

Fumigants & Pheromones

Issue 29

Fall
1992

A Newsletter for the Insect Control & Pest Management Industry

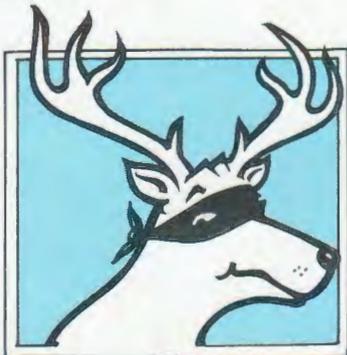
It's Turpin-Time

Dr. Tom Turpin, Professor of Entomology at Purdue University will be this year's Keynote Speaker for the Fumigants & Pheromones Technical Seminar to be held December 15-16, 1992 on the campus of IUPUI in Indianapolis.

Turpin is a native of Kansas; he graduat-

Man-Killers

Every year about 200 Americans are killed in unfortunate encounters with various wild and domesticated animals.



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Mild Mannered - Deer lead the way because they wander onto highways.

ed from Washburn University in Topeka, Kansas. He continued his education at Iowa State University where he received a Ph.D. in entomology and agronomy in 1971. Before coming to Purdue he taught high school science and mathematics and coached basketball and track in Brooklyn, Iowa.

Tom has been active in the Entomological Society of America and currently serves as President of the 6000 member Society. He has been a consultant to USDA, USAID and many



Dr. Tom Turpin

private companies. He has international experience in Africa, Central and South America, Greece, and the British Isles.

WE STUDY THE
SCIENCE

TO PRACTICE THE
Art

Turpin is the author of over 50 scientific publications and numerous popular articles. Tom is an excellent orator and can keep an audience on the edge of its seat with both informative and humorous information about trends occurring in the world. He has some very interesting

thoughts about "Perception is Reality..." Make plans to listen to Tom at this year's Fumigants & Pheromones Technical Seminar.

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Methyl Bromide

Science and Technology and Economic Synthesis Report

This is a report on the current understanding of the impact of methyl bromide on the ozone and on the uses of, and alternatives to, methyl bromide. It was requested by the United Nations Environment Programme on behalf of the Parties to the Montreal Protocol. The report includes information presented and discussed at the International Methyl Bromide Science Workshop held in Washington, DC on June 2-3, 1992, and at the International Workshop on Alternatives and Substitutes to Methyl Bromide held in Washington, DC on June 16-18, 1992.



Methyl Bromide is used as a fumigant for soils, commodities, and structures. It is currently vital for the economic viability of certain agricultural production and for quarantine treatment of certain products in international trade. Many developing countries are particularly dependent on the export of products currently fumigated using methyl bromide, before shipment and at ports of entry.

The total production and sales of methyl bromide for fumigation have increased from about 42,000 tonnes to about 63,000 tonnes between 1984 and 1990. Combining the approximate methyl bromide use-pattern data with the currently estimated fraction that escapes to the atmosphere from each use (soils: 80% of use, 50% emitted; commodities: 15% of use, less than 80% emitted; and structural: 5% of use, 80% emitted) indicates that about half of the methyl bromide used as a fumigant is emitted into the atmosphere. Based on current understanding, this implies an anthropogenic (man-made) emission from fumigation applications of about 30 thousand tonnes in 1990, which represents 25 + 10% of the total (natural and anthropogenic) emissions.

Ozone destruction by bromide is far more efficient on a per molecule basis than chlorine by a factor of 30 to 60.

Therefore, 1 part per trillion by volume (pptv) of bromine is equivalent to 0.03-0.06 pptv of stratospheric chlorine.

The current best estimate of the steady-state value of the Ozone Depletion Potential (ODP) for methyl bromides 0.7. Because of the short atmospheric lifetime of methyl bromide, its relative impact on ozone is expected to be much greater over the next decade (when chlorine abundances and ozone losses are predicted to reach their maximum) than is indicated by its steady-state ODP.

There are significant uncertainties in the atmospheric budget and ODP of methyl bromide, especially the quantification of possible oceanic and terrestrial surface removal processes and the rate of formation of unreactive bromine in the stratosphere.

