PH22 -857-2

RESTRICTED USE PESTICIDE

DUE TO ACUTE INHALATION TOXICITY OF HIGHLY TOXIC HYDROGEN PHOSPHIDE (PHOSPHINE, PH_3) GAS

For retail sale to and use only by Certified Applicators for those uses covered by the applicators certification or persons trained in accordance with the attached product manual working under the direct supervision and in the physical presence of the Certified Applicator. Physical presence means onsite or on the premises. Refer to Pestcon Systems Inc. Applicator's Manual for complete instructions for the safe use of this product.

ACCEPTED

MAR. 25 91

Fumitoxin

EPA REG. NO. 5857-1 – TABLETS

[illegible]

FOR USE AGAINST LISTED INSECTS WHICH INFEST STORED COMMODITIES, SPECIFIED PROCESSED FOODS, & ANIMAL FEEDS

ACTIVE INGREDIENT – Aluminum Phosphide	55%
Inert Ingredients	45%
	100%

KEEP OUT OF REACH OF CHILDREN

DANGER – PELIGRO – POISON

PESTCON SYSTEMS INC

5511 Capital Center Drive., Ste. 302
Raleigh, N.C. 27606
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Fax: 919-859-2155

EAP EST. NO. 46060-CI-04

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CHEMICAL AND PHYSICAL PROPERTIES OF FUMITOXIN® FUMIGANTS

A. Chemical formula for hydrogen phosphide is PH_3 or H_3P.

B. FUMITOXIN fumigant's active ingredient pure, finely ground aluminum phosphide, liberates hydrogen phosphide (phosphine) gas via the following chemical reaction:
$AlP + 3H_2O \rightarrow Al(OH)_3 + PH_3$.

C. FUMITOXIN also contains ammonium carbamate which liberates ammonia and carbon dioxide as follows:
$NH_2COONH_4 \rightarrow 2NH_3 + CO_2$
These gases are essentially nonflammable and act as inerting agents to reduce fire hazards. The pungent smelling ammonia gas serves as an initial warning agent, and begins to develop immediately upon opening.

D. FUMITOXIN is prepared in the form of tablets, pellets and bags. For use directions of bags, see the FUMITOXIN aluminum phosphide bag instruction labeling.

E. Upon exposure to air, FUMITOXIN fumigants begin to react slowly with atmospheric moisture to produce small quantities of hydrogen phosphide (phosphine) gas. This reaction gradually accelerates and then tapers off again as the aluminum phosphide decomposes.

F. The rate of decomposition of the tablets and pellets varies depending on the moisture and temperature. For example, when moisture and temperature of the fumigated commodity are high, decomposition may be complete in less than 3 days. However, with ambient temperatures lower than 15 degrees C (60 degrees F), grain moisture lower than 10% or relative humidity lower than 25%, decomposition may require 5 days or more.

G. The tablets weigh approximately 3 grams and release 1 gram of gaseous hydrogen phosphide. They are spherical in shape, approximately 5/8 of an inch in diameter, and are packaged in bulk in resealable, seamless aluminum flasks which contain approximately 100, or larger flask of approximately 500 tablets each.

H. Pellets are spherical in shape, approximately 3/8 of an inch in diameter, weigh approximately 0.6 grams, and release 0.2 grams of hydrogen phosphide. They are packaged in resealable aluminum flasks containing approximately 1,660 pellets, or larger flasks containing approximately 2,490 pellets each.

I. After decomposition FUMITOXIN® leaves

a grey-white powder composed almost entirely of non-poisonous aluminum hydroxide and a small amount of unreacted aluminum phosphide. This is not considered a hazardous waste. The slight trace of aluminum phosphide decomposes when raw commodities are moved. Following space fumigation and fumigation of processed foods, this powder may be disposed of as outlined in "Direction For Disposal of Spent Residual Dust."

Storage of FUMITOXIN® Alumimum Phosphide Products

A Store in a dry, well ventilated area, away from heat and under lock and key. Keep away from irresponsible people and children. Post as a pesticide storage area. Do not contaminate water, food or feed by storing pesticides in the same area used to store these commodities.

B Do not store in buildings where humans or domestic animals reside.

C FUMITOXIN tablets and pellets are supplied in relatively gas tight resealable aluminum flasks. Do not expose the product to atmospheric moisture any longer than is necessary. Reseal tightly before returning flasks to storage, mark the flask opened and partially used.

D The shelf life of FUMITOXIN is virtually unlimited as long as the containers are kept tightly sealed.

PRECAUTIONARY STATEMENTS

A. Physical and Chemical Hazards

Aluminum phosphide tablets, pellets and partially spent dust will release hydrogen phosphide if exposed to moisture from the air or, if it comes into contact with water, acids, and many other liquids. Piling of tablets, pellets or dust from their fragmentation may cause a temperature increase and confine the release of gas so that ignition could occur.

It is recommended that you open aluminum phosphide products in open air or near a fan which exhausts outside immediately. Never open in a flammable atmosphere because on rare occasions it may flash. When opening point the container away from the face and body. These precautions will also reduce the applicators exposure to hydrogen phosphide (phosphine) gas.

