Fumigants & Pheromones

Issue 58
Winter
2001

Routing:

A Newsletter for the Insect Control & Pest Management Industry

Those Amazing Mice...

Mice are prolific breeders: Indoors, mice breed year round. A female mouse can be sexually mature 1 1/2 months after birth, can produce 6 babies in each litter, and can have as many as 10 litters in a year. That's 60 new mice just from one pregnant female. If you assume that half of her offspring are also females that will each be producing 10 litters, you can see what you're up against.

Mice have extraordinary physical abilities: They can jump to the floor from a height of 8 feet. They can run up almost any vertical surface if it is rough. They have excellent balance. If they do fall, they land on their feet. They can climb and run along pipes, cables, and electrical lines. They can even travel for a considerable distance upside down. They can swim. They can adapt to almost any kind of environmental conditions, even surviving for generations in a frozen meat locker. Their small body size allows them to easily stow away and be transported to new sites. They can squeeze through a slot-like opening that is little more than 1/4 inch high. These capabilities allow mice to easily move into a building and then move from floor to floor. You can see why it's hard to completely mouseproof a building.

Mice are rarely restricted by food or water. Mice will feed on a wide variety of food, so they're not limited by a particular food source. They don't need very much food to survive. A mouse eats an average of 1/10 ounce of dry food a day. Mice are nibblers, feeding 20 or more times a night at multiple sites. This feeding habit makes it difficult to kill them. When a water supply is not readily available, mice can survive from the moisture in their food.

Source: techletter November 12, 2000.

That's Amazing!

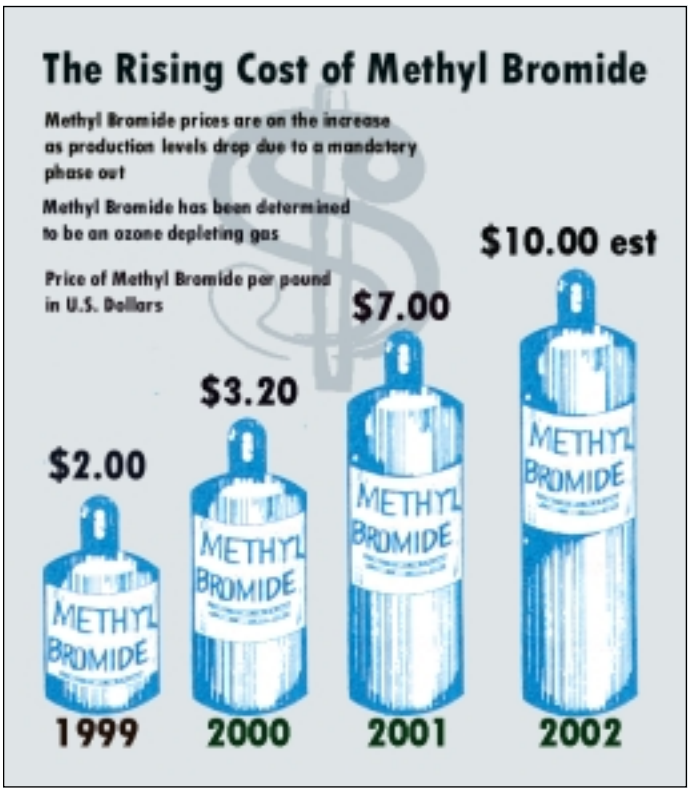
IN THIS ISSUE:

Methyl Bromide Phase Out

2001 is the year when the phase out of methyl bromide will start to take effect in the United States. Many people will ask why is this happening and what can be done to change it.

A 50% phase out of the fumigant methyl bromide took effect on January 1, 2001. This now becomes very confusing to who will get to buy this useful structural and soil fumigant. Methyl bromide has been determined by atmospheric scientists to cause the depletion of ozone in earth's upper atmosphere (Stratosphere). The bromine molecules detach an oxygen atom from O_3 to cause free radicals. Ozone is very useful in shielding the earth from harmful ultraviolet light. Too much ultraviolet radiation can cause the balance in the earth to be changed very slightly. The effects of too much ultraviolet light is: increased skin cancer, eye damage in humans and gradual changes in plant and animal life that could eventually upset the balance of nature. The increased amount of UVb along with carbon dioxide can also add to the warming of the earth's surface. The past decade has recorded six of the warmest years in the past hundred.

