

Fumigants & Pheromones

Issue 46
Summer 1997
Routing:

A Newsletter for the Insect Control & Pest Management Industry

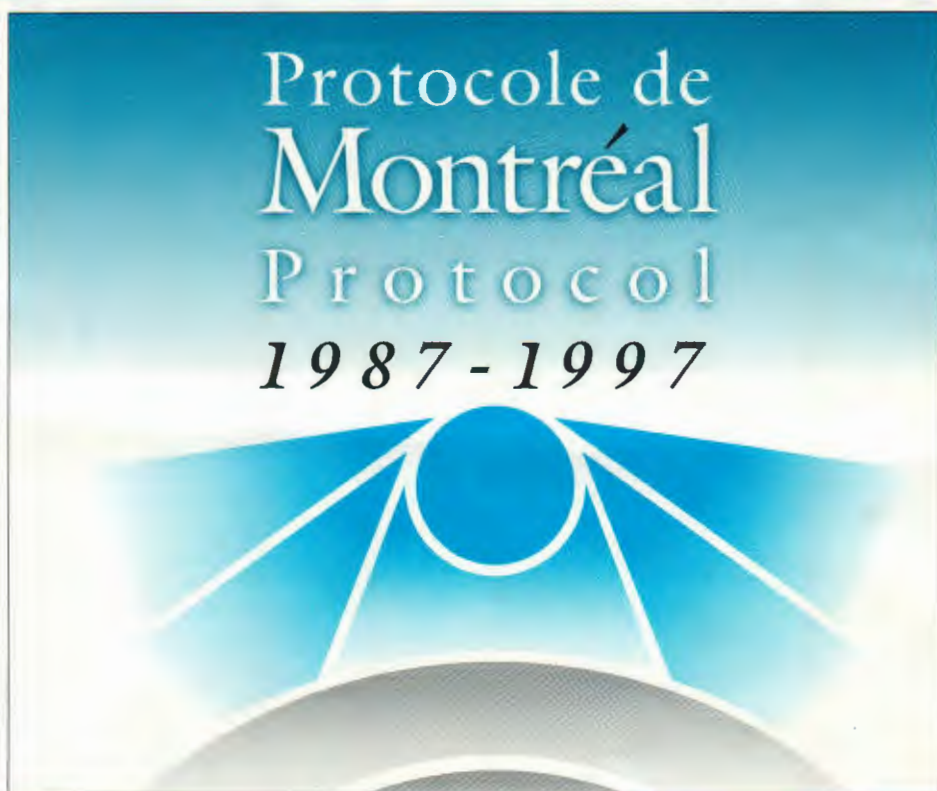
Montréal & Methyl Bromide

For two weeks in September, pest control will take center stage in Montreal at the 10th anniversary of the Montreal Protocol. The world politics of the Parties of the Montreal Protocol, a world environmental policy arm of the United Nations representing over 150 countries, will focus on the ozone depleting substance, methyl bromide. The fate of methyl bromide will most likely be decided during this two week conference. Meetings in Costa Rica and Kenya this past year have set the agenda for this year's meeting in Montreal.

In Vienna in 1995, the last conference of The Parties skirted around the methyl bromide issue in order to set policies on funding and deadlines to stop production on this inexpensive and effective pest control tool.

Industry representatives of the methyl bromide manufacturers, major fruit and vegetable growers' coalitions, environmental organizations, the various governments with environmental agendas, alternative representatives and the pest control industry are planning their platform position for this world gathering in Montreal.

Much of the positioning of this meeting will have to do with funding for research and more jobs in poorer parts of the world and not about the condition of the ozone layer and funding for research and jobs. Also, unfortunately,




Meeting of The Parties of the Montreal Protocol
September 9-17, 1997, 10th anniversary of the signing of the Montreal Protocol

these policy-makers have never seen or used methyl bromide.

