FUMIGANTS AND PHEROMONES

Issue No. 9

By: Fumigation Service & Supply, Inc.
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Indianapolis, IN 46280
(317) 846-5444 / 846-3399

"It is easier and more economical to save a bushel of grain than it is to grow a bushel to replace it."

Frieberg Group Buys Degesch

The purchase of Degesch's worldwide holdings by the West German fumigant manufacturer Detia Freiberg Group shocks the industry.

The manufacturer of Detia fumigants has bought the #1 manufacturer of solid fumigants in the free world. What effect this might have on Phostoxin fumigants in the short and long term is hard to speculate. The reason for the move might have been to lower the liability and exposure by the majority owners of Degesch GmbH.

The consolidation of these two major manufacturers of metal phosphides should:

1. Increase the production from the Weyers Cave, VA manufacturing facility
2. Offer a wider variety of products
3. Stabilize pricing
4. Offer a larger distribution and more technical support

The Detia Freiburg Group has a distributor located in Salina, Kansas; Research Products, Inc.

FUMIGANTS & PHEROMONES SEMINAR
December 11 & 12, 1986 Indianapolis

Address Correction

Thank you for sending in the address correction cards from Fumigants & Pheromones Issue #8. We received many responses. We also sent out, by request, over 500 1986 FSS & IL Product Guides.

If there are additional address corrections needed, or the newsletter is being sent to the wrong person, or you are not interested in receiving this newsletter, or you would like to have a new 1986 Product Guide, please reply.

Articles in this Issue of FUMIGANTS & PHEROMONES

INNOVATIVE PHEROMONE MONITORING HELPS PROVIDE CONTROL

Part 1

By David K. Mueller, RPE

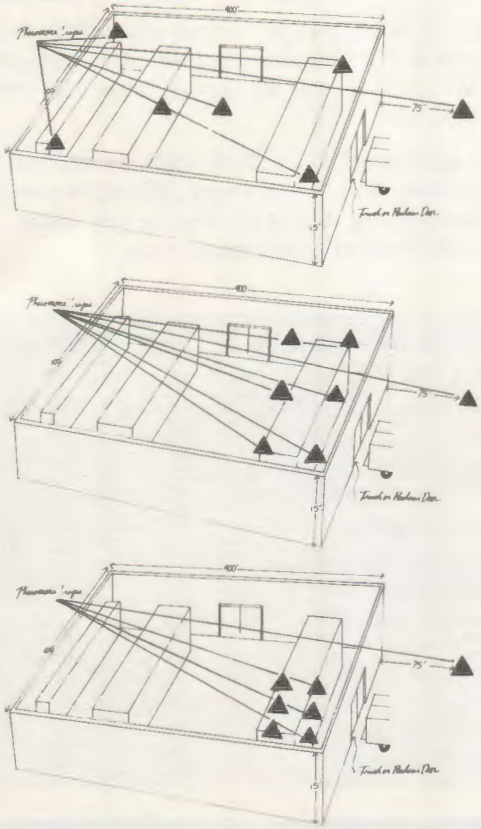
Are you interested in knowing about the practical uses of these insect attractants? This two-part article points out how to establish a pheromone trapping program and gives tips on ways to employ these valuable pest control tools. Using pheromones more effectively, how to develop innovative pheromone monitoring and partial control systems that can be coordinated with control methods are also covered. This article was featured in Pest Control Magazine in December 1985.

Stored products are particularly susceptible to insect infestation. Billions of dollars are lost each year to damage in this country by tiny, persistent, prolific pests.

Zero insect tolerance is the standard for processed foods and homeowners. In food warehouses, insect population levels must always be kept as low as possible. The detection of hidden infestations is especially important when food is to be distributed over large geographical areas.

Food stored in public warehouses causes concern for the food industry; one bad lot of product can infest a large amount of previously insect-free products. This makes a sensitive monitoring tool necessary. Some guage is needed to determine when a population has reached the economic threshold.

In a practical example of pinpointing a hidden infestation of stored product moths and beetles in a warehouse, diagrammed below, an outside or inside inspector can send seven pheromone traps to this facility in advance of his arrival.



Directions should be given to place one trap every 100,000 cubic feet near each corner of the warehouse, with two traps placed in the center of the warehouse. One is also placed outside the warehouse about 75 feet away.