Hundreds of scientists from around the world have been working to determine what can be done to help slow and eventually reverse these threatening effects. The first thing that was identified was that chlorine in refrigerants like CFC11 or Freon® was affecting the ozone layer around the earth. Many people remember that Freon refrigerants were removed from cars and refrigerators. CFC was phased out in developing countries in 1995 by an international treaty called the Montreal Protocol. Here, over 160 countries joined together to pledge their support to eliminate the threat of ozone depleting substances.



These same scientists discovered that bromine was a serious ozone depleting substance with 50 times more destructive potential of destroying ozone as CFC11. Even though the total tonnage of methyl bromide used compared to Freon was small, it still was listed under the Montreal Protocol as a chemical to be phased out.

The phase out schedule was determined to be two tier: Developed countries like the USA, Europe, Japan, Australia, and New Zealand were asked to phase out by the year 2005. They were also asked to assist the developing countries (countries with annual per capita incomes of less than US$3400) who phase-out by 2015. The Montreal Protocol would distribute these funds to countries that show an interest in an accelerated phasing out of methyl bromide. Over 100 projects have been proposed and implemented under the watch of the United Nations and its implementing organizations.

MEETING CALENDAR

27 February, 2001
Insect Identification Workshop
Insects Limited, Inc.
Westfield, IN USA
(1) 317 896-9300

20-22 March, 2001
5th Fumigants & Pheromones International Conference and Workshop
Thessaloniki, Greece
(1) 317 896-9300

12-23 May, 2001
Association of Operative Millers
Louisville, KY USA
(1) 913 338 3377

July 22-26, 2002
8th International Working Conference on Stored Product Protection
The University of York, York, UK
Further information: Paul Cogan +44 (0) 1904 4681 or iwcspp@icscs.co.uk

