

# FUMIGANTS AND PHEROMONES



By: Fumigation Service & Supply, Inc.  
 Insects Limited, Inc.  
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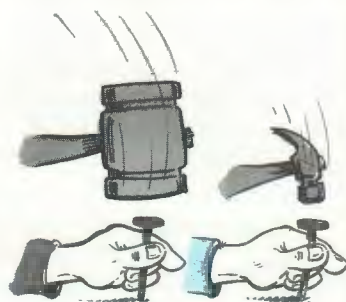
## 1988 FUMIGANTS & PHEROMONES TECHNICAL SEMINAR

### SEMINAR

*"In order to stay professional, we must stay current"*

The 1988 Fumigants & Pheromones Technical Seminar will be held December 8 & 9 at the University Place Conference Center on the campus of IUPUI in downtown Indianapolis.

This seminar will feature some of the finest speakers available from throughout the United States and Great Britain. It is designed to update persons in the grain industry, seed industry, food processing

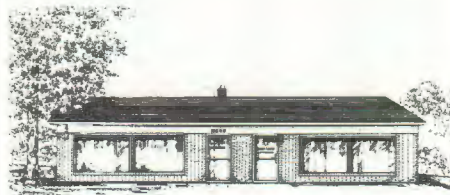


## OPTIONS & Strategies

industry, urban and industrial pest control industry and the professional pest manager on the subjects of fumigation and pheromones.

Enclosed is a program concerning this seminar. I hope you will take a moment

to review this informative technical seminar. We believe it is the best one of its kind available.



### MOVING DAY

FSS & IL moved into its own building after seven years at the old address. We leased a small 350 sq. ft. space for two employees in 1981. We added 550 sq. ft. across the hall in 1984 and moved into a 1200 sq. ft. office in 1986. Now in 1988 we purchased an existing building about a block away. The new address is:

**10540 Jessup Blvd  
 Indianapolis, IN 46280-1451**

The phone number and post office box number are the same: 1-317-846-5444 and 1-800-992-1991 and P.O. Box 40641.

Dave Mueller, owner of Fumigation Service & Supply, Inc. and Insects Limited, Inc., commented on the recent move:

"It is kind-of like living in an apartment and wanting your own house. I wanted our own place and we have grown to the point where we needed more room in the office and our own warehouse/ dock. Dad told me when I started out in business; 'Dave, you have to crawl before you walk and you have to walk before you run'. That was some great advice. I feel like after seven years in business that we are starting to walk."

## QUOTABLE QUOTES

"Everyone wants to win. The ones who win the most are the ones who expect to." Fred Akers, Purdue Football Coach

"Statistics are used the way a drunk uses a lamp post — for support, not illumination." Jim Valvano, basketball coach, NC State.

"We are trying a new experiment this year; we're trying to grow popcorn without water." Jim Vanness, Lil' Jimmies Popcorn Co., Tipton, IN.

"And to him who does his work with his whole heart and soul and life, I would say, persevere, even if the world call it doing evil, as it is most likely they will." Henry David Thoreau, *Walden*.

"Our published risk assessments will regulate the product better than the Regulator." Anita Schmidt, Review Manager, Special Review, United States E.P.A., Washington, D.C.

### ARTICLES IN THIS ISSUE

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## EPA ISSUES FINAL RULE ON PESTICIDE REGISTRATION FEES

EPA has published its final rule, pertaining to the collection of fees for registration activities, in the Federal Register on May 26, 1988 vol. 53, No. 102. The rule is effective with any application received or postmarked after June 27, 1988. The fee schedule is as follows:

New Chemical	\$184,500
New Biochemical or Microbial	64,000
New Use pattern	33,800
Experimental Use Permit	4,500
Old Chemical	4,000
Amendment 700	

Applications will not be accepted for processing until the required fees have been submitted.

Source: *Prentiss Pest-Asides, June 1988*

EDITOR'S Note: Surely this will have an immediate impact on the prices of all pesticides registered with the EPA. It will also eliminate many small chemical companies that cannot afford these excessive fees. It looks like the EPA is trying to make the chemical companies pay the tab. Does EPA stand for Eliminate Pesticides Altogether?