Model calculations suggest that anthropogenic (man-made) emissions of methyl bromide used for fumigation applications could have accounted for about one-twentieth to one-tenth of the current observed global ozone loss of 4-6% and could grow to about one-tenth of the predicted ozone loss by the year 2000 if methyl bromide emissions continue to increase at the present rate of about 5-6% per year.

There is no single alternative to methyl bromide in the broad spectrum of applications for which it is currently used. There are, however, many alternative chemicals and procedures for specific applications. However, the introduction of some chemical alternatives may require government approval, which



The ozone layer: shielding the rest of the solar system from the Earth's harmful effects

could be a lengthy process.

Finally, rough estimates indicate that a significant fraction (from as low as 30% to as high as 90%), of methyl bromide used for soil fumigation could be replaced by chemical substitutes during the 1990's; that a substantial proportion of emissions from fumigation chambers could be captured and recycled or destroyed; that a small fraction (1-2%) of methyl bromide emissions could be eliminated by better procedures during tank filling; and that significant reductions in emissions could be made using other alternatives or techniques, alone or in combination. However, there are some

In Short...

"One point can not be understated: considering its broad spectrum of applications, there is no single alternative to methyl bromide. However, alternative chemicals and techniques exist to reduce its use emissions to the atmosphere. Alternative procedures for durable and non-food commodities include, phosphine, residual pesticides, irradiation, biocontrol, modified atmospheres, heat and cold. There are no foreseeable alternatives for quarantine treatments which require pest elimination. Currently, there are no suitable alternatives for certain sites, such as, some food processing facilities, warehouses, aircraft and historic buildings. Minimization of methyl bromide from continued uses may include the use of gas-tight structures, recycling processes and displacement techniques. Research on these and other alternative pest management strategies is needed."

"So what is the bottom line? The belief is that we can reasonably expect certain uses of methyl bromide to be discontinued in as little as 2 to 3 years. The fumigation of dwellings is most likely one of those uses. With extended aeration times already in place in California and expected from EPA, the cost of using methyl bromide will increase. It is prudent to begin planning for the future now."

Richard Kramer, Ph.D., B.C.E.

Technical Director

National Pest Control Association

The NPCA Report July

applications for which there are limited or no alternatives, including some agricultural situations that have developed a dependence on methyl bromide, quarantine treatments, and some structural fumigation uses.



Dr. Robert T. Watson, NASA, Co-Chairman of the Science Assessment, United Nations Environmental Programme (UNEP) will address the topic: Methyl Bromide and the Ozone Layer: A Summary of Current Understanding and Dr. James Sargent will address the topic: Methyl Bromide Concerns; Perception or Reality, at this year's Fumigants & Pheromones Technical Seminar, Dec. 15-16, 1992.



James Sargent, Ph.D. addresses International Conference on Controlled Atmosphere and Fumigation in Grain Storage on the Subject of Methyl Bromide Fumigation and Ozone Depletion. Jim will be a speaker at the Fumigants & Pheromones Technical Seminar in Indianapolis.

Phosphine in the Atmosphere

With the recent controversy with methyl bromide and its role as a potential ozone depletor, let us explore a leading alternative, metal phosphides (aluminum and magnesium phosphide), and their effect on the atmosphere.

One of the major applications of phosphine is for fumigating grain. Solid pellets or tablets are incorporated directly into the bulk grain. After a fumigation time of 3-14 days, the treated granaries

and structures are vented to the atmosphere. Phosphine is released into the atmosphere both during fumigation and ventilation. *What happens to these emissions?*



A study performed by the Battelle-Institute of Frankfurt am Main for Detia Freyberg GmbH of Laudenbach, Germany in 1987 shows that "potential indirect effects of phosphine to the environment, e.g. by reaction with the ozone of the stratosphere, cannot be recognized because of a high rate constant of the reaction with OH radicals; transition into the stratosphere is not possible." The study goes on to say: "At a mean OH radical concentration of 5×10^7 molecules per cm^3 , the half-life of phosphine in the atmosphere is about 28 hours. In sunny weather, the OH radical concentration can be substantially higher during daytime; shorter than 28 hours, e.g. less than 5 hours. Due to the high reactivity of phosphine with the OH radical, this substance is eliminated from the troposphere rapidly."