After about a week, the inspector arrives at the warehouse. He inspects each trap and finds an absence of insects, for example, in the three traps on one end of the warehouse, but a significant number on the opposite end.

Inspector Records

The inspector records the results and moves the three insect-free traps to the suspected end of the warehouse. Now there is one trap per 50,000 cubic feet.

The next day the traps are again checked and recorded. It is noticed that only the traps in one corner of the warehouse are showing any significant catch. The inspector can start crawling around to ferret out the insect infestation or, if time permits, he can go one more step to pinpoint the hidden pest population by moving the traps to the corner where the most insects were captured. Now there is one trap per 10,000 cubic feet.

After close inspection, the inspector can just about pinpoint the exact location and pallet of the infested products. Pheromone traps can and do work this well!

As you can see, they do not replace the trained inspector, but they help make an accurate assessment of the situation. It should be noted that the pheromone trap outdoors in a nearby tree showed the inspector that a large number of target insects was captured.

The continuously-open truck door in the corner of the warehouse could have allowed a dangerous level of outdoor invaders entry. If these outside invaders had enough time to establish their population inside, they could be the cause of a major product recall.

The Indian meal moth (Plodia interpunctella) in the United States, and the flour moth (Ephestia elutella) in Europe, have been the most successful sex-attractant in providing valuable insect infestation surveillance along with providing a partial control for those areas with relatively low numbers of moths.

A sticky type trap with BioLure dispensers for Indian meal moth and Warehouse beetles is the best trap and lure to begin a monitoring program. These sex-attractants will work quickly and capture a large number of male insects present. The cost of the traps and lures to perform the above warehouse inspection would be less than $70.

Natural Food Stores

The grocery store and natural food industries in this country have successfully implemented trapping programs that are decreasing their customer complaints concerning insects. Indian meal moth, Trogoderma, flour beetles, and saw-toothed grain beetle outbreaks are being stopped through better awareness and partial control of pest insect populations using mass-trapping techniques.

Three traps per 1,000 sq. ft. are sufficient to affect this technique for the sex-attractant insects. Since most natural foods stores are about 1,000 sq. ft., it is quite simple to place three traps near the ceiling in the front of the store (avoid customer contact) and one trap in the back storage area.

Supermarket-type grocery stores use pheromone traps to survey the areas where insect pests have beeen a problem in the past. One trap per 10,000 cu. ft. is sufficient to affect this mass trapping technique for the sex-attractant insects.

The natural food industry will not use any toxic chemicals in its operation. The Indian meal moth is the major pest of grain-based foods and dried fruits in this country. Because of its association with toxic chemicals, the pest control industry, in most cases, has not had a good relationship with these people. This type of non-toxic chemical control could open new specialty markets for a progressive pest control company.

These pheromone traps are providing a guage to evaluate control procedures and show the results of good sanitation. The lack of insect catches is a positive report on an effective sanitation program.

The National Pest Control Association states that there are five major steps of good practice in pest control. These include:

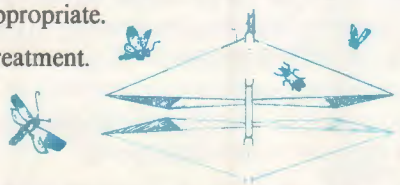
*1. Inspection of premises.

*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 help accomplish three of the five major principles involved in this approach to pest management.

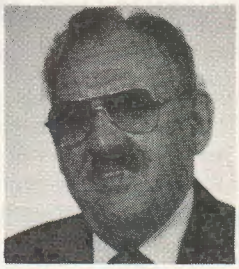
Food is sometimes brought into storage areas containing hidden infestations. The pheromone traps work well in areas where new products are unloaded after transit. This can be a tool to alert the buyer of any suspect incoming products. The natural food stores and grocery stores should place a pheromone trap in the receiving areas of the store and carefully watch it when new product is brought into the store.

If a certain product is found to contain insects, two things can be done: 1. Reject the product. 2. Place the suspect material in a freezer immediately.

Nuts, dried fruit, bird seed, popcorn, and certain grain-based materials should be placed in a freezer, when possible, for at least three days at 0 – 10 degrees (F.) or 7 – 10 days at 25 – 32 degrees (F.). This non-chemical control technique will kill most insects but not all.

Insects Limited, Inc. firmly believes that "The future of insect control is not with the use of toxic chemicals."

Evansville Warehouse



Southern Indiana, Southern Illinois, Kentucky, and Tennesee are very important to our company, and we are making some changes to improve our service for our customers in this area.