America and Canada will play a major role in influencing the rest of the world's policy. The U.S. will bring to Montreal its promised 25% share of the Multilateral Fund contribution and along with a strong State Department, EPA, and Executive Branch political pressure. Canada will have a strong influence because of its determined environmental leadership position. The Canadian Pest Control companies and industry representatives have been actively working together for several years to explore positive solutions to this difficult methyl bromide issue.

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Montréal & Methyl Bromide

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In reality

Methyl bromide is an important pest control tool for helping the world grow more and better food while allowing world trade to continue without a threat to our quarantine systems. Disinfestation of structures and stored products will likely have viable alternatives by the year 2001 if not sooner. The Clean Air Act in the U.S. will likely be amended in the near future to allow for those missing alternatives to be addressed. The next election in the year 2000 will see Vice-President Al Gore testing his political strength on a strong environmental platform. The challenge to be the "Protectors of the Environment" may never be greater than now. The September, 1997 meeting of the Parties of the Montreal Protocol will show an international support to protecting the ozone layer... no matter what the economic burden to today's civilization.

Percent Usage of Methyl Bromide

82% Developed countries (Article II) (U.S., Europe, Japan, etc.)	57 million tonnes/year
18% Developing countries (Article V) (Mexico, Costa Rica, Kenya, etc.)	13 million tonnes/year

Questions?: Can we survive without methyl bromide? Did we survive without CFC's, halons, and other banned ozone depleting substances?

So what is going to happen with methyl bromide?

There are two choices being discussed: 1. 100% phase out of methyl bromide by January 1, 2001 with critical exemptions and quarantine exemptions or 2. -75% reduction of methyl bromide by January 1, 2001 with no exemptions.

Original article was published by *Pest Control*, June 1997 by David K. Mueller.



Heat Sterilization

"Whether we agree or disagree with it, federal, state, and local regulatory agencies are, with quickness and regularity, eliminating most of the conventional insecticides the food industry has relied upon for years to control stored product insects. Methyl bromide has been a valuable tool in disinfestation for over 50 years and its apparent impending demise has caused the grain processing industry to seek alternatives to offset this apparent loss. Because of its classification as an ozone depletor, methyl bromide is scheduled to be phased out for most uses by January 1, 2001." Jerry Heaps, B.C.E., Manager of Sanitation and Pest Control for the Pillsbury Company.

"Always start with the insect first"

Insects are vulnerable to high temperatures. Heat is being used on homes for drywood termites, food processing plants, flour mills, and other structures that can hold extreme temperatures of about 125°-135° F for 16-24 hours. When insects are exposed to high temperatures, death normally is caused by the coagulation of soluble proteins in the body tissue and when body fluids are dehydrated.

We warm-blooded humans have a very hard time understanding how heat and cold affect cold-blooded animals like insects. We use clothing, air conditioning, and mobility to provide comfort from temperature extremes. A few degrees difference in temperature can not only cause insects to live or die through dehydration but cause elevated stress that causes them to be vulnerable to other adverse conditions such as low levels of conventional fumigants and insecticides. It is estimated that insects increase their respiration and activity by 10x for every increase in 10° C. From 67° F to 87° F to 104° F an insect can show a 1000x increase in respiration and activity.

Try this simple experiment: Place an insect in your closed hand for several minutes. Notice the difference in activity level. The heat from your hand will elevate the temperature and make it more active.

Heat sterilization is becoming a popular alternative to methyl bromide and other space treatments. This technology is not new. As early as 1901, heat was used for a general sterilization of a flour mill after a miller found dead insects near a steam line leading to a corn drier. The Quaker Oats Company and General Mills have used heat sterilization for over fifty years in some of their food plants while ConAgra, Pillsbury, Lauhoff, Ralston Purina and other food processing facilities have recently switched over from general fumigations with methyl bromide to heat sterilization. It is estimated that 10% of the flour mills in the United States use some form of heat sterilization.