Aflatoxin & Phosphine

Effects of Phosphine on Aflatoxin Production in Peanuts Stored with a High Moisture Content

M.F.P.P.M. de Castro, I.A. Pacheco, M.H. Taniwaki

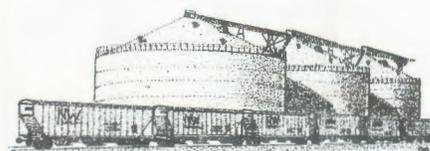
Instituto de Tecnologia de Alimentos, Avenida Brasil

Abstract- Freshly harvested peanuts (15.6% moisture content, wet basis), were exposed to 0.01; 0.5; 1.0 and 1.5 mg PH_3 /l for 3, 7, and 14 days at 30 degrees C and about 85% relative humidity. The CO_2 concentrations were determined

after each exposure period. Analysis of aflatoxin B1 and G1 were conducted initially and after all treatments. The three doses applied were sufficient for the control of the production of aflatoxins B1 and G1. The protection period offered by the fumigant for the control of fungi development and aflatoxin B1 and G1 production was related to the doses applied.

Railcars Fumigated In-Transit with CO_2

The Proctor and Gamble Company in cooperation with the University of Georgia fumigated in-transit railcars loaded with peanuts with carbon dioxide.



In a paper presented by Ken Hold and Dave Wilson at the International Conference on Controlled Atmosphere and Fumigation in Grain Storages, June 11-13, 1992, Winnipeg, Canada; Forty-eight loads of peanuts were shipped by rail from May 15 through October 5, 1991, from southern Alabama to Lexington, Kentucky. Forty-one of the loads were treated with CO_2 in bulk peanut cars and seven companion loads were treated with PH_3 prior to shipment. Rapid CO_2 filling stations were engineered to fill the rail cars to a concentration of 55%-80% CO_2 (approximately 410 kg of CO_2 per car) before sealing and shipment. The rail cars were not completely airtight and only from 5%-50% of the CO_2 remained after 8-14 days. The maximum CO_2 concentration in the ambient atmosphere around the cars was below 0.5% during filling and no elevated CO_2 was detected during unloading.

There was complete insect control in all but two of the cars treated with CO_2 and these had to be refumigated with PH_3 in Lexington.

Costs

- CO₂ tank installation ranged from \$3000 to \$11,000
- 900 lbs of CO₂ were needed per rail car;
- \$70/rail car compared to \$20/rail car for PH₃
- \$425 tank rental/ month plus annual rental

The conclusions of this study are that bulk rail cars can be successfully fumigated with CO₂, that CO₂ fumigation will result in the death of insect adults and larvae during shipment if the CO₂ does not escape too rapidly, and that CO₂ fumigation does not impact peanut flavor, structure, water activity or microflora during shipment. The effectiveness of CO₂ fumigation, however, depends on the retention of CO₂ for several days. Mr. Ken Hold stated: "We are continuing this year (1992) to fumigate peanuts with CO₂."

Scientists from around the world met in Winnipeg to discuss the future direction of stored-product protection.



Here are some of the participants (l to r) Dr. P. Ducom, France; Dr. Ch. Reichmuth, Germany; Dr. F. Fleurat-Lessard, France; and Dr. S. Navarro, Israel.

Earth Shaking News From San Francisco

San Francisco – A federal appeals court ruled that the U.S. Environmental Protection Agency overstepped its bounds in permitting the sale of processed foods that contain trace amounts of cancer-causing pesticides.

An appellate panel ruled that the Delaney

clause strictly prohibits the use of food additives that are found to induce cancer in animals or humans. If allowed to stand, the ruling is expected effectively to ban the agricultural use of dozens of pesticides.

A panel of three appellate judges set aside EPA chief William K. Reilly's 1991 ruling in which he allowed processed foods to contain pesticide residues of four chemicals found to induce cancer in laboratory tests.

The ruling stems from a 1989 lawsuit filed by the Natural Resources Defense Council, a Washington-based environmental group, on behalf of individual consumers and farm workers.