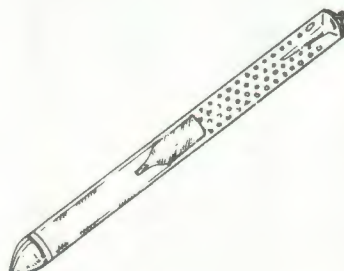
## FROM CANADA

Wendell Burkholder, Ph.D.

A world authority on pheromones talked at the Vancouver meeting. Wendell has patiently conducted basic research for the past 20 plus years, when the subject was not particularly popular, and brought it to industry while cooperating with them to make the system successful.



"THE RODENTS ARE COMING! THE RODENTS ARE COMING!"



## WHAT ARE IGR'S

Insect Growth Regulators are an exciting approach to bio-rational insect control. They were registered with the EPA for pest control in 1980. These special chemicals directly affect the insect's hormonal system which regulates growth, metamorphosis, and reproduction. Methoprene and Fenoxycarb are two commercially available compounds that mimic a natural juvenile hormone produced by insects. When the insect is ready to molt, this chemical must be absent in order for the insect to go to the next stage (ie. pupa or adult). By introducing this IGR, molting does not occur. The insect never becomes an adult or it will become sterile as an adult. IGR compounds are having a major impact on flea and cockroach control for the pest control industries. Dianex and a new grain protectant (ie. Reldan) could have a similar impact on the food processing and grain industry.

IGR's are a *bio-rational* insect control tool that should be considered for your "OPTIONS & STRATEGIES".

## IGR's on GRAIN

Diacon® (methoprene) recently received United States EPA registration (July 6, 1988) for use on stored grains. This is the first registration for Methoprene on stored grain in the world.

FSS is running tests and collecting data for Gustafson, Inc. this summer on this new approach to protecting grain. The results of these tests will be presented by Terry Pitts at this year's Fumigants & Pheromones Technical Seminar; Options & Strategies.



## VAPONA UPDATE

Effective August 1, 1988 Kenco Chemical Co., the supplier of *Industrial No Pest Strips*, was sold. The new owners are no longer going to produce the *Industrial No Pest Strip*. According to Dan Yunger, President of Benim International Corp.; "When the current 650 cartons are sold, there will no longer be any *Industrial No Pest Strips* available."

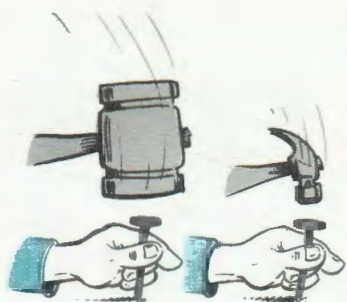
### Opinion

It seems that Shell saw the writing on the wall back in the late 1970's when it sold this product to Diamond Shamrock Company who in-turn sold the No Pest Strip to Texise who in-turn sold it to Kenco.

### More on Dichlorvos

Mr. George LaRocca, Product Manager #15, with the EPA in Washington recently stated that it looks like dichlorvos (Vapona) will get an extension on its October 30 deadline for new labeling. A January 1989 date was mentioned.

He also mentioned that the 48 hour aeration time would be relaxed, along with some of the stringent protective equipment requirements. It is important to note that Mr. LaRocca pointed out that the cancer statement (Delaney Clause) would remain as a requirement of the new labeling.



## OPTIONS & Strategies

### HE MET A CHALLENGE

*Keynote Speaker*



Wendell Roelofs, Ph.D. heard a challenge in 1972 by Dr. John Kennedy, President of the International Congress of Entomology. On July 9, 1988, Wendell Roelofs gave the closing lecture to entomologists from all over the world in Vancouver, B.C. He met this challenge with answers to some pretty difficult questions about insect pheromones and how they work. He presented his 75 minute talk with the flair of a storyteller who went on a long journey. Along the way he had to ask the correct question to go any further. The great masters would grant the storyteller the correct answer and he would continue further on his journey. The journey took almost two decades to complete.

