

# Fumigants & Pheromones

Issue 59  
Spring  
2001

Routing:

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Celebrating our 20th Anniversary ❄️ 1981-2001

## Temperature Profiles & Insect Management

Stored food insects breed and develop in optimum temperature ranges. Beyond these ranges life becomes more stressful and the ability to lay eggs, metabolize efficiently, and develop into reproductively fit adults becomes a challenge. We can intuitively say that insects would seek out those conditions, especially temperatures, which make life better. Would it not be possible then to monitor and inspect for insect infestations based on the ability to locate those areas in these optimum temperature ranges?

The challenge, however is to be able to efficiently and cost effectively, determine temperature points throughout a facility and then create a visual representation of these data points (Temperature Profiles). The overlapping of these temperature profiles with an existing floor plan of the facility could locate "hot spots" where optimum temperatures coincide with stored food, moisture conditions, or difficult sanitation conditions.

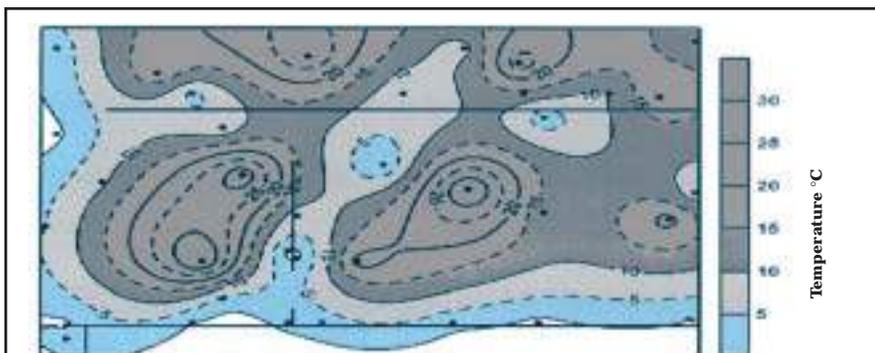


*In the extreme temperature ranges, an insects life becomes more stressful.*

Technology can be a wonderful thing. What we once considered as

possibility, can now be done with a little bit of technology and some experimentation. For example we can now use temperature data loggers (Watchdog model 100) about the size of a quarter that can record

*(continued on page 2)*



Graphs courtesy A.S. Danoff, USDA, ARS

**Determining the optimum temperature for insect development for a given target species can lead to better pest management.**

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# PROFUME®



**Jeff Welker(r), Global Manager for Profume/Vikane for Dow AgriScience, discusses Profume® with Bob Gillespie(l) of Australia and Billy Sotiroudas of Greece at the recent Fumigants and Pheromones International Technical Conference & Workshop.**

DowAgriSciences of Indianapolis is developing PROFUME® gas fumigant for food processing and storage facilities in the United States and Europe to help meet industry needs.

“We’ve been collaborating with government and university researchers, industry consultants, fumigators and members of the food industry both in the U.S. and Europe to develop PROFUME gas fumigant for control of stored product pests in food storage, processing, milling and warehousing.” Said Janet Rowley, product development manger at Dow AgroSciences.

In cooperation with Fumigation Service and Supply, Inc., the U.S. Department of Agriculture-ARS in Fresno, Central Science Laboratories in the United Kingdom, and the Federal Biological research Center for Agriculture and Forestry in Germany, laboratory efficacy studies are helping define dosages required to control the various life stages of key stored product pests.

Food quality studies have been conducted on a variety of dried fruits and tree nuts in cooperation with

the USDA and the California Dried Fruit and Tree Nut Association. Similar studies on cereal grains, which will include bakeability, taste and other quality measures, are being initiated in cooperation with Kansas State University. Food residue studies have been conducted on key dried fruits and tree nuts, and are currently planned for cereal grains.

In addition, field trial fumigations conducted by Dow AgriSciences field scientists in wheat and rice mills in multiple locations within the U.S., Germany and the United Kingdom provided valuable data resulting in recommended methods to improve fumigation efficiency and fumigant introduction and monitoring procedures. Structural sealing techniques for better gas confinement were identified as very important.

These field trial fumigations will help determine the cost and practicality for this potential alternative to methyl bromide.

## Temperature Profiles & Insect Management

(continued from page 1)

up to 2000 readings and cost under \$30.00. They can be placed on a grid system for each room or area and allowed to collect data for a week. Software and download equipment for this product costs about \$200.00.