Agency officials determined in 1988 that the four chemicals: benomyl, mancozeb, phosmet, and trifluralin, were carcinogenic but concluded that their agricultural use should be permitted because the risk of cancer is negligible.

"Congress intended to ban all carcinogenic food additives, regardless of amount or significance of risk, as the only safe alternative," Judge Mary M. Schroeder wrote for the court. Revising the law, the judge wrote, is "neither our function nor the function of the EPA.... If there is to be a change, it is for Congress to direct."

Editor's Note: Congress can act quickly to offer disaster relief for major catastrophes like earthquakes, maybe they will come forward to enact legislation to relieve this major decision.

EPA Responses to Court Decision

The United States Court of Appeals for the Ninth Circuit set aside on July 9, 1992 an EPA order permitting the use of four pesticides as food additives that the Agency found posed a negligible risk of cancer. This decision in effect upholds a strict interpretation of the Delaney Clause, which prohibits the establishment of food additive tolerances where evidence indicates that the pesticide may cause cancer in humans or animals, no matter how small the risk. While the Court directs EPA to revoke the toler-

ances at issue in this case, the undisputed court record shows the dietary risks of the four pesticides involved are trivial.

The EPA is disappointed in this decision. The literal interpretation imposed by the Court will hinder EPA's ability to make decisions that will best ensure the overall safety and affordability of the food supply. EPA is now reviewing the court's opinion and is considering further legal options, such as a request for a rehearing or an appeal to the Supreme Court. The court's decision makes even more urgent the need for Congress to act immediately on the Administration's 1989 proposal to replace the outdated Delaney Clause with a uniform negligible risk standard for pesticides in the diet.

A strict interpretation of the Delaney Clause could bar EPA from granting food additive tolerances to new chemicals that might pose a slight cancer risk, even though the new pesticides might displace more hazardous pesticides currently in use. This also means that the same pesticide residues that might be legal on a raw food could render a processed food unacceptable under the law.

In 1988, EPA adopted the recommendations of the National Academy of Science (NAS) by implementing a consistent negligible risk standard (in the range of a 1 in 1 million chance of developing cancer if exposed over a lifetime).

EPA intends to assess the potential impacts of the court's decision, which may have broad impacts upon pesticide users and consumers. Because the Agency believes that a strict interpretation of the Delaney Clause is not the most effective way to improve the safety of the food supply, the Agency intends to continue to call for legislation by Congress to replace the Delaney Clause with a uniform negligible risk standard. Regardless of the ultimate outcome of this decision, the Agency intends to regulate pesticides conservatively - in other words, to error on the side of safety when there is uncertainty about the extent of risk in order to protect public health.

Mike Beringer, Special Review Manager, stated recently in a telephone interview: "This is a significant court case and the Agency doesn't know what to do at this point. There is a good chance that Congress will have to change the law. DDVP and other pesticides that show a possible risk of cancer could have their



tolerances revoked in the near future." Beringer went on to say: "The economic impact of this court decision will be in the \$100's of millions of dollars." ❄

Least-Toxic Insect Control

"Why Didn't I Think of That?"

Many of our insect pests live in wall voids. So why do we continue to spray residual insecticides on the outside of the wall instead of inside?

John Jackson of Lake Worth, FL patented the "Insider" pest control system, which he says will eliminate the need to spray chemicals where people live. Instead, it applies pesticides inside the walls.

A small device, similar to a hollow golf tee, is permanently inserted in a wall behind cabinets, or pictures, closets or baseboards. At various intervals, a pest control technician can inject the correct insecticide through the small, clear, self-sealing nozzle installed in the walls. These can be inserted into, food processing plants, offices, restaurants, hospitals, schools, hotels, commercial kitchens, bakeries, and homes.

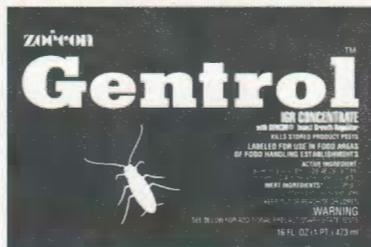
The Insider comes in two sizes. The first is the short Insider designed to be used in

wood frame and metal stud walls that are covered with drywall or paneling. The second is the long Insider which can be used in cinder block walls.