Dave's Soapbox

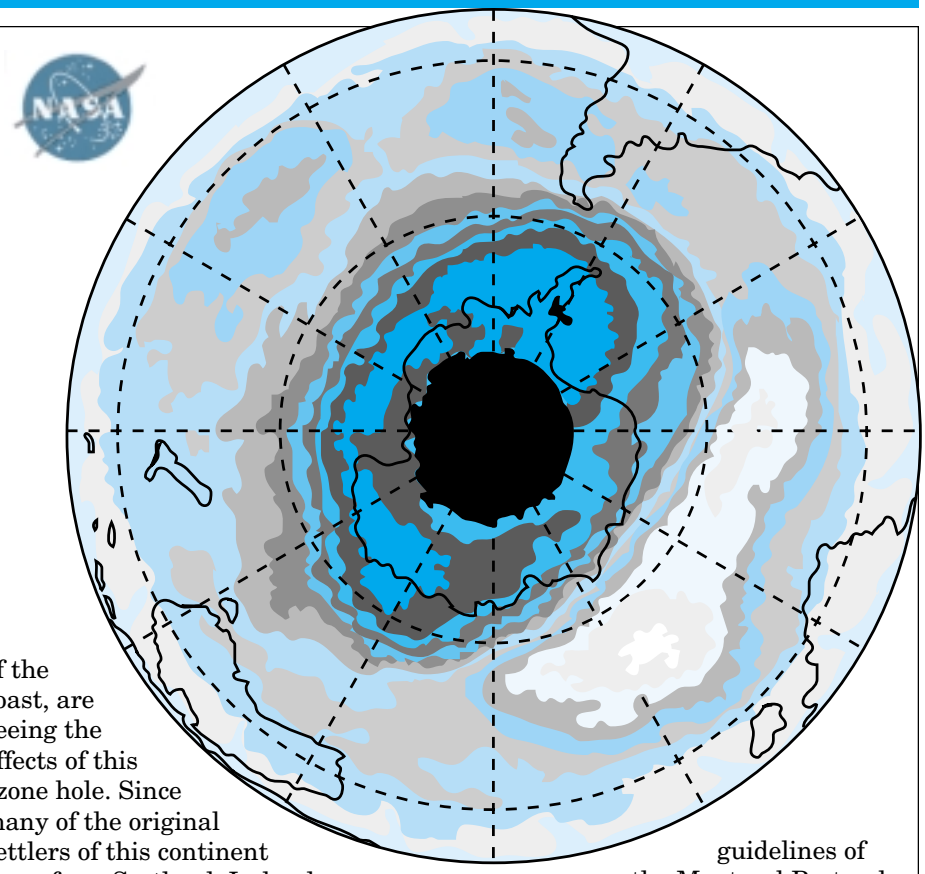
Focus on the Hole

As the next years get frustrating when all quotas of methyl bromide (MB) are gone by October, people will start getting desperate when an unscheduled structural fumigation is badly needed and there is no MB available, and the price of MB increases to over $15.00/lb. Then it will be important to stop and ask ***why*** we are doing this and to focus on the hole in the earth's ozone layer.

In September 2000, the ozone hole in the southern hemisphere was at an all time record in size and depth. As you can see in the diagram it covers an area bigger than the United States and for the first time it is over the city of Rio Gallegoes in southern Argentina. This means that anyone going outdoors in this region has no protection against the sun's damaging UVb light. As Dr. Jonathon Banks of Australia stated: "The people in southern Argentina have a hole above them that goes straight to the sun."

At the recent controlled Atmospheres and Fumigation Conference (CAF) in Fresno in October, Mr. E. Villa of Fugran Fumigation Company in Argentina stated that he was outdoors working in the yard for a day prior to coming to the conference. He showed the people at the table the skin on his sunburned arms. Mr. Villa is a dark complected man who is used to the strong sun in Argentina. He stated: "I know the ozone hole is real" as he showed his peeling arms.

Countries, like Australia, where 90% of the population is within 20 miles of the coast, are seeing the effects of this ozone hole. Since many of the original settlers of this continent came from Scotland, Ireland, and other northern countries, their skin is not prepared for the sun's forces. Skin cancer is a very serious health risk in Australia and New Zealand. Children are not allowed out during school recesses unless they wear a full covering hat and/or sunscreen.



Medical doctors say that for every one percent decrease in the ozone layer, there is a two percent increase in human health effect. Imagine if there is 100% decrease in the ozone layer.

There is some good news to this story. This year the ozone hole closed earlier than ever before. Atmospheric scientists explained this by the fact that the southern hemisphere was unusually warm this year and the frozen skies over Antarctica were not ideal for a prolonged ozone hole. The accumulation of chlorine in the stratosphere has leveled off and the ozone layer is starting to show signs of recovery. Recovery is possible by 2050 if we stay the course and follow the guidelines of the Montreal Protocol. This will prevent future generations from having to suffer from something their parents caused in the late twentieth century.

The other good news to this story is that fumigators from all over the world are coming together to discuss the alternatives to methyl bromide. These conferences and workshops are allowing the exchange of useful information. The result of this will be an improved industry of problem solvers that can tackle tough problems with reasonable solutions.

Finally, when things get a little crazy in the coming years, maybe we should stop and review our *reasons for phasing out of methyl bromide.* And then **focus on the hole**, the ozone hole that protects the Earth from harmful radiation from the sun.

D. K. Mueller

SPEAKERS AND PROGRAM:

(Simultaneous translated in Greek and English)

Organized by:

Insects Limited INCORPORATED

AGRO SPE COM L.T.D.

Sponsors:

CYTEC BASF

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DEGESCH

WORLD GRAIN

Pest Control

INTERNATIONAL PEST CONTROL

DIAMANTOUROS BROS Ltd
Grain Trading Representative of Cargill in Greece

SOYA HELLAS

Papaoikonomou Agrochemicals AVEE

DAY ONE

Athan Sotiroudas, *President, AgroSpeCom*
Mr. Sotiroudas has been working in grain and stored product inspection in Greece for over 40 years. Developing modern and technical methods to protect food has been his profession.