You could obtain average temperatures at each point as well as the range. These data loggers could be hung at different heights to obtain 3D data. Once this data has been collected it can be imported into a nifty software program called Surfer®. A bit of initial set up of the floor plan in this program is required then the data can be graphed over this layout. The result is an interesting and insightful visual representation of temperatures throughout the area. By selecting only the optimum temperature ranges to be displayed, you could quickly determine the most useful inspection areas and monitoring points for your insect pheromone

traps, or prioritizing areas for sanitation procedures.

Once your floor plans and initial data collection points are established, repeating the process and updating the data can be done in a matter of a couple of hours. By collecting data on a bi-weekly or monthly basis for a year you could obtain a very useful Temperature Profile of your facility.

**Editors note:** *After collecting this data for several years, you soon become aware of changing conditions and can correct them to offer sub-optimum conditions for the growth and development of pest populations. Manipulating temperature can help manipulate insect biology. Temperature Profiling may be the future of pest management.*

by Alain Van Ryckeghem  
Entomologist, Technical Director  
Insects Limited, Inc.

## What's New? ECO<sub>2</sub>FUME® Phosphine Fumigant

New  
ECO<sub>2</sub>FUME  
fumigant for  
improved  
stored grain,  
seed and mill  
fumigations.



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of Fumigation  
Service & Supply  
of Indianapolis  
in cooperation with  
CYTEC Industries  
offers  
Stewardship  
Training for  
ECO<sub>2</sub>FUME  
cylinderized  
phosphine  
fumigant.

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OR  
Email [Insectsltd@aol.com](mailto:Insectsltd@aol.com)

[www.insectslimited.com](http://www.insectslimited.com)

## Dave's Soapbox

...for what it's worth



The Montreal Protocol was created in 1987. This was the very first global environmental treaty produced to help preserve the planet as a whole without regard for individual countries personal benefits. A monetary fund was collected from the richer of these countries to help the less fortunate countries comply

with the theme for the Kyoto Protocol and our understanding about this complex and sometimes unclear field has lead to conflict and disagreement. Carbon dioxide is in the middle of the Kyoto Protocol, like ozone was the key player in the Montreal Protocol. Carbon dioxide is a by-product of the industrial revolution. Too much carbon dioxide can cause an imbalance in the planet's normal processes. The "greenhouse" effect may cause the temperature of the planet to increase much like the temperature inside a greenhouse when the sunlight shines in and warms the air and plants in it. Scientists are scrambling to find proven answers to this complex question. Many people are against the reduction of CO<sub>2</sub> in the atmosphere because it will cost more money to remove or eliminate it from established industrial processes throughout the world. Man has become dependant on automobiles in their every day life and engines produce excess CO<sub>2</sub>.

Can companies that produce CO<sub>2</sub> reduce this chemical economically without going out of business? Can scientists answer the unanswered questions about this topic before governments and business lobbies back them into a corner? Can the sacrifices that were made in the Montreal Protocol be made on a grander scale in this complex global environmental treaty? These are some important questions that will be discussed in the coming years and decades. This will not be solved in a decade or maybe even a generation, or maybe in a hundred years. What is important is that we sit at a table and talk about challenges to our planet. In it encouraging that our generation may be the one that school children in the future look back and say: "The past generations created the problem, they discovered the problem, they discussed the problems among themselves and figured out a way to correct the problem. They made the sacrifices so that our quality of life is better today."

*A. K. Mueller*

# The Kyoto Protocol

*What is it and why is it so important?*

First we talked about the Montreal Protocol and now we keep hearing about the Kyoto Protocol. Protocol...Schmotocol, what is this all about?

Over the past 100 plus years the by-products of the industrial revolution have been mounting. It is much like someone throwing trash out the back door of their house until the pile of garbage gets so bad that it begins to stink and cause changes in the quality of life of the people inhabiting the house. Man has thrown so much industrial waste into our skies in the past 100 years that changes are occurring on a global scale that unchecked will bring possible disaster to those that live here in the future.

The global warming debate has heated up in recent months throughout the world. Confusion is the norm today in the Bush Administration on this very important and politically sensitive environmental topic. Let's try to understand more about these global environmental treaties.