Wendell Roelofs, Ph.D. is a 50 year old chemist (turned entomologist) who did his graduate work at Indiana University and his post doctorate studies at MIT.

He has developed into one of the most famous scientists that our discipline has seen in modern ages.

His common-sense, humor, enthusiasm, style, and skills will make one feel at ease. His scientific outlook and information transfer skills leave his peers in awe.

Wendell Roelofs is the Liberty Hyde Bailey Professor of Insect Biochemistry at Cornell University's New York State Agricultural Experiment Station in Geneva, NY. He has helped train the minds of some of the best scientists in the job market today. He has produced over 230 publications.

He commented in his opening remarks that "We don't need to come from large university entomology departments to make an impact in our disciplines. We are only limited by our own ability to advance."

Wendell began his story by flashing a smile to the crowd and saying: "Entomology has been berry, berry good to me!"

Dr. Roelofs' journey started on Broadway in New York City and took him to all corners of the world. At such places as New Zealand he met with some close relatives to his moth friends on Broadway. They led him to asking more questions of the masters and getting closer and closer to the end of his journey.

### THE CHALLENGE

The challenge that Dr. John Kennedy presented in 1972 was quite simple – *how do pheromones work on insects?* It is not the chemical that attracts the insect, it is the insect that causes the response to occur. It is a complex puzzle how these semiochemicals work to modify the behavior of an insect. But, oh, how they work.

In closing, Dr. Roelofs left the 3300 entomologists attending this 5 day conference a challenge to advance to tomorrow to solve those difficult questions. He met the challenge of Dr. Kennedy in 1972.

Finally, after Wendell Roelofs completed his remarks to close the XVIII Congress of Entomology in Vancouver, Canada, I overheard the lady sitting next to me say to her husband; "He was pretty good!"

*Dr. Wendell Roelofs will be the keynote speaker at this year's Fumigants & Pheromones Technical Seminar.*

### FEATURED LECTURER



### PHEROMONE CHEMISTRY A NOBEL PRIZE WINNER'S PERSPECTIVE

Herbert C. Brown H.C. Brown; R.B. Wetherill Laboratories of Chemistry Purdue University

Professor Herbert C. Brown was born in London, England on May 22, 1912. He came to this country at an early age and received his education in Chicago, received the B.S. degree in 1936 and the Ph.D. degree in 1938, both from the University of Chicago. He presently holds the title of Wetherill Research Professor Emeritus at Purdue University. Professor Brown's awards and honors are numerous. His most recent awards are the Nobel Prize for 1979, the Priestley Medal for 1981, the Perkin Medal for 1982, the A.I.C. Gold medal for 1985 (the "Triple Crown" of American chemistry), and the National Academy of Sciences Award in Chemical Sciences for 1987.

Professor Brown is perhaps best known for his explorations of the role of boron in organic chemistry. He discovered that the simplest compound of boron and hydrogen, diborane, adds with remarkable ease to unsaturated organic molecules to give organoboranes. With organoboranes readily available for the first time, he undertook to explore their chemistry. This led to new synthetic routes to produce economically such things as pheromones and medical steroids.

It is evident that Professor H.C. Brown has discovered a new continent in chemistry, a continent that will take many years of enthusiastic research effort to explore in detail and to exploit for the good of mankind. One current major effort is the application of borane chemistry to the economical synthesis of *pure* pheromones.

**Editor's Note:** We look forward to hearing Dr. Brown's comments at the Fumigants & Pheromones Seminar in December. "In order to stay professional, we must stay current."