8:30-8:45 ***Welcome*** *(Greek)*

David K. Mueller and Billy Sotiroudas, *Organizers*

8:45-9:10 ***Introductions Conference Theme: Training for the Future***

Dr. Tom Bachelor, *Opening Speaker*

Dr. Bachelor is a policy-maker for the European Commission based in Brussels where he spearheads international policy development and improved action on ozone depleting substances including methyl bromide. For the past three years, Tom has served as Co-Chair of the United Nations Environment Programme (UNEP) Methyl Bromide Technical Options Committee (MBTOC), a group of 35 experts that writes technical reports about methyl bromide alternatives for governments of the Montreal Protocol. Prior to his position in Brussels, Tom was a scientist in New Zealand developing quarantine treatments based on methyl bromide and later developing non-chemical alternatives. He has also worked for the New Zealand fruit industry and the Australian government improving growers' exports. Tom recently compiled "Case Studies on Alternatives to Methyl Bromide" for UNEP which demonstrates methyl bromide replacement from a farmer perspective. He has attended Protocol meetings since 1992 and has therefore been closely involved in the international negotiations for the phase out of many ozone depleting substances. Tom's knowledge of the ozone layer together with his intelligent negotiation skills make him an international expert on methyl bromide and its future.

9:15-10:00 ***The Future of Methyl Bromide***

10:00-10:30 Break *(Sponsored by Dow AgriSciences)*

David K. Mueller, *President of Insects Limited, Inc., Indianapolis, IN USA.*

10:30-11:00 ***Alternatives to Methyl Bromide in Storage***

Dr. Christoph Reichmuth, *Federal Biological Research Centre for Agriculture and Forestry, Institute for Stored-Product Protection, Berlin, Germany.*

11:00-11:30 ***Carbon Dioxide Under High Pressure to Control Pests***

11:30-12:00 Break

Professor Despoina Vasiliadou, *Agricultural University of Thessaloniki, Greece.*

12:00-12:30 ***Modern Approach of Food Safety through the New European and Greek Standards***

Phillip Nickson, *Technical Manager, Uncle Toby's, Victoria, Australia.*

12:30-13:15 ***Pest Management in a Food Processing Plant***

13:15-14:15 Lunch
(Sponsored by Degesch / Detia GmbH)

Dr. Robert Corrigan, *RMC Pest Management Consulting, Richmond, IN USA.*

14:15-15:00 ***The Scientific Guide to Inspections***

15:00-15:30 Break

Professor D. Stamopoulos, *Agricultural University of Thessaloniki, Greece.*

15:30-16:15 ***Methyl Bromide: Current Status, Imminent Ban and Alternatives***

Brian McSwigan, *Global Phosphine Manager, Cytec Industries, Inc., West Paterson, NJ USA.*

16:15-17:00 ***ECO_2FUME: A New Cylinderized Phosphine Fumigant***

EVENING EVENTS:

Mediterranean Plaza Hotel
Sponsored by Cytec Industries, Inc.
Cocktails—19:00
Dinner—19:30

DAY TWO:

Paul Fields, Ph.D., Burkholder Award Winner shown with test insects used to test alternatives to Methyl Bromide on a ship in Toronto.

Dr. Paul Fields, *Research Scientist, Agriculture and Agri-Food Canada, Winnipeg, Manitoba, Canada; Since 1988, Dr. Fields has been working as a Research Scientist at Canada's federal grain research laboratory on the eco-physiology of stored product insects. There are three main areas to his research program: extreme temperatures, natural products, and insect behaviour. Paul is the recipient of the 2000 Wendell E. Burkholder Award, from Insects Limited, Inc., for his innovative work on extreme temperatures and alternatives to methyl bromide.*

9:00-9:30 ***Wendell E. Burkholder Award Lecture on Stored Product Protection***

Robert Ryan, *BOC / CYTEC, Sydney, Australia.*

9:30-10:00 ***Case Studies from the Real World of Fumigation***

10:00-10:30 Break
(Dow AgriSciences)

Dr. Jeffery Welker, *Vikane Global Manager, Dow AgriSciences, Indianapolis, IN USA.*

10:30-11:15 ***Profume®: An Alternative to Methyl Bromide***

Pat Kelley, *General Manager, Insects Limited, Inc., Indianapolis, IN USA.*

11:15-11:45 ***Corrosive Effects of Phosphine***

11:45-12:00 Break

Prof. Dr. Pasquale Trematerra, *Professor in Agricultural Entomology, University of Molise, Campobasso, Italy.*

12:00-12:30 ***Insect Behaviour, Pheromones and Integrated Pest Management in Stored Products***

Dr. Robert Corrigan, Ph.D.