A food plant that is heated to 125°-135° F will kill most exposed insects and break the pest population's life cycle. A 90-95% mortality of stored product insect bioassays can be achieved with heat. Insulated areas near hollow walls and the accumulation of static food product will be more difficult to reach a lethal temperature. Cockroaches, with their ambulatory legs and ability to run to safe areas when threatened, can find safe haborage in walls, vents, and roof vents. This was proven in a recent heat treatment of a large food processing plant when the tape was removed from the roof vents only to find German cockroaches stuck to the tape. No roaches were observed in these vents prior to the 'heat up'

In conclusion, the feasibility of heat sterilization depends on the type of facility available. An old facility with wood floors, wood framing, and old sprinkler systems are not a good choice for heat sterilization and neither is a modern plant with sophisticated electronic equipment that can't be removed or protected. Heat sterilization, from heat up to cool down, takes less than 36 hours while holding a temperature of 125° to 135° F for 16 to 20 hours. The cost is estimated at between 75% to 200% the cost of a methyl bromide treatment depending on the heat source. Portable supplemental heating units have the advantage of mobility; thus can be located where the heat is needed. Repeated applications of 4 to 6 times a year is needed to effectively break the pest insect life cycle. Preparation of the building is less labor intensive than a general fumigation. However items that may be destroyed during the heat up may need to be removed, and this is crucial. Finally, heat sterilization is not a panacea but a component of a well balanced pest management program.

Pest Control, August, 1997

Dave's Soapbox



Hale-Bopp...

"The furry star with feathers"

At a time when this newsletter is normally talking about summer insect control, upcoming conferences or new technologies in stored product protection, I would like to pause and salute Hale-Bopp, the comet that was such a pleasant surprise for most of North America in the spring of 1997. When it seems that our world has discovered all the surprises to be discovered, it is truly a surprise that such things as secret comets are still out there.

One of the most pleasant natural surprises that I have ever witnessed happened in the spring of 1997 while climbing the east rim of the Grand Canyon at night. Hale-Bopp looked bigger than a harvest moon on fire. As I watched the comet streaking across the pitch black sky of the new moon, I found myself wanting to stop doing anything except glare back at this celestial phenomenon.

The best thing about Hale-Bopp was that it was so unexpected. No one



knew it was on the way until the two Mr.'s Hale and Bopp first took note and announced to the world that another comet was on the way. Somewhat of a 'couch potato astronomer,' I said, "Sure there is a comet on the way. Is this one anything like ol' Mr. Haley in 1986 or more recently Mr. Hyakutake in 1996." Both were fizzles and disappointments.

The day we all saw the Hale-Bopp Comet for the first time most of us were impressed. This is what a real comet should look like. It is recognizable and, yes, it does have a tail.

Every night when the stars were shining, I could go outdoors and look to that same place in the northwest sky and there it was, a real comet, regal

and special as it seemed to stream across the sky.

Perhaps the most honest comet observations came from younger observers. A boy from Easton, PA, likened Hale-Bopp to a "furry star with feathers". One girl from Catcott, England, saw a "moon wearing a scarf."

As you read this, Hale-Bopp has crept from Earth's skies to begin another multi-millennium trip back into space.

Thanks Hale-Bopp. Wherever you're going, I hope you get there. Please come again, any time!

W. K. Mueller

National Survey of Stored Product Insects



Angie Resener,
Entomologist

History

If you work for a food plant in Indiana and the supplier of one of your most important ingredients is in California, how do you know what insects may be infesting that product? Well,

you can wait for problems to occur, or you can be prepared by checking the National Survey of Stored Product Insects in the United States. Insects Limited has just finished this survey for the third time in sixteen years. In 1980 this survey was begun because this kind of information was needed, but was not available in an organized form. In 1988 it was repeated in order to see if there had been any change or if there were any new trends to be considered.

Participants

In order to do this survey we contacted the Stored Product Specialist in the Cooperative Extension Service in each state as well Puerto Rico and Guam. In certain states there was no one who had that responsibility. In those cases we went to USDA or county extension personnel. This survey had the highest response of all three with 51 responses.

(continued on page 4)



National Survey of Stored Product Insects

Results

#1 Which insect is most commonly sent in to be identified in your state?