Pure hydrogen phosphide (phosphine) gas is practically insoluble in water, fats and oils and is stable at normal fumigation temperatures. However, it may react with certain metals and cause corrosion, especially at higher temperatures and relative humidities. Metals such as copper, brass, and other copper alloys, and precious metals such as gold and silver are susceptible

to corrosion by phosphine, especially at high temperatures and humidity. Thus items such as small electric motors, smoke detectors, brass sprinkler heads, batteries and battery chargers, forklifts, temperature monitoring systems, electrical switch gear, communication devices, computers, calculators, watches, and other electronic equipment should be protected or removed before fumigation. Hydrogen phosphide will also react with certain metallic salts and, therefore, sensitive items such as photographic film, copying papers and some inorganic pigments, etc. should not be exposed.

B Hazards to Humans and Domestic Animals

DANGER: FUMITOXIN tablets, pellets or dust can be fatal if swallowed. Do not get in eyes, on skin or on clothing. Do not eat, drink or smoke while handling aluminum phosphide fumigants. When a sealed container is opened, allowing material to come in contact with moisture, water or acids, toxic phosphine gas will be released. If a garlic odor is detected, refer to section on Industrial Hygiene Monitoring for appropriate monitoring procedures. Pure phosphine gas is odorless, the odor is due to a contaminant

Since an odor may not be detected under certain circumstances, the absence of garlic odor does not mean that phosphine gas is absent. Observe proper application, aeration, reentry and disposal procedures specified elsewhere in the labeling to prevent overexposure.

C. **Statement of Practical Treatment**

Symptoms of overexposure are headache, dizziness, nausea, difficult breathing, vomiting, and diarrhea. In all cases of overexposure get medical attention immediately. Take victim to a doctor or emergency treatment facility.

If excessive amounts of gas from aluminum phosphide are inhaled:

Get exposed person to fresh air. Keep warm and make sure person can breathe freely. If breathing has stopped, give artificial respiration by mouth to mouth or other means of resuscitation. Do not give anything by mouth to an unconscious person.

If aluminum phosphide pellets, tablets or powder are swallowed:

Drink or administer one or two glasses of water and induce vomiting by touching back of throat with finger, or if available administer syrup of ipecac. Do not give

anything by mouth if victim is unconscious or not alert.

If powder or granules of aluminum phosphide get on skin or clothing:

Brush or shake material off clothes in a well ventilated area. Check that all pockets and cuffs are empty. Allow clothes to aerate in a ventilated area prior to laundering. Do not leave contaminated clothing in occupied and/or confined areas such as automobiles, vans, motel rooms, etc. Wash contaminated skin thoroughly with soap and water.

If dust from pellets or tablets gets in eyes:

Flush with plenty of water. Get medical attention.

SUMMARY OF GOOD SAFETY PRACTICES

A. Carefully read all labeling and follow instructions explicitly.

B. Never work alone when applying fumigant from within an enclosed area.

C. Never allow untrained personnel to apply FUMITOXIN® fumigants.

D. NIOSH/MSHA respiratory protection must be available at the site of application when applying fumigant from within an enclosed area. Respiratory protection need not be available for uses such as outdoor air

plication

E Wear dry gloves of cotton or other appropriate material when applying FUMITOXIN® tablets and pellets

F It is preferable to open containers in open air or near a fan that exhausts outside immediately. Never open in a flammable atmosphere

G Do not allow FUMITOXIN to contact liquid water or steam

H Dispose of empty containers and spent residues in accordance with label instructions

I Post WARNING signs on fumigated areas

J Notify appropriate company employees and provide relevant safety information to local officials annually for use in the event of an emergency

K Hydrogen phosphide fumigants are **NOT** to be used for vacuum fumigations

L Exposure to hydrogen phosphide must not exceed the 8 hour TWA of 0.3 ppm during application or a maximum concentration of 0.3 ppm after application is completed

M Fumigated areas must be aerated to 0.3 ppm hydrogen phosphide or less, prior to

reentry by unprotected workers.

N. Finished foods and feeds which have been fumigated with FUMITOXIN® must be aerated 48 hours **prior to offering to the end consumer.**

O. Transfer of a treated commodity to another site without aeration, as in railcars, is permissible provided the new site is placarded.

P. Do not fumigate when **commodity** temperature is below 40°F (5° C).

Q. During transfer and processing of unaerated commodities, workers must not be exposed to levels of hydrogen phosphide above 0.3 ppm.

R. It is recommeded to aerate contaminated clothing in a well ventilated area prior to washing. Check that all pockets and cuffs are empty.

S Keep containers tightly closed except while removing product for application

T. Protect copper, silver, gold and their alloys from corrosive exposure to hydrogen phosphide.

U Pellets and/or tablets or their reacted residues must not come into contact with any processed food with the exception that both can be added directly to **processed brewers rice, malt, and corn grits** used in the manufacture of beer

V Do not re-use aluminum phosphide containers for any purpose other than recycling or reconditioning.

W. OSHA recommeds that pre-exposure screening of employees be conducted to detect impaired pulmonary function

RESPIRATORY PROTECTION

A. WHEN RESPIRATORY PROTECTION MUST BE WORN

NIOSH/MSHA approved respiratory protection must be worn during exposure to concentrations in excess of permitted limits or when concentrations are unknown.

