslimited.com](http://www.insectslimited.com).

## 85 and Enjoying Life!



*Al Mueller (center) father of Dave and John Mueller was the head miller of Igleheart Bros. Flour Mill of Evansville, Indiana. Here Al recently helped the FSS Fumigation crew fumigate a flour mill. Al enjoys attending AOM meetings and hearing from friends and old fumigators. He and his wife Etta can be reached at 1-812-424-7426.*

## Food Defects



The food defect action levels are levels of natural or unavoidable defects in foods that present no health hazards for humans.

The U.S. Food and Drug Administration (FDA) set these action levels because it is economically impractical to grow, harvest, or process raw products that are totally free of non-hazardous, naturally occurring, unavoidable defects. Products harmful to consumers are subject to regulatory action whether or not they exceed the action levels.

Poor manufacturing practices may result in enforcement action with-

out regard to the action level. Likewise, the mixing and blending of food with a defect at or above the current defect action level with another lot of the same or another food is not permitted. That practice renders the final food unlawful regardless of the defect level of the finished food.

As technology improves, the FDA may review and change defect action levels on this list. Also, products may be added to this list. The FDA publishes these revisions as Notices in the Federal Register. There is a current website available at <http://vm.cfsan.fda.gov/~dms/dalbook.html>

A printed version of this booklet can be obtained by written request to: Industry Activities Staff (HFS-565) Center for Food Safety and Applied Nutrition, FDA, 200 C Street S.W., Washington, DC 20204.



## New Pantry Patrol Gel Pheromone Formulation

Insects Limited, Inc., Westfield, IN, USA is proud to announce that it has improved its already popular Pantry Patrol™ trapping system to include a new pheromone gel bait. The new and improved pheromone gel bait has the same attractiveness as the original Pantry Patrol™ pheromone oil bait, but it is much more spill resistant in the gel formulation. The Pantry Patrol™ pheromone gel bait contains the pheromones for 7 major stored-product insects which include; Indianmeal Moth, Mediterranean Flour Moth, Tobacco Moth, Warehouse Beetle, Cigarette Beetle and Red & Confused Flour Beetle. Besides these pheromone attractants, the natural food attractant of the Pantry Patrol™ gel bait has been known to capture over 20 other species of stored product insects besides those listed above. This makes it the most all encompassing stored-product insect trapping system on the market today.

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 (Outside of Continental USA)  
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### Here are a few of the popular FDA Action Defect Levels:

Product	Contamination	Defect
Hops	Insect filth	Average of more than 2,500 aphids per 10 grams
Macaroni/ Noodle Products	Insect filth: Rodent filth:	Average of 225 insect fragments or more per 225 grams Average of 4.5 rodent hairs or more per 3225 grams
Pepper, Whole	Insect filth: Mammalian excreta:	Average of 1% or more pieces by weight is infested. Average of 1% or more mammalian excreta per pound
Pepper, Ground	Insect filth: Rodent filth:	Average of 475 or more insect fragments per 50 grams Average of 2 or more rodent hairs per 50 grams
Popcorn	Rodent filth:	1 or more rodent excreta pellets are found in 1 or more subsamples, and 1 or more rodent hairs are found in 2 or more other subsamples OR 2 or more rodent hairs per pound and rodent hair is found in 50-% or more of the subsamples OR 20 or more gnawed grains per pound and rodent hair is found in 50% or more of the subsamples
Field Corn:	Rodent filth:	5% or more by weight of field corn
Potato Chips:	Rot:	Average of 6% or more pieces by weight contains rot
Tomato Paste, Pizza	Drosophilais fly:	Average of 30 or more fly eggs per 100 grams OR 15 or more fly eggs and 1 or more maggots per 100 grams OR 2 or more maggots per 100 grams
Wheat	Insect damage:  Rodent filth:	Average of 32 or more insect-damaged kernels per 100 grams  Average of 9 mg or more rodent excreta pellets and/or pellet fragments per kilogram
Wheat Flour	Insect filth: Rodent filth:	Average of 75 or more insect fragments per 50 grams Average of 1 or more rodent hairs per 50 grams