States	Insect	Scientific Name
25	Indianmeal moth	<i>Plodia interpunctella</i>
4	Sawtoothed grain beetle	<i>Oryzaephilus surinamensis</i>
4	Cigarette beetle	<i>Lasioderma serricorne</i>
3	Red flour beetle	<i>Tribolium confusum</i>
3	Dermestids	<i>Trogoderma spp.</i>
2	Drugstore beetle	<i>Stegobium paniceum</i>
2	Lesser grain borer	<i>Rhyzopertha dominica</i>

#2 List the stored product insects which cause the biggest problems in your state on raw grain.

States	Insect	Scientific Name
21	Weevils	<i>Sitophilus oryzae</i> (12), <i>S. granarius</i> (6), <i>S. zeamais</i> (3)
8	Indianmeal moth	<i>Plodia interpunctella</i>
5	Lesser grain borer	<i>Rhyzopertha dominica</i>
2	Sawtoothed grain beetle	<i>Oryzaephilus surinamensis</i>

16 Year Comparison—on Raw Grain

1980	1988	1996
Indianmeal moth	Indianmeal moth	*Weevils (<i>Sitophilus</i> spp.)
Sawtoothed grain beetle	Red flour beetle	Indianmeal moth
Rice Weevil	Sawtoothed grain beetle	*Lesser grain borer
Confused flour beetle	Rice Weevil	Sawtoothed grain beetle
Red flour beetle	Flat grain beetle	*denotes changes from prior surveys

#3 List the stored product insects which cause the biggest problems in your state on processed food.

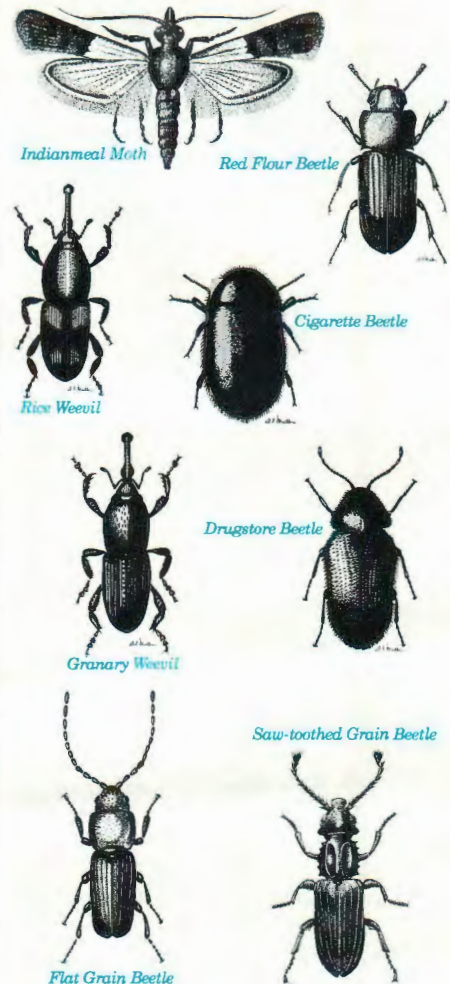
States	Insect	Scientific Name
31	Indianmeal moth	<i>Plodia interpunctella</i>
7	Red/Confused flour beetles	<i>Tribolium castaneum</i> & <i>confusum</i>
2	Sawtoothed grain beetle	<i>Oryzaephilus surinamensis</i>
2	Cigarette beetle	<i>Lasioderma serricorne</i>
2	Drugstore beetle	<i>Stegobium paniceum</i>
2	Larder beetle	<i>Dermestes lardarius</i>

16 Year Comparison—on Processed Food

1980	1988	1996
Sawtoothed grain beetle	Indianmeal moth	Indianmeal moth
Indianmeal moth	Sawtoothed grain beetle	Red/Confused flour beetle
Red flour beetle	Red flour beetle	Sawtoothed grain beetle
Dermestids	Dermestids	Cigarette beetle
Confused flour beetle	Confused flour beetle	Drugstore beetle

#4 Is there an individual insect or group of stored-product insects that is gaining importance in your state?