B. PERMISSIBLE GAS CONCENTRATION RANGES FOR RESPIRATORY PROTECTION DEVICES

A NIOSH/MSHA approved, full face gas mask, hydrogen phosphide canister combination may be used at levels up to 15 ppm or to escape from levels up to 1500 ppm. Above this level or in situations where the hydrogen phosphide concentration is unknown, a NIOSH/MSHA approved, self-contained breathing apparatus (SCBA) or its equivalent must be used. The NIOSH/OSHA Pocket Guide, 8-85, DHEW/NIOSH 78-210, lists these and other types of approved respirators and the concentration limits of which they may be used

C REQUIREMENTS FOR AVAILABILITY OF RESPIRATORY PROTECTION

Respiratory protection must be available at the site of application in case it is needed when applying FUMITOXIN® tablets and pellets from within the structure being fumigated. An approved full face gas mask, phosphine canister combination or self contained breathing apparatus (SCBA) or its equivalent must be available at the site of application. If SCBA or its equivalent is not available at the application site, it must be available locally, for example, at a fire station or rescue squad

Respiratory protection need not be available for application from outside the area to be fumigated such as addition of tablets or pellets to automatic dispensing devices, etc., if exposures above the permitted limit will not be encountered

Respiratory protection need not be available for outdoor applications

If monitoring equipment is not available on a farm and application cannot be done from outside the structure, an approved canister respirator must be worn during application from within the enclosed indoor area

GAS DETECTION EQUIPMENT

There are several reliable devices marketed. One type is the hand pump when used in conjunction with the appropriate detector tube. They are portable, simple devices and do not require intensive training or elaborate supporting equipment to operate. Furthermore, they are inexpensively adaptable to remote monitoring procedures and will measure concentrations of hydrogen phosphide in air in trace amounts up to 1%. Use instructions are enclosed with each purchase. Consult your local supplier of such equipment or contact Pestcon Systems, Inc. for more information.

APPLICATOR AND WORKER EXPOSURE

A. HYDROGEN PHOSPHIDE EXPOSURE LIMITS

Exposure to hydrogen phosphide must not exceed the 8 hour TWA of 0.3 ppm for applicators and workers during application. Application is defined as the time period covering the opening of the first container, applying the appropriate dosage of fumigant and closing up the site to be fumigated. All persons in the treated site and in adjacent indoor areas are covered by this exposure standard.

After application is completed worker or applicator exposure must not exceed 0.3 ppm maximum concentration. Such exposures may occur because of leakage into enclosed areas from fumigation sites, during reentry or during transfer of unaerated commodity.

B. APPLICATION OF FUMIGANT

Depending upon temperature and humidity, FUMITOXIN® tablets and pellets release hydrogen phosphide gas slowly upon exposure to moisture from the air. This release is often slow enough to permit applicators to deposit fumigant in the desired areas and then vacate the premises without significant exposure to the gas. If the fumigator's exposure exceeds the 8 hour TWA of 0.3 ppm, approved respiratory protection must be worn. Gas concentration measurements for safety purposes must be made using low level detector tubes or other suitable low level detection equipment. See the Industrial Hygiene Monitoring section. Information on hydrogen phosphide (phosphine, PH_3) detector tubes may be obtained from Pestcon Systems, Inc.

C. LEAKAGE FROM FUMIGATED SITES

Hydrogen phosphide is highly mobile and given enough time may penetrate seeming

ly gas tight materials such as concrete and cinder block. Therefore adjacent, enclosed areas likely to be occupied should be examined to ensure that significant leakage has not occurred. Sealing of the fumigated site and/or air flow in the occupied areas must be sufficient to prevent exposures exceeding the TLV's.

D. **AERATION AND REENTRY**

If the area is to be entered after fumigation it must be aerated until the level of hydrogen phosphide gas is 0.3 ppm or below. The area or site must be monitored to ensure that libration of gas from the treated commodity does not result in the development of unacceptable levels of hydrogen phosphide. Do not allow reentry into treated areas by any person before this time unless protected by an approved respirator.

E. **HANDLING UNAERATED COMMODITIES**

Following the required exposure time for fumigation, transfer and processing of a treated commodity prior to complete aeration is permissible; however, workers must not be exposed to hydrogen phosphide in excess of the permitted exposure limits.

F. **INDUSTRIAL HYGIENE MONITORING**

It is recommended that hydrogen phos-

phide exposure be documented in an operation log or manual for each site and operation where exposure may occur. The purpose of this monitoring is to prevent excessive exposure and to determine when and where respiratory protection is required. Once exposures have been adequately characterized, [illegible] spot checks should be made [illegible] especially if conditions [illegible] change or if an unexpected [illegible] is detected.

If monitoring shows that workers are exposed to concentrations in excess of the permitted exposure limits, then [illegible]

DIRECTIONS FOR USE

A. **General Use Directions**

1. It is a violation of federal law to use this product in a manner inconsistent with its labeling.
2. FUMITOXIN tablets and pellets are Restricted Use Pesticides due to the acute inhalation toxicity of hydrogen phosphide (phosphine, PH_3) gas.

3. FUMITOXIN® is a highly hazardous material and may be used only by individuals trained in its proper use. Before using, read and follow all label precautions and directions on the label and in labeling.