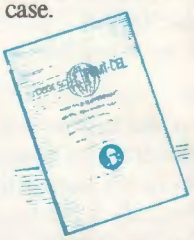
Al Mueller will stock fumigant items in a warehouse in Evansville, Indiana. Al has a grain and milling background and over 30 years experience in fumigation. He makes sales calls and deliveries to designated locations in these areas.

Al will be contacting our customers by phone prior to his trips into your area. This will be a free delivery service which we hope our customers will utilize. If you need any materials, do not hesitate to call Al and give him your particular time of needs. This way we can save you a freight charge and provide you with the best service possible. We strive to give you "Competitive Prices and Unbeatable Service."

Magnesium Phosphide Improved

Fumigation Service & Supply, Inc. will soon begin distribution of new and improved versions of the DEGESCH Fumi-Cel and Fumi-Strip. The new Fumi-Cel plate still contains the same amount of hydrogen phosphide, 33g per plate, but now weighs only 117g as opposed to 206g for the older plate. A small absorbent bag, similar to that used in Phostoxin Prepacs, will be placed in each aluminum foil pouch. This should solve the problem of gas build-up in the pouches.

The new Fumi-Cel will be packed in cases of 120 plates each, 40 plates per tin, 3 tins per case. The older cases contained 90 plates each. The new Fumi-Strip will be composed of 20 interconnected plates as opposed to 16 plates for the older one. The newer cases of strips will, therefore, contain 120 plates as opposed to 96 plates per case.



Mr. Don Shaheen, Vice President and Technical Director for Degesch America, Inc. states: "We believe that you will find this newer formulation more convenient to use. The breakdown rate of the new plates is practically identical to the older ones. And finally, the cost of each individual plate is the same as in the past."

Quotable Quotes

"And I don't want to go out to California and stay no seven days to be in a movie. I'd rather go back home and spend my time fishing."

– William "The Refrigerator" Perry
on turning down a movie offer.

"A sale without profit is a sale without honor"

– Ray Kalmanovitz,
Wall Street Raider

GRAIN FUMIGATION

How to keep grain insect free in farm bins

Fumigating grain can result in an insect free product if it is applied properly. Billions of bushels of grain will be stored this year. Much of it will become infested. If fumigants are applied improperly, the product can cost you money and headaches. To avoid infested stored grain, one should follow these simple instructions:

Fumigating Small Grain Bins with Phostoxin Fumigant

1. Empty Bin Preparation

   Clean out all empty grain bins thoroughly. Sweep up old grain and brush down the side walls. If you can gain entry under the bin floor, clean out the debris that accumulates in this area. Insects that breed and live under bin floors are a leading cause of reinfestation of grain bins from one year to the next.

   RESIDUAL SPRAY: The entire surface area of the empty bin should be sprayed with a contact residual bin spray. RELDAN 4E or Methoxychlor are proven residual bin sprays. Malathion is showing insect resistance problems throughout the United States and should not be used.

   When using Reldan 4E (Chloropyrifos-methyl), mix with water to give a final concentration of 1% (½ pint of product per 6½ gallons of finished spray). Apply the mixture by spraying equipment, walls, and floor surfaces at the rate of 1 gallon per 650 to 1250 square feet prior to storing or handling grain. Application should be made only after equipment and buildings have been thoroughly cleaned.

   When using Methoxychlor 2 lb. to clean up storage in empty storage bins, use 1 gallon in 10 gallons of water applying at a rate of 2 gallons of spray per 1,000 square feet before any product is stored. Note: Do not add grain to bin for at least 24 hours or until walls have dried out thoroughly, and Methoxychlor can not be applied directly to the grain.

   FUMIGATE: Chloropicrin is the only fumigant listed for empty grain bin fumigation. The bin floor should be covered with 4 mil polyethylene and metal pans with burlap cloth or rags are placed under the poly tarp. Use one pound/ 1000 cubic feet of Chloropicrin (Tear Gas) for one to two days. (Note: Choropicrin should not be used on processed food)

2. Wait two weeks after harvest to fumigate grain bins. This allows the grain to 'sweat' down and lose field heat and moisture. Batch fumigating in small grain bins (3,000 to 25,000 bushel) is the leading cause of fumigation failures throughout the country. Because the gas applied to the grain one day could be displaced when new grain is added to the bin the next day, wait until the bin is full and fumigate it all at one time.