## TRAINING, TRAINING...

If you have a need for updated training for your group or company, David Mueller can tailor a talk or program to your needs. David has given hundreds of educational, up-to-date, professional talks to groups in the United States, Canada, and Great Britain during the past fifteen years. Each presentation is tailored to the particular needs of an individual group. Here is a partial list of some of those groups and companies to whom David Mueller has or will present topics:

### Current Presentations

Kentucky Pest Control Short Course, October 16-18, 1988, Lexington, KY; Pheromones

National Pest Control Association, Nashville, TN, November 1, 1988; Safety

Fumigants & Pheromones Technical Seminar, Indianapolis, December 8 & 9, 1988; Pheromones

Ontario Pest Control Conference, Toronto, Canada, February, 1989; Safety

Commercial Pesticide Applicator Training, West Lafayette, IN, March 1, 1989; ULV Application, Fumigation

### Company Tailored Presentations (1/2 day and Full Day)

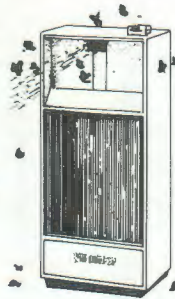
- Frito Lay, 1/2 day employee training, (four people), 1987, Indianapolis, Insect Identification, Pheromone, Fumigants
- Quaker Oats Company, Q.A. and Sanitation Conference, 1984, 1988
- Weaver Popcorn Company, GMP/Sanitation Conference, 1988
- PCO Services, Food for Thought, Toronto, 1984
- COPESAN Services, Technical Seminar, 1984 & 1986
- Behimer & Kissner, Grain Fumigation Program 1983
- Eli Lilly & Company Technical Training Program, 1983 & 1986; Fumigation & Pheromones
- Greenlon Fumigation Training, 1985
- Wil-Kil Pest Control Co., West Bend, WI, 1988, Fumigation Update
- Presto-X, Company, Omaha, 1988
- A.E. Staley Mfg. Co., Lafayette, Indiana, 1988
- Rentokil, East Grinstead, England, 1985
- Biological Control Systems, Cardiff, Wales, 1985

For a more complete description of available training programs, formats, available dates, and fees, contact David Mueller, RPE at 1-800-992-1991.

## REPLACEMENT For VAPONA STRIPS

...in Grain Bins

An automatic pyrethrum dispenser is replacing Vapona strips as a head space treatment in grain bins to protect stored grain against the invasion of insects. This fully automated fogging system releases a small amount of 2% pyrethrin every seven-and-a-half minutes. It runs on a single 9 volt battery. Each can of pyrethrin contains 7.50 oz. and lasts approximately 32 days or more. One unit will effectively treat up to 6,000 cubic feet.



## NEW CATALOG

The 1988-1989 PRODUCT GUIDE is available from Fumigation Service & Supply, Inc. and Insects Limited, Inc. This 28 page catalog features a new section devoted to *bio-rational pest control* along with over 120 new products listed. This year's product guide contains a section on stored-product insect identification.

We have increased our inventories in 1988 so that we can ship over 90% of our orders the same day they are placed. We want to offer "COMPETITIVE PRICING AND UNBEATABLE SERVICE".



✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂

YES  Please send me the New 1988-1989 Product Guide.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

St \_\_\_\_\_ Zip \_\_\_\_\_

Telephone Number \_\_\_\_\_



Entomology Contest - (l to r) Dottie J. Clements, a student at the University of Kentucky, Joe J. Demark (Purdue), placed second; and Neal H. Haskell (Purdue), won the contest. David K. Mueller, RPE presented the cash awards.

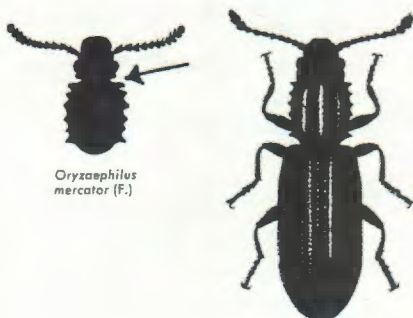
## RPE

The Registry of Professional Entomologists, Ohio Valley Chapter, sponsored the third Student Paper Competition on April 14 at Anderson University. This student forum is designed to recognize student excellence by giving college students the opportunity to present a paper before their peers and promote professionalism in Entomology. This is the third forum that Insects Limited, Inc. has donated the prize money for the top three Masters of Science Awards. At this meeting, David K. Mueller, RPE was elected president of the Ohio Valley Chapter for a second term.