Additional copies of this manual are available from:

PESTCON SYSTEMS, INC.
5511 Capital Center Drive., Ste. 302
Raleigh, N.C. 27606
Telephone: 800-544-2778 or 919-859-2500
Fax: 919-859-2155

4. At least two trained persons must be present when FUMITOXIN pellets or tablets are applied from within the enclosed indoor area being treated or during reentry into a fumigated or partially aerated site. Only one trained person is required to be present when the fumigant is applied from outside the area being fumigated.

5. Prior to applying this product you should determine (1) if the structure can be made sufficiently gas tight, (2) if recording of gas readings will be required, (3) how to efficiently and safely apply the fumigant and (4) emergency procedures.

6. Shipholds, barges, containers on ships, railroad cars and containers shipped piggyback by rail may be fumigated in-transit. However, fumigated trucks, vans, trailers and similar transport vehicles shall not be moved over public roads or highways until they are aerated.

7. Do not fumigate commodities with this product when commodity temperature is below 40°F (5°C).

8. Wear gloves of cotton or other suitable material while handling FUMITOXIN® tablets or pellets. Wash hands thoroughly after use.

9. Hydrogen phosphide gas may flash at concentrations above its flammable limit. Therefore, always open FUMITOXIN containers in outdoor air and never in a flammable atmosphere. This precaution will not only prevent harm in the unlikely event of a flash but will reduce the applicators exposure to hydrogen phosphice gas.

10. Piling of tablets, pellets, or dust from their fragmentation; or addition of liquid water to FUMITOXIN may cause a temperature increase and confine the release of gas so that ignition could occur.

11. As much as possible, protect unused FUMITOXIN® from excessive exposure to atmospheric moisture during application. Tightly reseal and mark the aluminum flask as opened and partially used prior to returning to storage.

12. Respiratory protection approved for the concentration to which the fumigator will be exposed must be available if FUMITOXIN is to be applied from within an enclosed indoor area. Respiratory protection need not be available for uses such as outdoor application, addition of tablets or pellets to automatic dispensing devices, etc., if exposures above the TLV's will not be encountered.

    A NIOSH/MSHA approved, full-face gas mask — hydrogen phosphide canister combination may be used at levels up to 15 ppm. Above this level or in situations where the hydrogen phosphide concentration is unknown, a NIOSH/MSHA approved, self-contained breathing apparatus (SCBA) or its equivalent must be used.

13. Notify appropriate company employees and provide relevant safety information to local officials annually for use in the event of an emergency.

8 USE PATTERN

FUMITOXIN® has been found effective against the following stored products insects and their pre-adult stages — that is, eggs, larvae and pupae

almond moth
Angoumois grain moth
bean weevil
cadelle
cereal leaf beetle
cigarette beetle
confused flour beetle
dermestid beetle
dried fruit beetle
dried fruit moth
European grain moth
flat grain beetle
fruit fly
granary weevil
greater wax moth
hairy fungus beetle
hessian fly
Indian meal moth
Khapra beetle
lesser grain borer
maize weevil
Mediterranean flour moth
pink bollworm
raisin moth
red flour beetle
rice weevil
rusty grain beetle
saw toothed grain beetle
spider beetle
tobacco moth
yellow meal worm
Africanized and honeybee infested with tracheal mites
pea weevil

Although it is possible to achieve total control of the listed insect pests, this is frequently not realized in actual practice

Factors contributing to less than total control are leaks, poor gas distribution, unfavorable exposure conditions, etc. In addition some insects are less susceptible to hydrogen phosphide than others. If maximum control is to be attainable, extreme care must be taken in sealing, the higher dosages must be used, exposure periods lengthened, proper application procedures followed and temperature and humidity conditions must be favorable.

C **COMMODITIES WHICH MAY BE FUMIGATED WITH FUMITOXIN**

FUMITOXIN may be used for the fumigation of listed raw agricultural commodities, animal feed and feed ingredients, processed foods, tobacco and certain other non-food items.

RAW AGRICULTURAL COMMODITIES AND ANIMAL FEED AND FEED INGREDIENTS WHICH MAY BE FUMIGATED WITH FUMITOXIN

FUMITOXIN tablets and pellets may be added directly to animal feed, feed ingredients and raw agricultural commodities stored in bulk. For those commodities not stored in bulk, FUMITOXIN may be placed in moisture permeable envelopes, on trays, etc. and fumigated as with processed foods.

almonds
animal feed & feed ingredients
barley
Brazil nuts
cashews
cocoa beans
coffee beans
corn
cottonseed
dates
filberts
flower seed
grass seed
millet
oats
peanuts
pecans
pistacho nuts
popcorn
rice
rye
safflower seed
sesame seed
seed & pod vegetables
sorghum
soy beans
sunflower seeds
triticale
vegetable seed
walnuts
wheat

PROCESSED FOODS WHICH MAY BE FUMIGATED WITH FUMITOXIN

The listed processed foods may be fumigated with FUMITOXIN. Under no condition shall any processed food or bagged commodity come in contact with FUMITOXIN tablets, pellets or residual dust except that FUMITOXIN may be added directly to processed brewer's rice, malt and corn grits for use in the manufacture of beer.