12:30-13:00 ***The Science of Rodent Control***

13:00-14:15 Lunch

Vasilis Sotiroudas, *AgroSpeCom Ltd., Greece.*

14:15-14:45 ***Pest Control as a Part of Integrated Crop Management***

John Mueller, *Food Safety Specialists, Indianapolis, IN USA.*

14:45-15:15 ***Fumigating Flour Mills with Phosphine, Heat and Carbon Dioxide***

Thomas Bousios, *From Farm to Fork, Belgium.*

15:15-15:45 ***Traceability as a Tool for Food Protection***

Professor C. Buchelos, *Agricultural University of Athens, Greece.*

15:45-16:15 ***Infestation Detection and Estimation***

Alain Van Ryckeghem, *Technical Director, Insects Limited, Inc., Indianapolis, IN USA.*

16:15-16:45 ***Manipulating Stored Product Insects with Temperature***

16:45-17:00 Closing Comments, Certificates, Evaluations

DAY THREE:

WORKSHOP

Organizers: *J. Mueller, V Sotiroudas*
Instructors: *Dr. R. Corrigan, Paul Cogan, Dr. Chris Bell, R. Cavasin, R. Ryan, P. Kelley, A. Van Ryckeghem*

8:00 Leave the Hotel by Bus
8:45 Insect Trapping Demo
9:15 ECO_2FUME Demo
9:45 PROFUME® Demo
10:15 J-System Demo
11:00 Coffee Break & Group Photo
11:30 Safety Equipment Demo
12:00 Gas Monitoring Demo
12:30 Inert Gas Demo
13:00 Warehouse Inspection
14:00 Lunch
15:00 Rodent and Bird Control
15:45 IPM Audit and Reports
16:15 Diplomas
17:00 Arrive at Hotel

Our 20th Anniversary

1981-2001

A family business was created in 1981 to serve the food and grain industries.

Fumigation Service & Supply, Inc. and **Insects Limited, Inc.** celebrate their 20th anniversary in business this year.

FSS and IL are sister companies that were founded at the same time with two separate goals and structure. FSS works with fumigants and toxic chemicals that control pests. IL strictly works with developing and distributing pheromones and non-toxic products for stored product insects.

Over the years we have grown from two rooms, two people, and a few dozen customers to 15,000 sq.ft. and 25 employees and over 3000 customers. The growth has been deliberately controlled to add one or two new qualified staff members each year.

Our goals have not changed much in the past twenty years:

1. *To be daring, be safe, be different, and be fair.*
2. *To establish a working environment that is fun, intellectually challenging, and foremost, safe to our employees, our customers, and our community.*
3. *We must show our respect for our customers and ourselves in all our research, product development, sales, and daily life.*
4. *We must maintain high integrity and be known for our integrity and fairness to our customers.*
5. *To be known as innovators for the future of fumigation, pest management, and pheromones.*
6. *To use the target pest as the initial starting place when a pest problem needs to be solved.*
7. *We will strive to be an education and training leader in our industry.*

In all, our aim is to strive for quality service, provide the absolute best products available worldwide. To be a respected world-class organization, and maintain profitability with innovation, alternatives, and education.