Several of the winners will be presenting papers at this year's Fumigants & Pheromones Technical Seminar.

## IL LICENSE PLATE





*Oryzaephilus mercator* (F.)

## INSECT SPOTLIGHT

### Sawtoothed & Merchant Grain Beetles

The sawtoothed grain beetle, *Oryzaephilus surinamensis* (L.), and the merchant grain beetle, *Oryzaephilus mercator* (Fauvel), are cosmopolitan pests of stored grain, cereal products, dried fruit, oilseeds, and other processed foods. Mueller listed the sawtoothed grain beetle as the most frequently found insect in *processed food* in the U.S. in 1980.

R.T. Cotton tells us that Linne received specimens of this insect back in 1767 from Surinam and for that reason gave it the scientific name *surinamensis*. Its common name comes from the peculiar projections on each side of the thorax (second segment). There are 6 saw-like projections on each lateral margin of the prothorax. Apparently, these sawteeth serve a purpose to this food pest during the pupa stage. They secrete a foul tasting substance which is not palatable to its predators during this 'defenseless' quiescent developmental stage (egg, larva, pupa, adult).

The adult beetles may live for more than 3 years, although the average life span is 6 to 10 months. Development from egg to adult may take 3 to 4 weeks in the summer.

Since these beetles are very flat, and only 1/10th of an inch long, they can hide in cracks and crevices. Because of their small size, they have the ability to get into 'almost completely' sealed packaging materials. It is important to note that the larva and the adult stages of these insects can run. They have ambulatory legs that help them escape. If you put STGB or MGB larvae in the middle of a piece of paper, it can get to the edge and under the paper before you can reach down to pick it up (ie. cockroach).

Dr. Chris Christensen states in the *Technician's Handbook*, "Sanitation is very important in all grain storage and processing facilities to keep potential breeding sites to a minimum. Heavily infested materials may need to be fumigated to achieve control with these insects. The first step in effective control is to find the source of the infestation. Infested stored products should be destroyed, discarded, frozen, or sterilized with heat."

### Are these really similar insects?

Differences between the sawtoothed grain beetle and the merchant grain beetle:

1. STGB develop in a higher temperature range than the MGB.
2. STGB develop faster than the MGB.
3. STGB prefer grain and grain based products and MGB prefers nuts and oilseeds.
4. STGB can develop at low humidity, MGB cannot.
5. STGB can lay more eggs than MGB.
6. STGB have smaller eyes and have a more 'heartshaped' head.
7. MGB have a more triangular shaped head (see illustration).

### Bio-Rational Control

- To control small lots of foods infested or suspected of being infested, treat with heat 140 degrees (F) for 20 minutes, or with cold for 25 hours at 32 degrees (F) or one hour at 5 degrees (F).

Sources: Pests of Stored Grain and Grain Products, Cotton, 1956  
Howe, 1956  
Technician's Handbook, Christensen, 1983  
Pest Management, 1988  
Beetles, Arbogast, 1986

## BIO-RATIONAL INSECT CONTROL

Insect pests cause heavy losses of stored grain, particularly in tropical countries. Although foodgrains are commonly protected by insecticides or fumigation, such practices pose health risks unless the chemicals used are safe to mammals. Toxic residues and the selection of insecticide-resistant pest strains are additional problems associated with the use of insecticides in grain protection. Therefore, plant derivatives that traditionally have been used as grain protectants in developing countries merit re-evaluation.

**Third world countries have used certain plant derivatives to repel and control insects in food and grains since the Dark Ages. With the demise of organic pesticides, these products are getting a closer look.**

Here is a list of those plant derivatives:

#### Neem (*Azadirachta indica*)

Neem leaves and cakes; Against insects that attack wheat Insect repellent and antifeedant. Neem seed powder (1 -2%) mixed with wheat grain provided protection from insect pests for 9-12 months. (Jotwani & Sircar 1965).