3. Grain Fumigation with Phostoxin Fumigant; 3,000 bu. to 25,000 bushel bins.

   Assemble all of the items necessary to perform a successful fumigation.

   A. Phostoxin tablets or pellets

   B. Probe – 1¼" diameter PVC rigid pipe

   C. Cotton work gloves

   D. Phostoxin warning signs

   E. Hand sprayer

   F. Polyethylene sheeting

   G. Reldan 4E or Methoxychlor insecticide and pesticide respirator

   H. Approved gas mask for hydrogen phosphide

   I. Detection equipment

Familiarize yourself with the fumigant...

An Instruction Manual is available from your supplier for detailed information. Contact FSS if you have any question about how to fumigate grain bins. Remember to read the label on the container before using any pesticides.

Determine the infestion in the grain bin and what type of insects you will be treating. Knowing the pest is half the battle in controlling it. Determine the number of bushels to be treated. Remember that the aluminum phosphide gas is 1.18 x heavier than air. It will fill the volume of the bin. The gas doesn't know the difference between the commodity and the headspace. You are fumigating space and not commodity.

Volume of Grain Bin:
3.14 × ½ diameter × ½ diameter of grain bin × height = Volume
3.14 × (10 × 10) × 18 = 5,652 cu. ft.

Volume of the Cone of a Grain Bin:
3.14 × ½ diameter × ½ diameter of grain bin × height divided by 3 = Volume of a Cone

3.14 × (10 × 10) × 7 divided by 3 = 733 cu.ft.
The total volume of a grain bin 20 feet in diameter and 18 feet to the eve and 7 feet from the eve to the peak is: 6,385 cu.ft. It is important to know the correct volume of the bins that you are going to fumigate.

Dosage Rate

There is a range of dosages that you can use to fumigate with Phostoxin fumigant. As a certified fumigator, you must make an intelligent decision on the correct dosage rate. The factors that play in this decision are:

1. Temperature of the grain
2. Tightness of the bin
3. Weather conditions; anticipated wind
4. Target insects (weevils are harder to kill than flour beetles)

Fumigation

Do not open the bin top and scatter fumigant on the surface. This will not give a complete kill. By following these steps, you can successfully fumigate a grain bin (3,000 – 25,000 bushel) with Phostoxin fumigant.

A. Always use at least two trained people to fumigate a grain bin. Never fumigate alone.

B. Pre-cut a piece of polyethylene sheeting to fit over the surface of the grain. Allow for the peak of the grain and 2 feet extra to tuck on the edges.

C. Plan your bin fumigation so that you are only in the bin for 15 minutes at the most. The headspace of a grain bin can reach 120 degrees (F.). Protect yourself against heat exhaustion.

D. One man should pull the poly to the farthest end of the bin and secure the poly by tucking it down between the grain and the metal side walls.

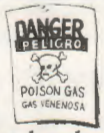
E. One man should probe the Phostoxin tablets or pellets on 5′ centers by starting at the farthest point from the escape hatch and working his way toward the ladder. Probe about 10 – 20 tablets or 25 – 50 pellets per probe. The probe should be pushed in as far as possible.

F. Take a gas reading with your detection equipment if you suspect the gas concentration to be above 0.1 ppm. If this level is detected, proper respiratory equipment should be used.

G. After the last probe is made, pull the poly toward the bin opening and secure a piece of cord on the poly sheeting. This will allow you to remove the poly after the fumigation without climbing into the bin.

H. To finish the fumigation, you need to place Phostoxin fumigant into the aeration fans and cover the ends of the fans with 4 mil polyethylene. The fans should be left off during the entire fumigation. A one inch piece of PVC tubing can be forced between the screen on the fan to help get the Phostoxin tablets or pellets back into the aeration fans as far as possible. By placing fumigant into the aeration fans, you can be sure that you are fumigating the debris under the bins. Note: Make sure that the aeration fan is dry before you add Phostoxin fumigant.

I. Place warning signs on all doors and near ladder.



J. Place one or two vapona pest strips in the headspace of each bin. This will prevent flying insects from re-infesting the grain after the fumigation.

K. Spray the perimeter of the bin at ground level with an approved insecticide to help prevent reinfestation. The weeds and any obsolete equipment should be removed

L. Do not enter the bin for a minimum of four days for pellets and five days for tablets. Remember that Phostoxin works better the longer it is allowed to sit in the bin. If the grain temperature is below 60 degrees(F.), leave the bin under fumigation longer.