Processed Candy and Sugar
Cereal Flours and Bakery Mixes
Cereal Foods (including cookies, crackers,

macaroni, noodles, pasta, pretzels, snack foods and spaghetti)
Processed Cereals (including milled fractions and packaged cereals)
Cheese and Cheese Byproducts
Chocolate and Chocolate Products (assorted chocolate, chocolate liquor, cocoa, cocoa powder, dark chocolate coating and milk chocolate)
Processed Coffee
Corn Grits
Cured, Dried and Processed Meat Products and Dried Fish
Dates
Dried Eggs and Egg Yolk Solids
Dried Milk, Dried Powdered Milk, Nondairy Creamers, and Nonfat Dried Milk
Dried or Dehydrated Fruits (apples, dates, figs, peaches, pears, prunes, raisins and sultanas)
Figs
Malt
Processed Herbs, Spices, Seasonings and Condiments
Processed Nuts (almonds, apricot kernals, Brazil nuts, cashews, filberts, pecans, pistachio nuts and walnuts)
Processed Oats (including oatmeal)
Peanuts
Rice (brewer's rice grits, enriched and polished)
Soybean Flour and Milled Fractions

Processed Tea
Dried and Dehydrated Vegetables (beans, carrots, lentils, peas, potato flour, potato products and spinach)
Wildrice
Yeast (including primary yeast)

NONFOOD COMMODITIES WHICH MAY BE FUMIGATED WITH FUMITOXIN

Processed or Unprocessed Cotton, Wool, and Other Natural Fibers, Cloth or Clothing
Feathers
Human Hair, Rubberized Hair, Vulcanized Hair, Mohair, Animal Hide, Furs
Tobacco
Wood, Cut Trees, Wood Chips and Wood and Bamboo Products
Paper and Paper Products
Dried Plants and Flowers, Hay or Straw
Seeds (grass seed, ornamental herbaceous plant seed and vegetable seed)

FUMIGATION EXPOSURE GUIDELINE

The following table may be used as a guide in determining the minimum length of the exposure period at the indicated temperatures

TEMPERATURE TO WHICH FUMIGANT AND INSECTS ARE EXPOSED	MINIMUM EXPOSURE PERIOD FOR FUMITOXIN	
	PELLETS	TABLETS
Below 40°F (5°C)	Do Not Fumigate	Do Not Fumigate
40° - 53°F (4-12°C)	8 days (192 hrs.)	10 days (240 hrs.)
54° - 59°F (12-15°C)	4 days (96 hrs.)	5 days (120 hrs.)
60° - 68°F (16-20°C)	3 days (72 hrs.)	4 days (96 hrs.)
above 68°F (20°C)	2 days (48 hrs.)	3 days (72 hrs.)

The length of the fumigation must be long enough so as to provide for adequate control of the insect pests which infest the commodity being treated. It will be necessary to lengthen the fumigation at lower temperatures and relative humidities (or grain moisture) since insects are more difficult to control under these conditions.

The fumigation period should also be long enough so that the generation of hydrogen phosphide gas has essentially ceased and worker exposure minimized during further storage and processing.

There is little to be gained by extending the exposure period if the structure to be fumigated has not been carefully sealed. This is required to insure that adequate gas levels are retained. Proper application procedures must be followed to provide satisfactory control, odor retention and results.

The exposure periods in the above table are minimum periods and should not be shortened for any reason other than when it may be necessary to abort the fumigation.

RECOMMENDED DOSAGE RATES

The successful conclusion of a fumigation depends on the concentration being held for a sufficient length of time or exposure period. With hydrogen phosphide, minimum exposure times are required because of the means of generating

the gas from solid material and the biological action of the insect. For successful results against all stages, exposure times are not generally possible in less than 48 hours.

It is beyond the scope of this brochure to take into account all conditions prevailing in all situations where FUMITOXIN® is used. Construction and tightness of storages vary considerably, so do climatic conditions. Therefore, we can only give a general guidance, which explains the wide range of the following recommended dosage rates.

Dosage rate depends primarily upon the following factors:

- —Type of storage
- —Pests to be controlled
- —Commodity temperature

Dosage is calculated per 1,000 cubic feet or per 1,000 bushels.

PRODUCT	PER 1,000 CU. FT.	PER 1,000 BUSHELS
Pellets	100 - 500	125 - 625
Tablets	20 - 145	25 - 180

These dosages are not to be exceeded. It is important to be aware that a shortened exposure period cannot be compensated by an increased dosage of hydrogen phosphide.

Long fumigation experience has shown the following recommendations to be generally reliable. Extremely adverse conditions may

require deviation from these recommended dosage rates. Contact your Pestcon Systems, Inc. representative for assistance.

TYPE OF STORAGE	RECOMMENDED DOSAGE
b. Bulk stored commodities in flat stores, steel bins, bunkers, etc	90 - 180 tablets per 1,000 bushels 270 - 540 pellets per 1,000 bushels
c. Loosely piled commodity stored under temporary relatively gas tight covering.	90 - 180 tablets per 1,000 bushels 270 - 540 pellets per 1,000 bushels
d Packaged commodities (bagged grain, processed foods, etc.) in sealable enclosure	30 - 90 tablets per 1,000 cubic feet 165 - 300 pellets per 1,000 cubic feet
e Nuts or dates in bags or storage boxes	20 - 40 tablets per 1,000 cubic feet 100 - 200 pellets per 1,000 cubic feet
Nuts or dates in bulk	30 - 40 tablets per 1,000 cubic feet 150 - 200 pellets per 1,000 cubic feet
f Railcars	45 - 145 tablets per 1,000 cubic feet 225 - 500 pellets per 1,000 cubic feet