Water and ethanol extracts of leaves and seeds of neem repelled the red flour beetle, the Khapra beetle, and the lesser grain borer. (Jilani & Malik 1973)

Neem compounds are too complex to be synthesized for practical purposes.

#### Turmeric (*Curcuma longa*)

Turmeric powder is commonly mixed in India and Pakistan with rice for protection against insects. Turmeric powder repelled the granary weevil and lesser grain borer and red flour beetles.

#### Sweetflag (*Acorus calamus*)

The root of this plant is toxic to the rice weevil, long-headed flour beetle and red flour beetle. Sweetflag oil completely stopped development of lesser grain borer, rice weevil, and the Angoumois grain moth. The active compound in sweetflag is ararone.

"Margosan-O" is a commercial neem-based insecticide. At concentrations of 1000 ppm, this plant derivative insecticide was the most repellent product tested, with neem oil, turmeric oil, and sweetflag oil following in order. No adult grain insects reproduced in rice treated with turmeric oil or Margosan-O and the red flour beetles that were fed treated wheat produced significantly fewer larvae, pupae, and adults than in the control.

Source: *J. Economic Entomology*, August 1988

G. Jilani, et. al., Manila, Philippines

**Editor's Note:** It seems there is much to be learned or re-learned from some of our developing countries throughout the world when it comes to preventative insect control on stored-products. "The nature of the chemicals employed in the future must be more selective to the target pest and also environmentally safe."

# PEST MANAGEMENT for the POPCORN & SEED INDUSTRY

**Purpose:** To establish an on-going, year-round pest management program to eliminate any damage incurred by insects, rodents, or birds. This would include both physical damage to the popcorn and the defacing of the packaging that contains the popcorn.

## History of the problems:

The popcorn and seed industry in the United States is rapidly advancing in the manipulation of the genetic structure of plants in order to create varieties that will grow better and produce more. However, with all of this modern technology, most seed companies are years behind in the protection of their stored commodities from stored product insect pests and rodents after it has been harvested, compared to other processed food disciplines. **It is easier and more economical to save a pound of popcorn and seed than it is to grow a pound to replace it.**

## I. Monitoring and Inspection

- A. Pheromone traps
  - 1. Indian meal moth traps
  - 2. Angoumois grain moth traps
  - 3. Grain Probes in bulk bins
  - 4. Recordkeeping is essential
  - 5. Replacement of traps and lures
- B. Glue boards & Ketch-alls/rodent inspection
  - 1. Dock and loading areas
  - 2. Critical points in the operation
- C. Visual Inspection
  - 1. Insects
    - a. Inbound packaging materials
    - b. Webbing from moths
  - 2. Rodents
    - a. Black light inspections / inbound
    - b. Fecal pellets
  - 3. Birds
    - a. Nests
    - b. Feces

## II. Building Pests Out

- A. Insects
- B. Rodents
- C. Birds

## III. Non-Chemical Control

- A. Cold Storage
  - 1. 50 degrees(F) with 50% RH
  - 2. Insect activity in cold temperatures
    - a. Reduces activity
    - b. No reproduction
- B. Anticipation of winter storage/fumigate before winter.
- C. Mice in cold storage
  - 1. Insulation, be aware

- D. Lighting / placement is critical
  - 1. Indoor
  - 2. Outdoors
- E. Beneficial Insects (non-food areas)