M. Following the fumigation, it is important to remove the polyethylene sheeting from the surface of the grain and the aeration fans. It can be reused. Warning signs should be removed. Reldan 4E can be sprayed on the surface of the grain for long-term protection (9 – 12 months) to discourage surface reinfestation.

If these instructions are followed and all safety precautions undertaken, grain bins can be fumigated safely and effectively using Phostoxin fumigants. Remember to always read the label of any pesticide before using it.

Explosion Hurts 10

Packages of an illegally dumped pesticide exploded and burned at a garbage transfer station, spewing white clouds of toxic smoke that sent 10 people to the hospital and forced the evacuation of about 100 others.

"Somebody took the easy way out by disposing of hazardous material in a dumpster," said emergency services director Don Brown of Portsmouth, Virginia.

Police were prepared to close a section of Interstate 64 near the area, and authorities brought in 15 school busses in case it became necessary to remove residents from a housing project.

Four firefighters and six public works employees exposed to the acrid smoke were taken to Maryview Hospital, where they were treated for minor respiratory irritation and released. Doctors said none sustained permanent lung damage.

Wladimir Gulevich of the Bureau of Hazardous Waste Disposal in Virginia said a separate state police investigation had been requested. Improper disposal of toxic materials is a criminal offense that carries a maximum penalty of 12 months in jail and fine of up to $10,000.

Magnesium Phosphide was used at a terminal to fumigate trailer-sized containers of tobacco to rid them of insects. The fumigant was collected and placed in plastic bags and put in dumpsters following the fumigation.

QUIZ

It is important that all fumigators know how to figure the volume of the area that they are going to fumigate. To brush up on your math skills take a few minutes to practice these examples. The answers can be found on page 7.

Figuring Volume

1. You are fumigating two adjoining buildings. The first building is 200 feet long, 80 feet wide and 17.5 feet to the side wall eve. The peak of this building is 6 feet from the side wall eve to the peak.

   The second building is 40 feet long, 40 feet wide and 80 feet tall. It has a flat roof.

   What is the total volume of these two buildings?

   Answer: _____ cubic feet

2. You are fumigating a grain bin that is 36 feet in diameter and 20 feet to the side wall eve and 8 feet from the side wall eve to the peak. How many cubic feet are in this grain bin?

   Answer: _____ cubic feet

3. How many bushels would fill the entire grain bin to the peak?

   Answer: _____ bushels

Did you get all three answers correct? Check your answers on page 7

INSECT SPOTLIGHT

MITES... The Mighty Microscopic Menace

Mites are close relatives of ticks, spiders, scorpions, and daddy-long-legs, and they are distant relatives of insects. Highly specialized among the Arachnida, the food and grain infesting mites can be a major problem for stored products. They are hard to kill with conventional fumigants, they can survive cold temperatures, and they can reproduce so very quickly.

Identifying mites is a highly technical procedure. They are so small that only in special preparation can their distinguishing characteristics be seen, and then only under high magnification. They range in size from 1/125th in. to 1/16th in. This article will not provide you with the knowledge to identify different species of these pests; however, it will provide you with an understanding of their importance. The Book "The Mites of Stored Food" by A.M. Hughes, published as Technical Bulletin No. 9 by the Ministry of Agriculture, Fisheries and Food, London, is a superb source for those who want to know more about this group of pests.

IDENTIFICATION

For species identification, mites may be sent to: Insects Limited, Inc. Mites to be mailed should be preserved in a vial of 70 percent ethyl or isopropyl alcohol.

Distribution

Mites are as widely distributed as are insects. They have adapted to life from the Artic to the Antarctic. They live on high mountains and they have been found drifting in the air high above the earth. However, relatively few mites can tolerate areas of low moisture.

Habitat

The surface litter of woods, decaying vegetation, and the upper layers of soil – where humidity remains high and uniform – comprise a microworld rich in species and in numbers because such a habitat provides an abundance of food and protection from desiccation. Many species live in the nests of birds and social insects, and in homes of rodents and other mammals; others have become specialized as parasites on the outside or within the bodies of other creatures.

Appearance

Mites are among the smallest of the Arthropoda. Some are so small that they would not be detected by the naked eye were it not for their movements.