States	Insect	Scientific Name
10	Indianmeal moth	<i>Plodia interpunctella</i>
3	Fungus feeders	Various
2	Larder beetle	<i>Dermestes lardarius</i>
2	Psocids	Various
2	Sawtoothed grain beetle	<i>Oryzaephilus surinamensis</i>



Conclusions:

- The Indianmeal moth continues to be the dominant pest of stored products in the United States.
- Because budgets are being cut at the State Entomology Extension departments nationwide and U.S. territories, it took a lot of work to find people that could participate in such a survey.
- Fungus feeders are not the frequent pest we found in the 1980's when long-term storage was common in the North Central States.
- The term 'Weevil' in raw grain is a general classification that can mean more than Rice, Granary or Maize weevil. It can mean any beetle in grain.

For more information call
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FOOD PROTECTION '98

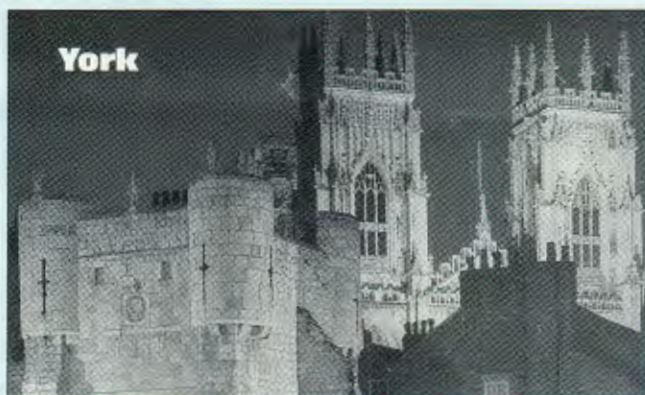
First Announcement Fumigants & Pheromone Technical Conference

sponsored by
Insects Limited, Inc.

in cooperation with:
Central Science Laboratories (CSL)

April 1-3, 1998

Speakers have been selected and programs/registration will be available October 1, 1997. If you would like a program for Food Protection '98, write or e-mail your request.



York

Free Trip to England

Win a trip to York, England for the next Fumigants & Pheromones International Technical Conference. This contest will offer round trip airfare, hotel accommodations at a four star hotel, meals and full registration for the Conference.

If you would like to enter this contest, you must be at least 21 years of age, have a valid passport, and be a FSS or IL customer. The drawing will be February 15, 1998.

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Indianmeal Moth

One of the most interesting characteristics of Indianmeal moth behavior is its use of webbing. When they feed, the larvae lay down this thin trail of webbing. Usually it is mixed with food particles or droppings. It can be so thick on a highly infested product that it looks like a fabric cover. Essentially this webbing is a form of silk similar to that



made by the silk moth. This silk is a protein, and it is produced in a gland in the head of the larvae called a labial spinneret. Researchers believe this webbing to be an oviposition site. This means that the webbing somehow is an indication to the female that the location is a food place to lay eggs. The female can lay from 200-400 eggs during her one week adult stage. After hatching the tiny (1/2 to 1 mm) larvae can get into packaging with very small holes or poor sealing wreaking havoc on the product contained inside. The larvae feed primarily on the surface so webbing is usually found in or on the top layer of product. After the larvae are full grown (1 1/4 cm), they use their silk to make a cocoon in which to pupate and transform into an adult.

Indianmeal Moth webbing on outside of Jute bags.

I Went to England and Learned English



by Frances M. Mueller, age 9

It was different the way they talked. Their food was different too. I especially had trouble with the way you have to look when you cross the street. Even the Coke tasted different, but not the ice cream.