The Insider Pest Control System is designed to enhance your present integrated pest management program and can offer better control with a least-toxic approach to controlling insect pests.

A new product called the INSIDER™ offers a patented technique designed to "put the chemicals in the walls" where the insects live and breed. ❄



Gentrol™:

An Insect Growth Regulator with a food plant label.

Over three years ago, Zoecon Corp. announced, with much surprise and regret from the food processing industry, that they were discontinuing the production and labeling of the popular product Dianex™. This was an insect growth regulator (IGR) with methoprene as the active ingredient. Many food processing plants would fog Dianex throughout their facility on a quarterly basis. The effects were subtle at first, but quite effective against beetle and moths. Sanitarians were beginning to depend on methoprene's long, least-toxic effects when the announcement was made to remove the product in 1988.

Zoecon has announced that they are bringing back a new formulation called Gentrol™ (hydroprene). Gentrol will be available in Mid-October in a 16 ounce tip & pour container. This exciting new IGR has a label application on stored-product insects in a food area. It will not have the less restrictive general fogging

label, but rather a crack and crevice and spot treatment (2ft. x 2ft.) for food areas.

Mr. Joe Brarile, BCE, Regional Manager of Zoecon stated: "Finally...Zoecon is very excited to present a product that is perfect for the food industry. After all the regulatory holdouts this product will be ready to be distributed by mid-October of this year."

This is very good news for those pest management oriented individuals who believe that products like insect growth regulators are the future of our industry. It is conceivable that every sanitation program will utilize insect growth regulators, like Gentrol, in the future. ❄

Least Toxic Weed Control

Using heat to manipulate vegetation is an ancient horticultural technique. Native Americans used fire to keep brush out of grasslands for centuries, and farmers in the southern U.S. have flamed fields of cotton, sugarcane, and corn since 1852, when the first flaming equipment was patented. Use of flammers in agriculture declined in the 1950's when the romance with herbicides was going strong.

Today flaming is used to control weeds in row crops, orchards, railroad tracks, waterways, ditch banks, and other locations where herbicides may cause damage. It is ironic that removing weeds by flaming has never caught on with American gardeners, while in Europe it is a common weed control technique for residential gardens and urban parks.

How Flaming Works

Flaming utilizes a propane- or kerosene-fired torch, mounted on a long wand, to sear, not burn, the tops of young weeds. The flame produces temperatures of 2,000 degrees F. The weed wilts and dies.

Resource: Flame Engineering, Inc.
800/255-2469.

Reprinted in part from: Common Sense Pest Control VIII (3) Summer 1992. ❄

Fumigator's Tip

Tip #1

Experienced fumigators have two meth-

Least-toxic Ant Control

- Try to tolerate some ants—ants are beneficial as well as pestiferous.
- Use soapy water sprays or a soapy sponge to kill invading ants until you can undertake more permanent solutions.
- Store food and organic wastes in tight containers.
- Caulk cracks where ants may nest or enter the building.
- Use sorptive dusts in cracks, wall voids and similarly inaccessible places before caulking.
- Select the least-toxic poisons, such as insecticidal soap, boric acid and pyrethrum, for baits and sprays, before turning to more toxic compounds.



Source: *Common-Sense Pest Control*. (available from The Book Store)

ods to determine a successful fumigation:
1. Gas Concentrations 2. Bug-Chek
(Insect Bio-Assays).

Make a point to place several Bug-Cheks on the inside of a clear window on the ground floor. When the fumigator returns to take gas readings, he/she can directly see if the test insects are dead.



Capture some native insects from the building to be fumigated or purchase some Bug-Cheks (4 inch x 3 inch card that contains ten adult or larvae Confused flour beetles (*Tribolium confusum*). The cost is \$36.65 for ten cards from FSS. Have someone, not with the fumigation crew, distribute (hide) the cards throughout the building and/or commodity to be fumigated. Some large fumigations use as many as 200 Bug-Cheks to monitor efficacy.