## IV. Chemical Control of Bulk Seed Storage

- A. Timed pyrethrin dispensers
  - \* (replacing vapona strips)
  - 1. 32-day aerosol cans of 2% natural pyrethrin
  - 2. Top dress with Actellic, Reldan, or Dipel
- B. Pheromone Traps
  - 1. Moth trap / every fourth bin (outside the bins)
  - 2. Grain probes in the bins (one per 5,000 bushel)
  - 3. Check every two weeks / July - November
  - 4. Critical check before processing
- C. Routine fumigation of bulk bins
  - 1. Phostoxin Tablets / 45 - 60 tablets / 1000 cu. ft.
  - 2. Phostoxin Pellets / 165 - 300 pellets / 1000 cu. ft.
  - 3. New Degesch Mini-Ropes (1 per 4,000 cu. ft.)
    - \* Retains the dust in the commodity
- D. Empty Bin Treatment
  - 1. Beneficial Insects
  - 2. Chemical residual
    - a. Methoxychlor
    - b. Reldan
  - 3. Fumigation; Chloropicrin
- E. Perimeter Control
  - 1. Weeds
  - 2. Bare ground herbicides
  - 3. Gravel or blacktop
  - 4. Methoxychlor or Reldan
    - a. Where to spray / 1' up side & 2' away from bin
    - b. How to use / see label instructions
    - c. How often to spray / twice a summer
  - 5. Spillage clean-up / important

## V. Chemical Control in Seed Warehouses and Processing Areas

- A. ULD Treatments (Ultra Low Dosage); \* replace vapon
  - 1. Check pheromone traps / once per week and record catch
  - 2. Minor threshold: if total catch exceeds 10 moths / week
    - a. Apply remotely if possible (timer)
    - b. Particle size; 15 - 30 micron

- 3. 3% Pyrethrin
- 4. Types of ULD equipment; Micro-Gen
- 5. Safety equipment to use
  - a. Proper respirators
  - b. Draeger detection tubes before re-entry

## B. Fumigation with Metal Phosphide (Phostoxin)

- 1. Trained, certified, and experienced
- 2. Safety
- 3. Proper storage / cool, dry, well-ventilated, locked
- 4. Cold Temperature Fumigation
  - a. Magnesium Phosphide
    - 1. Degesch Fumi-Strip
    - 2. Degesch Fumi-Cel
- 5. Inert gases
- 6. Aerate to safe level
- 7. Proper safety equipment available
- 8. Draeger detection equipment

## VI. Rodent Control Program

- A. Outdoor
  - 1. Bait stations / Tamper proof
  - 2. Rodenticide
    - a. Grain based / Talon weatherbloc, Vengence
    - b. Liquid bait, summer
    - c. Safety
  - 3. Building them out
- B. Outdoor Perimeter Control
  - 1. Weed abatement
  - 2. Bait stations, every 60'
  - 3. Ditches and standing water
  - 4. Rats need water every day
  - 5. Gravel 24" perimeter
  - 6. All doors should fit tight

## VII. Bird Control

- A. Co-operative venture with surrounding groups.
  - 1. City
  - 2. Grain companies
- B. Farm machinery sheds
- C. Warehouses
  - 1. Close doors
  - 2. Plastic strips
  - 3. Rid-A-Bird perches (restricted use pesticide)
  - 4. Avicides
  - 5. Bird netting
  - 6. Sticky Bird Repellent

This is a blueprint for a complete pest management program for the seed and popcorn industry.

Submitted by: David K. Mueller, RPE ©1988

Vote!



## DAVE'S SOAPBOX

... for what it's worth

### 1968

Twenty years ago this country was in the middle of a civil war that was only overshadowed by the North/South War of the 1860's. This civil war was not a war about slavery, but of a feeling of dishonesty, useless dying, and civil disobedience.

Richard Nixon and Spiro Agnew had just won a nomination in Chicago. President Johnson had decided that the war in Vietnam had taken its toll on him and his family and decided not to run for a third term.

Neil Armstrong and his crew had just landed on the moon. Students were in the streets fighting against students, the National Guard, and the "establishment" (ie. South Korea, 1988). Music filled the air from Woodstock to Main Street. People were talking about Vietnam, Cambodia, voting, and things like: *Silent Majority, Peace, Black Panthers, Civil Rights, Martin Luther King, Jr., the Kennedys and Hippies.*

People were also starting to talk about the *environment*. Earth Days and the environmental movement were being conceived. Rachel Carson's *Silent Spring* was being read, and people all over the world were asking questions about pesticides and their usage.