Here are some words that were different than the American words:

Truck.....	Lorries	Elevator.....	Lift
Trash.....	Litter	Directly.....	Straight away
Rest Room.....	Toilet, WC,	Cheap.....	Good value
.....	Lav, Loo	Vacation.....	Holiday
Highway.....	Carriageway	Bus.....	Coach
Trunk (car).....	Boot	Doubledecker.....	Bus
Hood (car).....	Bonnet	Chips.....	Crisps
Oatmeal.....	Porridge	French fries.....	Chips
Full.....	Good measure	Very.....	Quite
Fall.....	Autumn	Great.....	Lovely
Parking lot.....	Car park	Rush over.....	Pop
Rent.....	Let	Bar.....	Pub



Methyl Bromide Debate in London

At a recent British Pest Control Forum in London, The BPCA urged the European Union (EU) to "stick to the science and expert opinions rather than bow to the might of the US." In a debate over the future of methyl bromide a panel of experts was allowed to share recent information from the meeting in Nairobi and the EU Ministers in Luxembourg.

At a Council meeting of EU Environment Ministers in Luxembourg on 19-20 June, an agreement was reached on an EU negotiating position for the 9th meeting of the Parties of the Montreal
(continued on page 8)

Pheromone Questions?

How do pheromone traps work?

Pheromones are natural compounds that are created in the body of an insect. Insects use pheromones to communicate with each other. We have isolated many of these compounds in the laboratory and use them to lure the insects into a sticky trap.

How far apart should we place the traps?

Indianmeal moth, Cigarette beetle, Warehouse beetle traps should be placed 25-50 feet apart on a grid pattern. Clothes moth and Flour beetle traps should be placed 25 feet (or less) apart.

How high should we place the traps?

In general, traps should be placed at eye level for optimum performance, but they will perform at higher or lower levels as well. Flour beetle traps should be placed on a surface. Floor placement may be necessary.

Will these traps control my pest problem?

Not necessarily. Pheromone traps are designed as a monitoring tool.

However, if used in situations with low populations, they can sometimes achieve control.

I am using the traps, but I still see insects. What else can I do?

Pheromone traps are meant to be used as part of an integrated approach to pest control. Sanitation, inspection, and removal of infested material are all very important parts of an integrated approach.

Do I need to cut the cap off the Bullet Lure?

No, they are ready-to-use. Just open the envelope, take the entire lure out of the package and place it in the trap.

How long will the lure last after it is opened?

In general all pheromone lures are good for 60 days (8 weeks). After that, they should be replaced with a new lure.

How long will the lures last if kept unopened?

The Bullet Lure will last two years in its foil packet. Care should be taken not to store them in hot conditions (100+° F). It is not a case where the old lures will not work at all; however, their effective duration will be reduced. If kept in a freezer or refrigerator, all lures should last indefinitely.

Where in the trap should I place the lure?

It really doesn't matter. Bullet Lures should be placed in the bottom of the trap, but others can go in the top.

Will these traps catch all my insects?

No. Pheromone traps are species specific. They are designed to catch either one species or several closely related species. (e.g. Indianmeal moth, Mediterranean meal moth, Tobacco moth, Warehouse moth, and Meal moth will all come to one lure, but at different times of the day).

Cigarette Beetle Pheromone Study

By Larry Pierce, RS
Food Protection Services, Mililani, HI

Over the last two years in the tropical climate of Hawaii, pheromone lures were compared in two food processing plants where a known native Cigarette beetle (CB) existed. The Trécé CB Lure, the Serrico lure, the LasioLure were evaluated. The LasioLure has been the best performer in the past with the Serrico lure being second and the Trece CB lure showing the least reliable performance.

New pheromone chemistry was discovered in 1995 that showed promise in increasing the attractiveness of this pheromone. This chemistry allowed for a higher purity (90%+) along with better stability. The thing to do then was to ask the insects what they thought about it.

Methods and Materials

The standard field test protocols used for all of the previous evaluations were employed. Three sets of 10 experimental Cigarette Beetle lures were provided by Insects Limited for testing. Each set of capped, polyethylene vials contained three different pheromone loads. A set of 10 standard LasioLures was used for comparison.

Each of the lures were placed in a Sani-Trap and one trap with a lure of each



type was suspended, 2'-4' apart on a wire at a series of 10 preselected sites in the bakery.