The atmosphere over our heads knows no country boundaries. The stratospheric ozone layer that protects humans and plants from dangerous ultraviolet light 15-60 km above us can be polluted by anyone on this planet emitting chlorines and bromines. For the past 50 years, man made chemicals from refrigeration, soil fumigation, structural fumigation, and even medical inhalers have caused the thinning of the precious ozone layer over our planet.

with the deadlines and guidelines of this global environmental treaty. Today, the Montreal Protocol is working. It has replaced most of the chlorine and bromine uses with alternatives. By accomplishing the phase out dates of damaging CFC-11 refrigerants one year earlier in 1995, it showed many countries that it is possible to eliminate some 'essential' uses of man made chemicals. Today the task of phasing out the universal fumigant methyl bromide is approaching its final phaseout date in 2005. A 50% reduction in production and an escalating price of methyl bromide will slow its use in the coming years. By the year 2050, one generation from now, people will look back at the Montreal Protocol as a bold step for our civilization. They will see the industrial greed along with the healing sacrifices offered from our generation. Students studying environmental science in schools will study the first global environmental treaty, The Montreal Protocol and know of its success in correcting a problem compounded by the industrial revolution in the 20th century.

## Kyoto Protocol

The Montreal Protocol opened negotiations for another important global treaty called the Kyoto Protocol. A meeting of most of the countries throughout the world in 1997 in Kyoto, Japan patterned their initial framework on the decade old Montreal Protocol. The Montreal Protocol was the blueprint for future environmental meetings to come. Climate change



**TRAINING  
FOR THE  
FUTURE**

**G R E E C E 2 0 0 1**

*The 5th International Fumigants & Pheromones Technical Conference and Workshop was held on March 20-22, 2001 in Thessaloniki, Greece. This unique meeting of fumigators, food processors, pest management professional and researchers from around the world offered an excellent opportunity for information exchange and an insight into new and innovative technologies. The historical Greek city of Thessaloniki was an excellent setting for this meeting. This truly international conference was attended by over 200 people, representing 28 different countries.*



*Day 3: Fumigation Workshop.*

- Algeria
- Argentina
- Australia
- Austria
- Belgium
- Canada
- Columbia
- Croatia
- Denmark
- Egypt
- Finland
- France
- Germany
- Greece
- India
- Israel

The first day of lectures and discussion offered insight into topics such as; The Future of Methyl Bromide, Controlling Pests with Carbon Dioxide and High Pressure, Food Safety Issues, Integrated Pest Management, Inspection Procedures and A New Cylinderized Phosphine, ECO<sub>2</sub>FUME®. Conference participants also attended an elegant dinner and reception following the close of the first day. Plenty of great food, music, dancing and fine Greek wine made for a memorable evening.



*The formal portion of the meeting was held in a state-of-the-art lecture hall at The University of Macedonia.*

- Italy
- Latvia
- Malaysia
- Saudia Arabia
- Slovenja
- Sweden
- Switzerland
- Taiwan
- Turkey
- United Kingdom
- United States
- Zimbabwe

Day two of the conference continued with talks and discussions about such topics as; New Ways to Use Ancient Pest Control Methods, Profume® (Sulfuryl fluoride) as an Alternative to Methyl Bromide, The Corrosive Effects of Phosphine, An Expert's View of Rodent Control, Further Discussion into the Future of Methyl Bromide and it's Effect on the Ozone Layer, Fumigation with Phosphine, Heat and Carbon Dioxide and finally How to Manipulate Pests with Temperature. This closed the formal portion of the conference and gave attendees a chance to visit the quaint cafes, restaurants and nightlife of Thessaloniki.



# OZONE



**Nairobi, 30 March 2001**—An important meeting to chart the future of the official scientific body which advises governments

on climate change took place at the Nairobi headquarters of the United Nations Environmental Programme (UNEP).

The scientists, members of the Intergovernmental Panel (IPCC) on Climate Change met as the United States is questioning the science of global warming and the Kyoto Protocol which is the mechanism agreed by nations in 1997 for tracking climate change.

Klaus Toepfer, the Executive Director of UNEP, said: "The IPCC has provided the world community with first class assessments of the soaring temperatures the world is facing, the devastating impacts of these rises and the ways in which we can try and avoid the worst effects of global warmings. Our scientific knowledge on global warming has advanced considerably since Kyoto. We now know climate change is real and its effects on humankind is becoming clearer and clearer." He said.

"Indeed, the latest scientific assessments show that global warming is intensifying with serious consequences for each and everyone of us. But there are certain strategic options available for governments, industry and society to fight the worst effects. We at UNEP are clear that this can be done without damaging the stability of national economies. Indeed, averting climate change offers real opportunities to develop new technologies and markets rather than damaging prosperity."