Albert Mueller, John Mueller, and David Mueller

FSS and IL is a family oriented business started by David Mueller in 1981 after graduating with a degree in Entomology and five years of experience in the field of fumigation. David states: *"I had a lot of ambition when I was 25 years old. My wife Mary Beth was teaching school and we had no kids at the time. We thought hard and long about giving up my job and trying to make it on our own. I have never had any regrets about starting my own business. It is a very rewarding experience."*

Dave's father, Albert F. Mueller, soon joined the company in 1982. He was retired at 58 years old from General Foods Corp. in Evansville, IN. With many good years ahead of Al, he took to the road and drummed up business for the company in Southern Indiana, Southern Illinois and Kentucky. Today at the age of 84, Al still takes time to help his sons. Al Mueller stated: *"After over 50 years of working with food protection in flour milling, grain handling, food processing and now in fumigation service and supply, I have seen great changes in our industry…mostly for the better."*

"I remember the first day someone called and purchased a pheromone trap from our company," states Dave Mueller: *"I was so excited that someone saw the value of this tool that I ran outside and yelled with joy."* I knew the fumigation company was viable but the pheromone business was still brand new. No one knew what they were and we had to start from square one to educate them." Today, Insects Limited, Inc. is a multi-million dollar company with distribution in over 30 countries throughout the world.

As in any business there are many people we are thankful to for their hard work, loyalty, and perseverance. John Mueller came to the company in 1985 during the Reagan grain storage years at the age of 19. He had been fumigating with his brother and father since he was 12 years old. During the next 15 years, John learned the business and has become a leader in fumigation technology and innovation. Today, John is the vice-president of FSS and has started a new division called Food Safety Specialists that works with commercial food pest management. John Mueller stated: *"Working in a fun atmosphere and being part of the success and growth of our company has been very fulfilling."*

A few people that must be mentioned for their contribution over the past 20 years are:

Bob Springer, Jeff Benjamin, Pat Kelley, June Beasley, Scott Beasley, Jonathon Beasley, Jack Beasley, Barb Brookie, Brett Niemeier, Laura Kelley, Mary Zajak, Tim Hodgson,

—continued on page 8

Phosphine Update:

On October 12, 2000, Lois Rossi, Director, Special Review and Registration Division, of EPA, wrote a letter that stated:

Please find attached for your signature a copy of the Memorandum of Agreement (MOA) between the Agency and the registrants of phosphine fumigants. The purpose of the MOA is to implement a number of mitigation measures that address risks of concern identified the reregistration Eligibility Decision (RED) issued in December of 1998. As you know, this MOA is the product of extensive interactions among various stakeholders including the registrants, the Phosphine Coalition, USDA, state lead agencies, and the EPA that have occurred over the past 18 months.

The terms of the agreement are as follows:

A. *Label Amendments;* By January 1, 2001 Registrants shall have submitted to EPA a draft interim guidance on the preparation of **fumigation management plans.**
B. *Incident Reporting;* Each registrant shall conduct a two-year project to identify and report toxic or adverse effect **incidents associated with phosphine based fumigants,** including failures or performance related to public health uses.
C. *Monitoring Studies;* By April 1, 2001, the registrants shall submit to EPA protocols/feasibility studies for **exposure monitoring studies.**
D. *Worker Exposure Limits;* To determine whether the current worker exposure standards for phosphine should be lowered, the registrants have submitted a **science-based literature assessment** to EPA for review.
E. *Training & Certification;* The registrants agree to work with the representatives of EPA, USDA, academia, the states and the user community in development of **training modules and validated certification examination questions** that can be used by the states in their Certification and Training programs.

On November 7, 2000, Dan Barolo (Chief consultant to the Phosphine Task Force) and Adam Sharp (Farm Bureau Federation) wrote:

I am pleased to report that all of the registrants of phosphine products have now signed a Memorandum of Agreement with the EPA that revises the Risk Mitigation Measures that must be included in future labeling. In addition, there are conditions of registration involving monitoring studies, training materials and incident reporting. No substantive changes were made in the agreement from the last version you saw. The registrants have now begun the process of implementing these changes.

Even though there are still some action points left to do, the registrants were successful in working with EPA to write a new label that will take this useful fumigant forward into the future. It is the result of the cooperation of many concerned people.

Organophosphate Update:

EPA is reviewing older pesticides that might pose a risk to children. Diazinon was the 35th or 37th organophosphates to be reevaluated. EPA has already begun a phaseout of the most widely used organophosphate, choropyrifos. Choropyifos, known as Dursban, was determined to be the riskiest of the OP's reviewed.