TYPE OF STORAGE	RE
a SILOS	
Large vertical silo bins which are relatively gas tight (e.g. steel), or well constructed concrete bins	40 120
FARM BINS (BUTLER TYPE)	
Well constructed and reasonably gas tight	90 200

Farm bins made of wood or loosely constructed considerable increase in dosage may not give should be covered with polyethylene sheeting considerably reduced

g Space fumigation such as cereal mills, feed mills, food processing plants & warehouses — 20 - 45 tablets per 1,000 cubic feet; 100 - 225 pellets per 1,000 cubic feet

h Stored Tobacco — 20 - 40 tablets per 1,000 cubic feet; 100 - 165 pellets per 1,000 cubic feet

i Non food products — 60 - 90 tablets per 1,000 cubic feet; 150 - 450 pellets per 1,000 cubic feet

j Stored combs, supers and other beekeeping equipment for wax moth control and Africanized and Honeybees infested with tracheal mites and foulbrood — 30 - 45 tablets per 1,000 cubic feet; 150 - 225 pellets per 1,000 cubic feet

k Rodent burrows — 2 - 4 tablets per burrow; 10 - 20 pellets per burrow

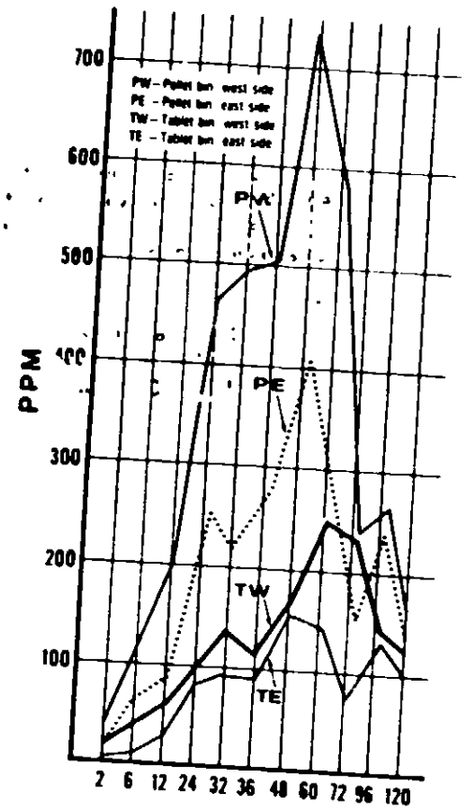
l. Shipholds — 30 - 60 tablets per 1,000 cu. ft. - BULK; 30 - 60 tablets per 1,000 cu. ft. - BAGGED; 165 - 300 pellets per 1,000 cu. ft. - BULK; 100 - 300 pellets per 1,000 cu. ft. - BAGGED

m. Spices in small containers — 1 - 2 pellets per 10 cubic feet

USING TABLETS OR PELLETS

The question often is asked why there may be a difference in the total amount of aluminum phosphide in dosage recommendations between tablets and pellets. Contrary to what might be expected, it is not always the best decision to assume that you use five times as many pellets (which weigh 0.6 grams each) as tablets (which weigh 3 grams each). Because they are smaller pellets decompose more quickly and almost always give a higher peak concentration much sooner than tablets. Often you have a different distribution pattern. These and other factors thus suggest there often will be a difference in dosage rates between tablets and pellets.

To illustrate this, the chart on the following page summarizes the results of a test fumigation of two bins of identical size, one treated with 22 tablets (66 grams) per 1,000 bushels and the other treated with 110 pellets (66 grams) per 1,000 bushels. The results show a clear difference in the amount of gas available and the concentration reached using identical weights of aluminum phosphide. Peak concentration of the pellet treated bins were over three times that of the tablet treated bin (770 ppm vs 230 ppm). For warehouse and flat storage buildings, tablets often (but not always) are the preferred choice.



SPECIFIC USE DIRECTIONS

*Patent No 4,579,417 and 4,641,573

1. FARM STORAGE FUMIGATION

a. Equipment Necessary:

1. FUMITOXIN® tablets/pellets
2. 5' to 7' probes, 1-1/4" diameter, PVC rigid tubing is recommended.
3. Grain sampling probe with pan, screen and thermometer (optional).
4. Gloves of cotton or other appropriate material (washable).
5. Aluminum phosphide warning signs.
6. Polyethylene sheeting.
7. Detection equipment.
8. Approved respiratory protection equipment.

b. Steps in FUMITOXIN Fumigation:

1. Contact your supplier for detailed information, assistance and training outlines.
2. **Read the label on the container** and all supplemental labeling.
3. Determine location of infestation.
4. Determine number of bushels to be treated.
5. Determine number of tablets/pellets required for treatment as follows:

DOSAGE CHART

TYPE OF STORAGE	GRAIN TEMP.	TABLETS DOSAGE PER 1,000 BUSHELS	PELLETS DOSAGE PER 1,000 BUSHELS
Concrete elevators or steel tanks with turning facilities	60-68° F	90-180 tablets	200-450 pellets
	Over 68° F	60- 90 tablets	150-450 pellets
		as grain is being turned	
Round steel bins	60-68° F	120 tablets	200-450 pellets
	Over 68° F	90 tablets	150-450 pellets
Flat stores in relatively tight building not over 30 feet in depth	60-68°F	150 tablets	150-450 pellets
	Over 68° F	120 tablets	150-450 pellets
Treatment of partial bins		120-180 tablets	150-450 pellets