The Kyoto Protocol requires the industrial nations to reduce their greenhouse gas emissions by an average of 5.2% between 2008–2012. Those countries which are criticizing the Kyoto Protocol should recall that it is a flexible instrument that allows nations to meet emission reduction targets in a variety of economically effective ways." He said.

A concern being expressed by the United States is that developing countries need to be included in emissions cutbacks alongside the developed countries.

"We need to advance provisions, under the Kyoto Protocol, whereby developing countries are assisted by industrialized ones to reduce emissions. These include the technology transfer of cleaner forms of energy production such as cleaner burning coal and more energy efficient gas power stations alongside renewables, including solar, wind and biomass." Said Mr. Toepfer.

"Reducing emissions of carbon dioxide by being more carefully efficient in our use of energy in our homes, business and factories must also be part of the transfer.

Mr. Toepfer said that the United States, which emits around 25% of world emissions of greenhouse gases, could not be ignored." The United States is an important part of the problem, but also an important part of the solution. It has an advanced economy with technology able to help avert the threat of damaging climate change," he said.

Talks on the four-year-old Protocol stalled in The Hague in The Netherlands last November when the United States, the country responsible for 25% of CO<sub>2</sub> global

emissions began to back down from signing the Protocol. Today, Vice President Cheney and President Bush have reversed their campaign promises on this issue of CO<sub>2</sub> emissions reductions in the United States. What is important now to watch is how the environmental groups and the increasingly more environmentally conscious populous in North America and Europe react to this major policy change?

### ***So what is the Kyoto Protocol?***

It is an international treaty designed to curb dangerous emissions and making the world less energy dependent and more climate friendly.

## New Book

### **Alternatives to Pesticides in Stored-Product IPM**

*Edited by:*

*B. Subramanyam and D. Hagstrum*

456 pp. Hardback \$105.00



Insects associated with raw grain and processed food cause qualitative and quantitative losses. Preventing these losses caused by stored-product insects is essential from the farmer's to the consumer's table. While traditional pesticides play a significant role in stored-product integrated pest management (IPM), there has recently been, and will continue to be, a greater emphasis on alternative approaches. Alternatives to Pesticides in Stored-Product IPM details the most promising methods, ranging from extreme temperatures to the controversial radiation, and from insect-resistant packaging to pathogens. This collection is essential for anyone in academic, industry or government interested in pest ecology or food or grain science.

You can order this book and many more popular titles by contacting **The Bookstore:** [www.insectlimited.com](http://www.insectlimited.com) or calling 1-800-992-1991.

## Dr. Paul Fields, Ph.D. Wendell E. Burkholder Award Winner

Paul is a recipient of the Wendell E. Burkholder Award, from Insects Limited, Inc., for his innovative work on extreme temperatures to control insects, insect behaviour and alternatives to methyl bromide. He is a research scientist for Agriculture and Agri-Food Canada, Winnipeg, Manitoba. Since 1988, Dr. Fields has been working as a Research Scientist at Canada's federal grain research laboratory on the ecophysiology of stored product insects. There are three main areas to his research program: extreme temperatures, natural products, and insect behaviour. Paul combines the common sense of a practical field worker with the knowledge of his experiences and the literature along with a skill for being able to energetically communicate his message loud and clear.

### History of the Award:

Dr. Wendell Burkholder retired in 1999 from the University of Wisconsin School of Entomology and had joint responsibility with the United States Department of Agriculture. Dr. Burkholder spent 35 years patiently studying insect behaviour and insect communication in Madison, Wisconsin. This award was first given in 1993 as a way for scientists that study stored product protection to travel to international meetings to present and exchange their research. Winners in the past include: Dr. Megha Parajulee, Nepal,



**Recently Paul Fields, Ph.D. was presented the Wendell Burkholder Award Lecture on Stored Product Protection at the Fumigants and Pheromones Technical Conference in Thessaloniki, Greece. His topic was Freeze, Fry, Dry, Starve: New Ways to Use Ancient Control Methods.**

Dr. A. Hussain, Pakistan, Dr. Rudiger Plarre, BAM Germany, Dr. Francis Webster, University of Syracuse, USA, Paul Cogan, CSL, United Kingdom, Professor Dr., Pascale Tremmaterra, University of Molise, Italy, and Dr. Tom Phillips, Oklahoma State University, USA.