The traps were checked weekly and the positions were rotated from left to right on the suspending wire each week.

Results and Discussion

A total of 1139 CB were captured on the 40 traps during 8 weeks. The ten traps with the new IL pheromone captured 394 CB or 35% of the total. The ten LasioLures captured 332 CB or 29% of the total. The two other formulations captured 227 CB and 186 CB, 16% respectively.

Conclusion

After two years and four eight week field trials, Larry Pierce concluded that:

"The experimental polyethylene vials performed better than any of the previously tested combinations. It out-captured the standard industry leader by 6%."

New Catalogs



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5. Pick one up at our office

Update



ECO₂FUME™

The cylinderized phosphine fumigant ECO₂FUME from BOC Gases is proceeding toward a full registration from the US EPA. Testing on tobacco, seed, popcorn, wheat, cold temperatures containers, and flour mills is scheduled. Oklahoma State University is running a series of trials both in the laboratory and in outdoor bins.

The advantages of this cylinderized phosphine fumigant are mainly through worker safety with reduced concentrations and no worker entry during the fumigation. One of the biggest advantages is that there is no disposal of undecomposed residue with ECO₂FUME. The EPA has a special program set up for fast track registration for methyl bromide alternatives and reduced risk pesticides. ECO₂FUME may be one of these alternatives.

Several trade organizations have been contacted about ECO₂FUME and cooperators from their organizations are being evaluated as test sites. This testing will help evaluate the potential for this controlled fumigation procedure while compiling data for EPA registration.

International, ECO₂FUME is being tested at CSL in York, England on grain storages. Cyprus has registered this new fumigant for grain and is using ECO₂FUME on a commercial scale. A global launch of ECO₂FUME is expected in North America, Europe, South America, Africa, and Asia. It has been used in Australia for over ten years.

The management consulting group; The Sloane Group and David Mueller of FSS have been contracted by BOC Gases to push this exciting new product forward in the regulatory and commercial arena. ECO₂FUME offers many advantages over methyl bromide and metal phosphine fumigants.

For more information about ECO₂FUME, access the WebPage: <http://www.insectslimited.com>

Mueller Nominated for EPA's 'Best' Award



The Best-of-the-Best EPA Stratospheric Ozone Protection Award recognizes corporations, associations, and individuals that have demonstrated exceptional leadership, personal dedication, and technical achievements in eliminating ozone-depleting substances. The recommended Best-of-the-Best winners would represent a wide spectrum of achievements by individuals and organizations in Australia, Canada, Germany, Japan, Malaysia, Mexico, Netherlands, New Zealand, Switzerland, Thailand, United Kingdom, United States and Venezuela.

There are nineteen different categories that will be recognized. In the methyl bromide category there are three nominees: Dr. Jonathan Banks, CSIRO Australia, Technical and Economic Assessment Panel (TEAP) Committee Chairman; Dr. Melanie Miller, Consultant from New Zealand, member of the Methyl Bromide Technical Options Committee (MBTOC); David Mueller, president of Fumigation Service & Supply, Inc. was listed in the Summaries of Nominees as: "An industry leader in pioneering alternatives to methyl bromide for post-harvest uses in food processing facilities. He is to be commended not only for his innovation and ingenious approach to replacing methyl bromide, but also for his perseverance despite the best efforts of the methyl bromide industry to arrest his good work."

Awards will be presented September 14, 1997 at the Montreal Protocol 10th Anniversary Dinner Dance Celebration.