### 1988.

Things sure have changed in the past twenty years!

We now talk about America instead of Vietnam or Cambodia. The students at our universities dance to a different beat; **"Don't Worry, Be Happy."**

The E.P.A. has matured and the message about the protection of the environment is louder than ever:

*Hazardous waste cleanup, Super Fund, Acid Rain, Oconegency, Ground Water, and Pesticides.*

The space race has run out of gas and funding. The exploration of the heavens will be replaced with the potential of Star Wars (SDI).

### The Moral

Pull out a pen and mark the date November 8 on your calendar. It is one of the most important dates this year. November 8 is election day. We have some very important decisions to make on who will run this country along with our state and local governments. Twenty years ago this country was in trouble. Don't let the glare from your 'Wing-tip' shoes blind you into forgetting the problems that this country went through with Jimmy Carter, Richard Nixon and Spiro Agnew. 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. Economic Growth
4. A Clean Environment
5. No Vietnams
6. The people who can lead us into the 1990's with the best plan to protect, defend, and provide a strong *democracy* for America.

*W. K. Mueller*



### Letter Opener

In reference to your Issue 16 Quotable Quote From Austin Frishman; "Someday, you in the Pest Control industry, will have to show that there is an existing pest problem before you will be allowed to apply pesticides."

"Austin's predictions are late. The day that Austin referred to in his quote arrived some time ago in California.

Dave, you are rendering a good service to this industry by putting out Fumigants & Pheromones Newsletter. I always read your publication because it contains some good information. Keep up the good work. Thanks." Dr. Hamif Gulmahamad, Terminex, California.

*Austin's comments were made at an Eli Lilly Pest Control Conference in 1983. Thanks for the kind words.*



### June Beasley

June Beasley began working for Fumigation Service & Supply, Inc. in 1984. She is the Office Manager with a wide range of responsibilities. June plays an active role in organizing our Fumigants & Pheromones Technical Seminars and will be handling registration at this year's conference.

June and her husband Jack look forward, every year, to their vacations to Fripp Island, SC and Sante Fe, NM. It is especially enjoyable when they are joined by their three children and three young grandchildren. She also manages to find time to run, attend Indianapolis Colts games, and cheer for the Purdue Boilermakers. June always lends a smile to employees, customers, and visitors.

"If you ever have a question concerning the status of your account, please give me a call. I'll also be taking your calls when it's time for the Fumigants & Pheromones Technical Seminar."



### Barbara Brookie

Chances are, if you have called FSS or IL during the past year, Barbara Brookie answered your call. Barbara started with us part-time during the summer of 1987. In addition to answering the phone, she also does all our invoicing.

A life-time Carmel, Indiana resident, Barbara is married to Stan, has three grown sons and five grandchildren, is a gourmet cook, and sings in the church choir. She exercises by walking three miles most mornings at 6 a.m.

Barbara is a conscientious worker with a terrific sense of humor and is always "ready to help".

## SUPPORT DUCKS UNLIMITED



In 1988, 1 out of 6 ducks in North America will be raised on a Ducks Unlimited project. Support Ducks Unlimited and help preserve precious wetlands habitat. D.U.; The Leader in Wetlands Conservation since 1934.

### Good Practices in Pest Control Include:

- \*1. Inspection of premises
  - \*2. Identification of pests, pest damage, or potential for pest infestation
  - \*3. Determination of the extent of the pest problem.
  4. Treatment as appropriate
  - \*5. Evaluation of treatment
- \*Pheromone traps can play an important role in each of these steps, especially #1 & #5.

Whether you are using the 'big hammer or the small hammer', these are the five steps necessary to control any pest problem.

### WE MOVED

10540 Jessup Blvd.  
Indianapolis, IN 46280-1451, USA  
1-800-992-1991

## NEWSLETTER

Fumigants & Pheromones is published by Fumigation Service & Supply, Inc. and Insects Limited, Inc. for the professional pesticide 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 that 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 (317) 846-5444.

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