A total cash and travel award of \$20,000 has been donated to this Award from Insects Limited, Inc. The recipients for this award are selected by Insects Limited, Inc. and Dr. Burkholder. With his award, Dr. Paul Fields was able to travel last summer to Brazil to the World Congress on Entomology.

## EMPLOYEE PROFILE:



### Barbara Bass

Barbara Bass has recently been promoted from Office Manager to Vice-President of Finance. Barbara joined FSS in September 1994 after a relocation of her husband's job to Indianapolis. Barb worked for a commodity broker in Minneapolis for eleven years prior to the move to Indianapolis.

Barb and her husband David reside in Carmel, Indiana. They have one daughter Shanna who will graduate from Ball State University in May with a major in Special Education and an endorsement in Computers. Barb's other family member includes "Mandy" her very spoiled cocker spaniel. Barb enjoys reading, bowling, car shows (with her husband) and shopping in her spare time.

David Mueller, president of Insects Limited, Inc says: "Barbara Bass is the heart of our company. She is the first one here in the morning and her positive and pleasant nature keeps us all upbeat throughout the day. Her outstanding organizational abilities to manage the finances, office and conferences are a real asset to our company. If you are ever in the area, stop by and visit Barbara and she may take you for a ride in her new silver PT Cruiser."

## Now is the time to start your Pheromone Trapping Program!

# PantryPatrol™

**Traps Beetles and Moths!**

- ✓ **Poison Free**
- ✓ **Ready to Use**
- ✓ **Lasts for Months**
- ✓ **Guaranteed**



### Pheromones:

- Indianmeal moth
- Almond moth
- Warehouse beetle
- Cigarette beetle
- Flour beetles
- Rice weevil
- Varied carpet beetle
- Black carpet beetle
- Powder post beetle
- Drugstore beetle
- Webbing clothes moth
- Grain borers

...and more!



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## CALENDAR OF EVENTS:

- May 19-23, 2001** Association of Operative Millers, Louisville, KY  
What's New Program, and Trade Exhibition \*\*
- May 2001** UNDP Methyl Bromide Phase out Project  
Harare, Zimbabwe \*\*
- June 1-3, 2001** Stored Product Protection In-house Training  
Fumipac, Guayaquil, Ecuador \*\*
- June 5 & 6, 2001** PEST-EX, Birmingham, UK, [www.bpca.org.uk](http://www.bpca.org.uk)
- September 2001** UNIDO Methyl Bromide Phaseout Projects  
Algeria and Tunisia\*\*
- Oct. 28-31, 2001** National Pest Management Association 68th Annual  
Convention, New Orleans, LA, [www.pestworld.com](http://www.pestworld.com)
- Nov. 6-7, 2001** Methyl Bromide Alternatives Workshop, Westfield, IN  
Log on [www.insectslimited.com](http://www.insectslimited.com) for more information  
and online registration.
- July 7-20, 2002** The 4th International Conference on Urban Pests  
Charleston, SC, USA, [rcooper@cooperpest.com](mailto:rcooper@cooperpest.com)
- August 2002** 5th Stored Product Protection Workshop  
Manhattan, KS, Train the Trainer Meeting \*\*  
UK, Paul Logan, Stored Product Insect Working Conference

\* *we will attend*

\*\* *we will speak on the program*

\*\*\* *we are the organizers*

*We hope to see you there!*

Celebrating our 20th Anniversary  
1981 - 2001

## Job Opportunities:

**Food Plant Pest Management Specialist:** Fumigation Service & Supply, Inc. is seeking individual to work full time as food sanitation specialist in Chicago. A good understanding of Good Manufacturing Practices, HAACP, AIB audits, entomology, pest biology, food plant ecology is preferred. Some travel is required for this job. Base salary, monthly commissions, vehicle provided with generous benefit package included medical and profit sharing pension plan and paid training, available. Job is based out of Chicago Area. Fax your resume to John Mueller (317) 867-5757. Confidentiality insured.

**International Fumigator Exchange:** Fumigation Service & Supply, Inc. is seeking international individuals to work on seasonal fumigation crews (May-October). This is a great opportunity to work, teach and learn fumigation techniques that can be beneficial to your company back home. You will need to obtain all work permits and visas. Housing can be arranged. Fax or send resumes to Dave Mueller, 16950 Westfield Park Road, Westfield, IN 46704 USA, (1) 317 867-5757, [insectltd@aol.com](mailto:insectltd@aol.com)

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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