Current Books Available from

THE BOOKSTORE

New Mallis Handbook of Pest Control, 8th. edition, by Hedges et. al. 1483 pages w/ over 500 illustrations and 30 chapters\$119.00

Engineering for Food Safety and Sanitation...A Guide to the Sanitation Design of Food Plants and Food Plant Equipment, by Tom Imholte, 282 pages\$74.00

Post-harvest Tobacco Infestation Control by Dr. Lee Ryan, et.al. 155 pages\$70.00

Field Guide for the Management of Urban Spiders, by Stoy Hedges & Dr. Mark Lacey, 220 pages\$9.95

Field Guide for the Management of Flies, by Stoy Hedges, 150 pages.....\$9.95

New Field Guide for the Management of Structure-infesting Beetles, vol. 1: Hide & Carpet beetles/Wood-boring beetles by Stoy Hedges and Dr. Mark Lacey 196 pages.....\$9.95

New Field Guide for the Management of Structure-Infesting Beetles, vol. 2: Stored product beetles/ Occasional & Overwintering beetles by Stoy Hedges and Dr. Mark Lacey 212 pages\$9.95

Nutritional Ecology for Insects, Mites, Spiders, and Related Invertebrates, by Slansky & Rodriguez 1016 pages.....\$215.00

Museum Pest Management, 3rd ed., by David Pinniger 58 pages.....\$14.95

Proceedings of the 6th International Working Conference on Stored Product Protection, Held in Canberra, Australia in April 1994, 2 volumes, 1274 pages\$325.00

New Truman's Scientific Guide to Pest Control Operations, 5th edition, by Bennett, Owens, and Corrigan 500 pages, hard cover.....\$79.95

Earth in the Balance, by Al Gore, 407 pages\$25.00

Stored Product Management, by Oklahoma Cooperative Extension Service, 242 pages\$15.00

To order, call: 1-800-992-1991 or email: insectsltd@oal.com or fax: 1-317-846-9799

Methyl Bromide

(continued from page 5)

Protocol which will take place in Montreal in September. The EU negotiating position will be a 50% cut in 2001 and phase-out in 2005 in developed countries (as opposed to the current position of a 25% cut in 2001, 50% cut in 2005 and phase-out in 2010).

Mr. Alex Waugh of the National Association of British and Irish Millers stated that "We have a need to keep our product hygienically fit. He was quick to discount any "real" alternatives that are being offered as a replacement, including the North American work with heat, CO₂ and low levels of PH₃. He was eager to 'que' for any critical use exempt for his organization because of a lack of 'real' alternatives. This position is identical with the North America and Canadian millers organization's position.

Mr. P. Beaumont of the Pesticide Trust, a nongovernment organization dedicated to the responsible use of pesticides stated: "Consumers often dictate what happens in the marketplace... it is not always rational but they have the ability to change what we do."

"Anyone that did not start looking for alternatives ten years ago is not really serious about this industry." In short, industries and companies should plan for obsolescence.

"The Pesticide Trust would like to see methyl bromide phased out by 1999."

Professor Nick Price, CSL

"R & D is slow to gain realization of the problem. We need a coordinated action NOW for the public good and the public health." Professor Price presented an overview of the current status of research into methyl bromide and possible alternatives.

Mrs. Maria Nolan, from the Global Atmosphere Division of the Department of the Environment and representative from UK on the TEAP committee stated:

"The Montreal Protocol is not without sacrifices. It calls for a switch from ozone depleting products to non ozone depleting products. It never said that there would not be a cost to do this. It calls for an acceptable cost and not a cheaper cost."

"Environmental protection costs money!"

"Progress is being made to better access the real cost of ozone protection."

Kentucky Fumigation Workshop

July 25, 1997



"Scientists measure risk and politicians manage risk."

Dr. Chris Wise from the National Farmers Union examined the potential social and economic consequences of the withdrawal of methyl bromide from the agricultural and horticultural sectors.

Mr. Colin Smith of Rentokil UK used this opportunity to perform his best stage production to express in public his 'bleeding heart' comments which directly accused the United States of a grand conspiracy to cheat the rest of the world out of methyl bromide. He questioned the science again and has made a grand exit by announcing his flamboyant resignation from the Methyl Bromide Technical Options Committee (even though he was not asked back after its restructure).

editor's note: "In conclusion it seems that the debate found the various sides gaining strength and passion as the judgment day approaches 29 months from now. From my view point, while North Americans tend to embrace change for its own sake, Europeans tend to mistrust it."

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