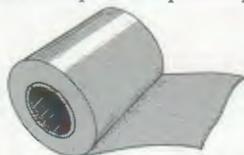


Gas concentrations can be determined with gas detection tubes (Draeger high range methyl bromide or high range phosphine tubes), with a Fumi-Scope for methyl bromide, and an Inter-Scan for VIKANE™ Gas concentration is important but the real question is "Are the bugs dead?"

Fumigator's Tip #2

Place a small piece of tape over the key-hole to the entrance doors.

So, you distributed memos prior to the fumigation. And you properly filled out dozens of warning signs and placed them in the most conspicuous places possible.



You contacted the police and fire departments. And yes, you even hired guards to watch the building during the fumigation.

People still manage to avoid these warnings and reach in their pockets, take out their keys, and unlock a door as they did so many times before.

Next time, tear off a small piece of sealing tape and cover the key hole. This may awaken the casual intruder enough to read and believe the warning signs.

INSECT SPOTLIGHT

The Larder Beetle

Dermestes lardarius L.

Description: Larder beetle adults are rather large (1/4 to 3/8 inch long). They are a dark brown to black beetle with distinctly clubbed antennae. The upper one-third of the hard wing covers are covered with a side, yellow band that has six dark spots on it. The underside of the body is covered with fine yellow hairs. The larvae are 7/16 to 1/2 inch long, brown, and very hairy. They have two distinctive curved, sharp spines on the upper side of the next to the last abdominal segment.

Biology: Adult larder beetles overwinter in cracks or crevices in outdoor locations and enter buildings in spring and early summer. These insects prefer to infest dead insects, dried museum specimens, stored tobacco, meats, as well as cheese, feathers, horns, skins, dried pet foods. They prefer undisturbed areas where an accumulation of animal protein can be found. They are particularly common in dead insects accumulations found in the catch pan beneath insect electrocutor units.



The larder beetle adult and larva, Dermestes lardarius

The female lays about 100 eggs during her lifetime. They hatch in 12 days and bore into the food material they are infesting. Recently this occurred in a bag of dog food that had an ALUMINUM

FOIL liner. The larvae leaves the food material and wanders just before the last molt and they bore into wood or other similar materials to pupate.

German Cockroach Pheromone

After three years of searching for the sex-attractant pheromone for the German Cockroach (*Blattella germanica*), a young researcher from Rutgers University named Dangsheng Liang presented a definitive explanation of the cockroach's delicate but persuasive communication to lure its mate.



This topic will be presented at this years Fumigants & Pheromone Technical Seminar in December in Indianapolis. Plan to attend and find out more about the German cockroach pheromone.

Dave's Soap Box

Vote!



Pull out a pen and mark the date November 3 on your calendar, if you haven't already. It is one of the most important dates this year. November 3 is election day. We have some very important decisions to make on who will run this country along with our state and local governments.

Apathy is a disease that this country needs to find a cure for (It starts with signing up to be eligible to vote and then studying the people on the ballot to be informed enough to pick the best people for the job). Casting an informed vote is a beginning to that cure for apathy.

There are many issues that confront our industry and society. I'm not here to tell you who to vote for, but to tell you to VOTE!

Vote For:

1. Freedom
2. Free Enterprise
3. Affordable Health Care
4. Economic Growth
5. Less Unemployment
6. A Clean Environment
7. The people who can lead us into the future with the best plan to protect, defend, and provide a strong democracy for America.



Malathion Update

Chemnova, Inc., has decided to defend the malathion dust formula-tion for grain protection.

Stored commodities (wheat, corn, sorghum, etc.) will continue to be able to be treated with this forty year old organophosphate. The popular brand named product Big 6 will be manufactured for grain protection. However, all liquid formulations (57% EC and 5lb.) will not be defended for future registration. The cost to defend the dust formula-tion of malathion alone will be over \$1,000,000 dollars (US).

All Liquid malathion products can continue to be used in accordance with its labels for at least one to two more years. The product will be phased out by attrition, due to no more liquid malathion being manufactured, instead of any recall or stop emergency.

It is interesting to note that many of the more popular stored-product insects, like Indianmeal moth and red flour beetles, have become highly resistant to malathion.