On December 5, 2000, the Environmental Protection Agency announced that it had reached an agreement with the pesticide industry to phase out diazinon. Under the terms of the agreement, the manufacturing of all products containing diazinon for indoor use will end March 1, 2001, and by June 30, 2003 for products used on lawns and gardens. There is no end date for use of existing stocks. The manufacturer plans to track inventories through 2004 and will offer to repurchase unsold supplies at that time.

Diazinon, an organophosphate developed during WWII, is one of the most widely used household pesticides in the U.S. More than 14.7 million pounds of diazinon is sold annually in lawn and garden sprays. EPA feels that diazinon poses unacceptable risk to people, especially children.

Reprinted from techletter.

Dichlorvos (Vapona, DDVP) is in a different category with EPA. Vapona is a chemical in Special Review. This review process has taken a long time because of changes from a "Delaney" cancer risk chemical to determine how it will be grouped with the organophosphate products because of chnages. Vapona is the last chemical going through the OP risk assessment process. It is under a 90-day review on comment by the EPA at this time. Much of the cancer risk that has been shadowing Vapona in the past has been shifted to the child risk issue that EPA has been so focused on under the Food Quality Protection Act. One problem with Vapona are that there are no air monitoring devices to detect this vapor and worker exposure is high when applicators are inside the building during a fogging. After this 90-day comment period, EPA will make a statement to the fate of dichlorvos for indoor and outdoor use. For more information about dichlorvos you can contact Ted Rodgers of the USDA at 1-202-720-3846 or EPA office of OPP Special Review in Washington, DC.

Where Do Insects Go in Winter?

by Alain Van Ryckghem,
Technical Director

Without a doubt, insect activity is greatly reduced during the winter months of November to February. Several environmental changes occur at the same time to cause this change in activity. The temperature begins to fall into ranges that stress the biology of insects, humidity in the air decreases and becomes dryer, and the hours of sunlight available each day has been reduced dramatically.

Insects don't disappear entirely during the winter months, but their numbers have been greatly reduced. They are also less active and in many cases only certain stages of development are present. In cold unheated environments, insects will seek out protective places to overwinter. Examples may include the use of cracks and crevices in walls or floors adjacent to south and west walls, voids and spaces near ceilings or insulated areas; deeper penetration into stored food bins, bags or product, or possibly in protective leaf litter food spills, or under tree bark outdoors.

Each species of insects has a stage at which it is more tolerant to cold temperatures. Many species of stored food insects overwinter in a protective larval stage. These include Indianmeal moth, Mediterranean flour moth, Cigarette beetle, Drugstore beetle, Warehouse beetle, Cadelle, Mealworms, Carpet beetles and Spider beetles. Some species, which have longer life spans as adults, overwinter as adults. These include Saw-toothed and Merchant grain beetles, Flat grain beetle, Flour beetles, Granary and Rice weevils, and Cadelle. During these very cold temperatures there is virtually no activity and very slow metabolism.

Where buildings are less cold or there is some heat present, activity and reproduction can occur with very slow development rates such as with Saw-toothed grain beetles and Flour beetles. Despite such warmer conditions most stored food moths will remain in this period of inactivity (diapause) due to low humidity and short daylight hours. The Indianmeal moth for example will remain in diapause when there are less than 13.5 hours of daylight per day.

In Spring, when daylight hours begin to increase, humidity levels return to normal, and temperatures begin to rise above 60°F, adult insects begin to lay eggs; larvae complete development then go through a short pupation period to emerge as adults themselves. Yes, the return of the "hordes" will be upon us soon.

20th Anniversary

(continued from page 6)

Cam Clawson, Etta Mueller, Barb Bass, Angie Richards, Roger Cole, Bob Wente, Kevin Petrow, Doug Thompson, Jeff Waggoner, Ricky Vincent, Daniel Clark, Mary Beth Mueller, Karmen Mueller, Brian Simons, Joseph Spohn, Greg Krodel, Bev Vehling, Chris Grissom, Shawn Sullivan, Brian Wendell, Tim Byrne, Nathan Stocker, Steve Riney, Todd Wilhelm, DW Bennett, Peggy Rutkowski, Alain Van Ryckeghem, Andrea Damm, Manuel Irigoyen and the many college students that helped out during the summer months.

NEWSLETTER

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

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