Revised May 1998

# Honeybees and Butterflies

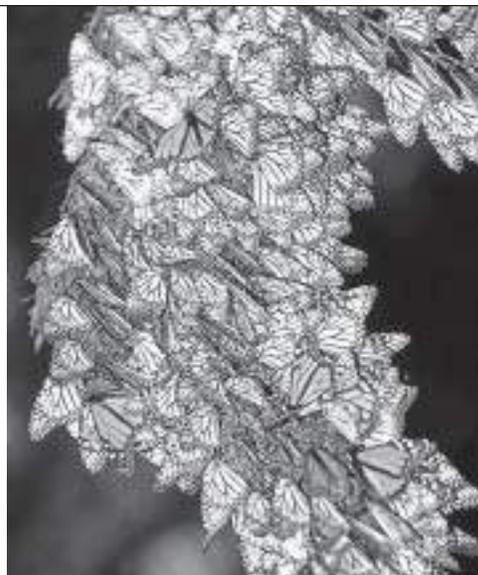
In an environmental disaster last winter, an estimated 275 million butterflies perished in Mexico's Valle De Bravo as a result of severe winter weather combined with diminished forest cover in and around the Monarch Butterfly sanctuaries. The too-thin forest canopy was a result of logging and cutting of trees by poor residents attempting to eke out a meager living.

Phi Chi Omega, the National Honor Society of the pest management industry in conjunction with the World Wildlife Foundation and the Heifer Project announced that it is focusing its HoneyBee Project on these environmentally critical areas. This will provide a new source of income to locals while, at the same time, protect the fragile environment necessary for the survival of the Monarch Butterfly.

Hundreds of millions of North American Monarch butterflies migrate—up to 3,000 miles—to these areas of Mexico, which have become a popular ecotourism dollar. Although the Mexican government has set aside areas as reserves for Monarch sanctuaries, desperately poor residents have continued to support themselves by cutting trees.

The goal of the Pi Chi Omega/HoneyBee Project is to provide an alternative source of income by furnishing bees, hives, and instructions to profitably produce honey, beeswax, and pollen for medical purposes. In addition to providing much needed income, this program engenders self-reliance, passes on hives, skills and benefits to others. It also improves sensitivity in gender related issues and enhances environmental awareness.

For a donation as little as \$30 you or your organization can contribute to the Pi Chi Omega/HoneyBee Project, which has already raised enough to provide hundreds of beehives and has been instrumental in helping to initiate a joint program between the Heifer Project and the United Nations Development Program staff. For more information where to contribute to this worthwhile project contact: Dr. Austin Frishman, (516) 694-7224.



## Word Find

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- Workshop      Denmark      Sharing      Fumigants      Pheromones
- Educational      Knowledge      International      Experiences

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W P D E N M A R K Q H W Q K A V T M Y Q O P K R U V Q C K I

## MEETING CALENDAR:

- \*\* Nov. 10-12, 2002 FAOPMA, Yokohama, Japan, faopma@knt-tokyo.gr.jp  
Speech and Trade show participation: Methyl bromide alternatives, David Mueller
- \*\* Nov. 17-20, 2002 Entomological Society of America, Ft. Lauderdale, FL, www.entsoc.org  
Speech: Pheromones traps for stored food pest management and warehouses, David Mueller
- \*\* Dec. 3, 2002 Purina Petcare/Walmart Food Safety Symposium, University of Arkansas, Kim Kemp, (314) 982 2519
- \*\* Dec. 4, 2002 UNIVAR Customer Training, Elmhurst, IL, John Forbes, John\_Forbes@UnivarUSA.com
- \* Jan. 6-10, 2003 67th Annual Purdue Pest Control Conference, West Lafayette, IN, www.conf.purdue.edu.
- \*\*\* Jan. 21, 2003 Fumigation Training /Examination, Westfield, IN, Barb Bass, www.insectslimited.com, 1-800-992-1991
- \* April 8-10, 2003 Fourth National Pest Management Symposium/Workshop, Indianapolis
- \*\*\* June 3-5, 2003 6th International Fumigants & Pheromones Conference and Workshop, Copenhagen, Denmark, Barb Bass 1-800-992-1991, www.insectltd@aol.com, Lange@Tanaco.dk



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### Fumigation Service & Supply, Inc.

16950 Westfield Park Road  
Westfield, IN 46074-9374 USA  
(1) 317-896-9300 voice  
(1) 800-992-1991 toll free  
(1) 317-867-5757 fax  
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