All mites are without antennae and all (except mite larvae) have four pairs of legs and two body segments.

Life History

Mites develop from eggs; in some species the eggs hatch within the body of their parents. A newly-hatch mite is called a larva and it has only 6 legs.

Under highly favorable conditions, only a few days may be required for a mite to develop from egg to adult but under unfavorable conditions, the developmental period may be long and indefinite.

Foods and Feeding

Mites are free-living animals that can change their diet from decaying organic matter, mosses, and wet leaves to the foods of man in his warehouses, processing plants, grain bins, and dwellings. Mites are highly adaptive and will eat practically any foodstuff.

Food-infesting mites fall naturally into these groups, based on what they feed on primarily:

1. Cheeses
2. Grains
3. High protein specialty foods possessing certain acids
4. Predators of food related insects and mites
5. House dust and other organic dusts

Some food-infesting mites feed directly on grain or processed foods. Under favorable conditions, the number of mites may become enormous; up to 1,500 mites have been found in one grain of house dust.

Damage

Mite-infested food consumed by humans may have been made filthy and repulsive by mite egg shells, cast skins, dead bodies, and fecal pellets; it may be tainted with disagreeable odors and flavors; food-infesting mites may attack humans and other mammals and produce a dermatitis or "itch"; or they may cause bronchial asthma and dust allergies; when taken internally with infested food, intestinal acariasis may result.

The Straw Itch Mite has been found to be a tremendous human health problem. This mite will leave large welps on people's skin. There are cases where children have been killed by these mites. The toxin from the Straw Itch Mite is 1000's of times more potent than rattlesnake venom. These insects have a potential as a biological control predator on fire ants in the United States.

Mites can be detected in grain bins by the sweet smell that occurs. This smell is distinctive to high moisture grain in storage that has become infested with grain mites. Lowering the moisture level in this bin of grain would greatly reduce the mite population.

Control

Aluminum phosphide products (Phostoxin) have not shown desirable results in controlling mites in fumigations. Choropicrin has proven to be a good fumigant for mites in non-processed foods.

Controlling mites is difficult when moisture and temperature conditions are favorable for their development. Here are some suggestions for controlling mites:

1. Inspect foods and reject infested products before thay are admitted to the premises.
2. Do not reuse sacks or packages.
3. Reduce the relative humidity to below 55% and the moisture content to below 12%.
4. Provide good ventilation.
5. Avoid prolonged storage.
6. Remove nests of birds and rodents as food-infesting mites are normal inhabitants of such places.
7. Give special attention to prevention of local increases in moisture, leakage, open windows, holes in grain bin roofs, etc.
8. Spray walls and floors with an approved residual miticide.
9. Apply approved fumigants when advisable, bearing in mind that dosages appreciably greater than those needed for insect control are usually necessary for mite control.

I'm sure you will agree after reading this spotlight of mites that they live up to their name: "The Mighty Microscopic Menace."

Reprinted in part from KSU , Food Infesting Pests

Top Dressing Grain in Storage with Reldan 4E

Fumigation is designed to kill all stages of insect life without leaving an active residual on the grain. Insects are free to wander into the grain bin after the gas is gone.

A protective barrier is sometimes needed after the grain mass has been fumigated. This does not suggest that Reldan can be used instead of treating the total grain mass, but does say it will fit well with fumigated grain to help prevent the establishment of immigrating insects. We still prefer turning and treating the grain after fumigation for best protection.

To protect stored grain from being attacked by surface feeding insects, apply a mixture of Reldan 4E concentrate (consult the label) and 2 gallons of water. Apply as a split application to 1000 square feet of grain surface. Apply ½ of the mixture as a spray to 1000 square feet of grain surface and rake the mixture into the grain to a depth of 4 inches. Apply the remaining ½ of the mixture (1 gallon) to the raked surface.

OSHA Limits Use of Gas Mask Canisters

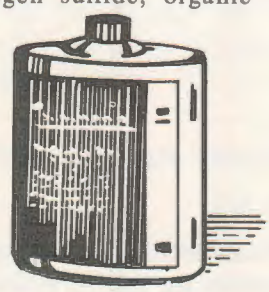
MSA sent out the following news release: "The enclosed memo to OSHA Regional Administrators about the Use of Bureau of Mines Approved Gas Mask Canisters has generated some questions from customers who use gas mask canisters for protection against hydrogen sulfide, hydrogen cyanide, and phosphine (Phostoxin).