There have been reports from around the United States that some flour mills have been screening inbound wheat for malathion residues. This is in response to

Stored Product Protection (Worldwide)

Metal Phosphides (Phostoxin™) 50%	
Methyl Bromide 100%.....	15%
Grain Protectants (malathion, Reldan, Actellic).....	35%

a yet unpublished report by the government on the negative health effects from malathion.

New Warehouse

Fumigation Service & Supply, Inc. and Insects Limited, Inc. now have a new warehouse behind their sales office. Completed in early August, this warehouse will allow for more inventory and more responsive shipments of your orders.



Gentrol

Is now available from
Insects Limited, Inc.

Order today
1-800-992-1991



Insect Specimen

Dry Mounts

Twenty of the most popular stored-product insect pests are individually set in a 2" x 2" clear drymount.

Order Form

Yes, I would like to order a set of twenty (20) stored-product insect specimens.

Name _____

Company _____

Address _____

City _____

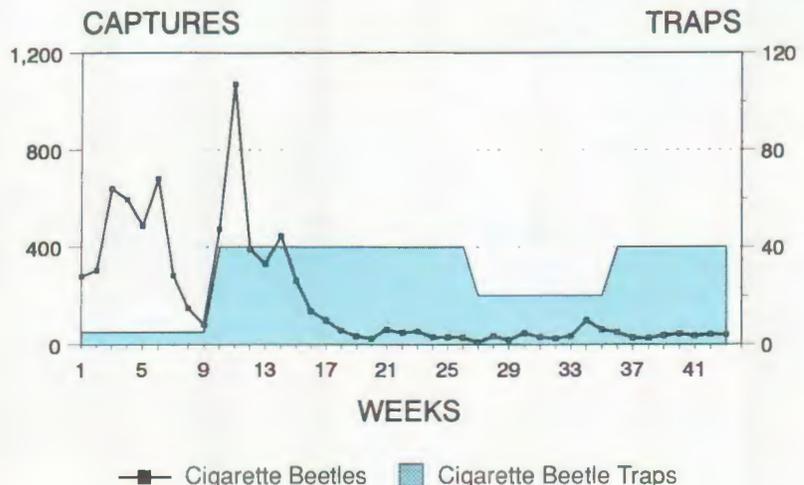
State _____ Zip _____

Please send me sets _____

Cost: \$87.00 per set plus \$3.50 shipping/handling

Payment enclosed Bill me

Stored Product Pheromone Monitoring in a Warehouse





Your Hosts for the 1992 Fumigants and Pheromones Technical Seminar: (L to R) David Mueller, June Beasley, Patrick Kelley, Mary Beth Mueller, John Mueller, Barbara Brookie, Cam Clawson, Chris Grissom, and Russell Edwards.

Your Host

I would like to offer a special invitation to join us in Indianapolis on December 14-16 for what promises to be an excellent exchange of information.

The theme for our eighth conference is: "We Study the Science To Practice the Art." This seminar will update professional pest managers in the grain, seed, food processing, pest management, and urban and industrial pest control indus-

**WE STUDY THE
SCIENCE
TO PRACTICE THE
Art**

tries on the use of new products, new techniques, recent university and government research, current regulatory actions, and new methods of controlling pests.

If you have an interest in participating this year in our Fumigants and Pheromones Technical Seminar, now is the time to send in your registration to secure your seating.

QUOTABLE QUOTES

"In order to integrate a pest management program, we need all of the tools available. Methyl bromide is one of those needed tools." Vern Walter, consultant, McAllen, TX.

"If God had meant for you to have Presidential elections, he would have given you candidates." Colin Smith, Rentokil, United Kingdom

"Perd'near ever corn stalk has three ears

on it this year." The answer to the question from a midwestern farmer about how his corn crop is doing this year.

"Part of the irony of environmentalism is questing solutions when you know you're part of the problem."

Diane Ackerman, Insect Love, *The New Yorker*.

THE NEWSLETTER

Fumigants & Pheromones is published by Fumigation Service & Supply, Inc. and Insects Limited, Inc. for the professional applicator. 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., P.O. Box 40641, Indianapolis, IN 46280.



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