6. Plan the distribution pattern for applying the tablets/pellets (keep in mind location of infestation). Contact your supplier for information on equipment to probe deeper than seven feet if this is necessary.
7. Probe tablets on 4' centers. Probe all tablets/pellets as deeply as possible, particularly with warm grain in cool climates. Convectional currents can prevent the hydrogen phosphide (phosphine) from penetrating downward.
8. Place warning signs by all access openings.
9. It is recommended that the perimeter of the bin be sprayed at ground level with an approved insecticide to help prevent reinfestation.
10. Do not enter the building for a minimum of five days after the fumigant has been applied or longer if grain is cooler than 60° F. Do not fumigate when grain temperature is below 40° F.
11. Following aeration of the building, spray grain surface with approved insecticide to discourage surface reinfestation.

NOTE: If monitoring equipment is not available on a farm and application cannot be done from outside of a structure, an approved canister respirator must be worn during application from within an enclosed indoor area.

2. **FUMIGATING VERTICAL STORAGE (Concrete upright bins, silos, etc.)**
   a. Locate all ventilation facilities for basement/tunnel.
   b. Check commodity temperature and moisture and determine required exposure time.
   c. To the extent possible, seal all openings except for fill opening.
   d. Calculate number of tablets or pellets required, based on quantity (bushels) of commodity to be treated.
   e. Open containers in open air or near a fan which exhausts outside immediately as under certain conditions containers of aluminum phosphide may flash upon opening.
   f. Tablets or pellets may be applied by hand or with an automatic dispenser to the moving grain stream. Bins requiring more than 24 hours to fill should not be fumigated by direct addition as the bin is filled. These bins should be fumigated upon completion of filling by probing.
   g. Warning signs should be placed on hatch cover and discharge spout of each treated bin.
   h. Employees may continue with their normal duties when FUMITOXIN® fumigant is used to fumigate grain in concrete eleva-

for bins, providing proper exposure levels are maintained

i Following application, basement/tunnels should always be checked for gas concentration before work starts. This can be done with detector tubes. If a concentration is detected in the basement/tunnel it must be eliminated by natural or forced ventilation. Checking of headhouse/gallery and basement/tunnel should always be done before the elevator crews start work. Grain may not be removed prior to completion of minimum exposure time.

3 **FUMIGATION OF FLAT STORAGE (Bunkers, quonset buildings, large steel tanks, etc.)**

Structure shall not be occupied during fumigation. If the storage is within a barn, all animals must be removed for the entire period of fumigation.

a Check the storage for tightness.

b To the extent practical, seal any vents, cracks or other leaks.

c Determine commodity temperature, moisture and type of application to be made.

d Determine the dosage and exposure time based on the above information.

e Tablets are recommended for flat storage, but if necessary, pellets may be substituted. Workers should be aware of the much shortened allowable application time if pellets are used.

f Apply tablets by using probes. Probes should be inserted at three or four foot intervals horizontally in both directions. The number of tablets per probe is determined by dividing the total number of tablets by the total number of probings to be carried out. Tablets will be dropped into the probes at intervals, as the probe is withdrawn.

g During application of the tablets, doors and windows shall be open to create as much cross ventilation as possible. Observe proper exposure levels and proper respiratory protection requirements found elsewhere in this manual.

h Covering the surface of the commodity with tarps or plastic sheets reduces convectional currents and gas loss, thus increasing the effectiveness of the fumigant. This cover must be removed after the fumigation is completed.

i On completion of FUMITOXIN® application and covering of commodity with tarps, close, seal and secure all doors, windows, hatches, etc.

j. Warning signs are placed on all doors and openings so they are visible from all directions

k. After full exposure time, aerating can be accomplished by opening doors and windows from the outside and allowing a cross draft until the area is suitable for reentry. If the enclosure must be entered to open doors and windows, two or more persons must work together wearing proper respiratory equipment. Presence of hydrogen phosphide must be determined with detector tubes. Refer to aeration, reentry and industrial hygiene monitoring sections found elsewhere in this document

4 **TRUCKS, VANS, CHAMBERS, CONTAINERS AND OTHER TRANSPORT VEHICLES**

a. Determine if the truck, van, chamber, container, or other transport vehicle can be made relatively gas tight

b. Determine the volume of space to be fumigated

c. Determine the proper dosage and exposure time

d. Seal any vents, cracks or other leaks

e. For raw agricultural commodities aluminum phosphide may be added directly to the raw commodity as it is loaded, or probed in after loading is completed

f. The fumigation of processed foods in trucks, vans, containers, and other trans

port vehicles must be done in such a manner as to prevent contact of aluminum phosphide with the commodity or its packaging.

g. All doors and other openings are then sealed to prevent gas loss.

h. After doors and other openings are closed and resealed, warning signs are placed on all of these doors or openings. Refer to placarding instructions for sign requirements.

i. Trucks, vans, chambers, containers and other transport vehicles to be placed aboard vessels or on piggyback rail shipments may be fumigated in-transit, but must not be moved while under fumigation over public roads or highways when moved to the rail site or vessel for loading.