Essentially, this memo means that OSHA believes that these BM-approved gas mask canisters may not provide an adequate margin of safety to respirator wearers. OSHA will not accept use of these canisters for anything except "emergency escape." OSHA will, "for a reasonable time," issue a minor citation (a warning with no fine called a "de minimus" citation) to employers whose employees use the canisters for respiratory protection other than emergency escape."

The MSA canisters affected are:
#77713 GMC-SS-1 Hydrogen sulfide, organic vapors, phosphine

#77709 GMK Hydrocyanic acid gas

#77711 GML Chlorine



IMPORTANT NOTICE

If you fumigate with methyl bromide, chloropicrin, magnesium phosphide, or aluminum phosphide (Phostoxin), you will be required to have the following safety equipment in 1986:

1. Self-contained Breathing Apparatus (SCBA)
2. Gas Detection Device (Draeger Pump & Tubes)

Insects Limited, Inc. distributes this equipment to fumigant applicators. We are Draeger and MSA equipment distributors. We would like to work with you on the new safety equipment requirements.

Three important things to remember when purchasing this type equipment are:

1. Training
2. Maintenance
3. Price

Insects Limited, Inc. provides a training program to teach you and your people how to properly use this equipment. Maintenance is important on this type of air mask. ILI works with a certified MSA service technician who can keep your equipment in proper working order. These are two good reasons to purchase your air supply gas masks from Insects Limited, Inc. The third reason is the following money saving special:

INTRODUCTORY SPECIAL OFFER ON SAFETY EQUIPMENT

- MSA ULTRALITE Air mask with 9.5 lb Composite II cylinder & carrying case. #473649
  Regular price: $1350.00
  Special price: 1287.50

- Draeger Gas Detection Model 31 pump with two boxes of detection tubes (phosphine or methyl bromide)
  Regular price: $208.00
  Special price: 197.50

OFFER ENDS AUGUST 15, 1986
Call (317) 846-5444

Answers from Page 5

1.a. 200 × 80 × 17.5 = 280,000 cu.ft.

b. 200 × 80 × 6 divided by 2 = 48,000 cu.ft.

c. 40 × 40 × 80 = 128,000 cu.ft.

Answer: 456,000 cu.ft.

2.a. 3.14 × (18 × 18) × 20 = 20,347 cu. ft.

b. 3.14 × (18 × 18) × 8 divided by 3 = 2,713 cu. ft.

Answer: 23,060 cu. ft.

3. There are approximately 1.25 bushels of grain per cu. ft. There is approximately .80 cu. ft in a bushel of grain.

Answer: 28,825 bushel

Note: By estimating the volume of a structure you are taking a risk of having a fumigation failure or cost overrun.

How to Protect Yourself from Pesticides

Pesticides might help keep your garden and lawn healthy, but be careful to protect yourself.

Kitty litter, gloves and non-absorbent shoes are the best protection from dangerous chemicals, says Susan Arnold, poison specialist at the University of Kansas Medical Center in Kansas City.

Gloves and non-absorbent footwear – not sneakers or other canvas shoes – prevent skin from absorbing chemicals. And if you spill pesticide on the floor, cover the mishap with kitty litter or sawdust, which will soak up the chemical, Arnold says.

Gloves are the single most important thing one can do to protect himself against pesticide poison. An unlined 14″ neoprene glove is recommended when pouring and handling pesticides (except methyl bromide fumigant).

FFS wants to provide you with those gloves. Anyone purchasing pesticide products from FSS in the months of June, July, or August, 1986 can get a pair of 14″ unlined black neoprene gloves for $5.00/pair. This is a regular $11.99 item. We want to help you protect yourself.

Ask for your gloves with your next order.

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Chemical residues are now being recorded as low as parts per quadrillion. To put this amount in perspective; a part per quadrillion is equivalent to your handprint on the ground, compared to the entire area of the United States. Wow!

Alarm Pheromones

By 1609 beekeepers recognized that a single bee sting provoked excitement among other bees and in turn additional attacks. When a bee attempts to pull herself free after stinging, the entire sting apparatus is torn from her body and remains firmly embedded in the victim's skin. During this process the sting pheromone – a releaser – is discharged into the air from a special gland which remains attached to the sting. This highly volatile pheromone is detected quickly by other bees and causes them to join the attack. Other insects including termites and ants also produce alarm pheromones.

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