5 **FUMIGATION IN SMALL SEALABLE ENCLOSURES**

a. Determine that the small sealable enclosure can be made relatively gas tight.

b. Place the tablets or pellets in the space to be fumigated. Never pile pellets or tablets on top of each other.

c. Secure the structure in such a way as to prevent gas loss.

d Post warning signs on all sides of the structure

e If the structure is properly sealed, workers need not vacate the premises However, you must observe proper exposure levels found elsewhere in this manual

f Maintain good cross ventilation during working hours

g Observe proper disposal procedures

6 **PROCEDURES FOR FUMIGATION OF SPACE IN MILLS, WAREHOUSES AND OTHER STRUCTURES**

a Determine the dosage of tablets or pellets to be applied based upon the following parameters for space fumigation

1 The volume of the structure
2 The air and/or commodity temperature
3 The general tightness of the structure to be fumigated

b Carefully seal the area to be fumigated

c Place trays on sheets of Kraft paper, up to 12 sq ft in area on the floor of the structure to hold the tablets or pellets

d Spread tablets or pellets on the sheets at a density no greater than 30 tablets per sq ft or 75 pellets per sq ft This corresponds to slightly more than one half flask

of tablets or one-half flask of pellets per 3' x 4' sheet.

e Check the sheet to see that aluminum phosphide has not been piled up and that it is dispersed evenly to minimize contact between the individual tablets or pellets

f Doors leading to the fumigated space are then closed, sealed and **locked**. Aluminum phosphide warning signs must be placed on all entrances Refer to the placarding instructions found elsewhere in this manual

g The fumigation period usually lasts from 2 to 5 days depending upon the temperature Do not fumigate when the temperature of the commodity or the space within the structure is below 40° F (5° C) Consult the label and other labeling for further information

h Upon completion of the exposure period windows and doors should be opened and the fumigated structure allowed to aerate Gas concentration readings must be taken using low level detector tubes before allowing personnel to re-enter the area Refer to **aeration, reentry and industrial** hygiene monitoring sections found elsewhere in this document

i Spent residual dust remaining after the fumigation is disposed of as described in

disposal procedures found elsewhere in this manual

7 **BARGE FUMIGATION DIRECTIONS**

a Determine barge is suitable for fumigation.

b Determine barge is dry and clean

c Determine that lids and hatch covers are in good order and can be secured.

d 1 **Bulk Commodities** can be treated as follows:

— By placing tablets or pellets into the stream as the commodity is being loaded on the barge

— Or, after completion of loading fumigate by using directions for land based structures inserting the pellets or tablets below the surface with probes.

2 **Bagged or Other Packaged Commodities** can be treated as follows:

— Upon completion of loading, apply tablets or pellets in a manner consistent with other bagged or packaged fumigation directions in land based structures.

e Close and secure covers

f. Post appropriate warning signs to include ballast tank openings as well as

cargo area.

g. Notify consignee the commodity is under fumigation.

h. Prior to unloading barges make appropriate test to ascertain cargo area as well as ballast areas are free of hydrogen phosphide gas.

NOTE: Barge fumigation is regulated by the U.S. Coast Guard Regulations 46 CFR 147A as modified by U.S. Coast Guard Special Permit 2-75 The shipper or fumigator must possess this permit prior to fumigating. To obtain this permit contact:

U.S. Coast Guard
Hazardous Materials Branch
Washington, D.C. 20593-0001

8 **RAILCAR FUMIGATION**

Bulk Raw Commodities and Processed Brewers Rice, Malt and Corn Grits

a. Determine proper dosage and exposure time.

b. Seal any vents, cracks or other leaks.

c. For raw agricultural commodities aluminum phosphide may be added directly to the commodity as it is loaded, or probed in after loading is completed. Probing is easily done by using a 5' x 7' section of rigid

PVC tubing that is 1 1/4" in diameter. Tablets or pellets are dropped through the tube as it is withdrawn from the commodity.

d. All doors and hatch covers are then sealed with tape to prevent gas loss.

e. After the doors or hatch covers are closed and sealed, warning signs are placed on the top and sides of the car as required by law. Refer to placarding instructions for sign requirements.

f. Notify consignee that the railcar has been fumigated.

Processed Food

a. Volume of space is first determined.

b. Determine proper dosage and exposure time.

c. Seal any vents, cracks or other leaks.

d. The fumigation of processed food in railcars must be done in such a manner as to prevent contact of aluminum phosphide or its residual dust with the commodity or its packaging.

e. Tablets or pellets may be placed in moisture permeable material and then fastened to substantial supports in order to prevent contamination during railcar movement.

f. All doors and hatch covers are then sealed with tape to prevent gas loss.

g. After the doors or hatch covers are closed and sealed, warning signs are placed on the top and sides of the car as required by law. Refer to placarding instructions for sign requirements.

h. Notify the consignee that the railcar has been fumigated.

9 TREATMENT OF BEEHIVES, SUPERS AND OTHER BEEKEEPING EQUIPMENT

FUMITOXIN® tablets or pellets may be used for the control of the greater wax moth in stored beehives, supers and other beekeeping equipment and for the destruction of bees, Africanized bees, and diseased bees including those infested with tracheal mites and foulbrood. The recommended dosage for this use is 30-45 tablets or 150-225 pellets per 1,000 cubic feet.

Fumigations may be performed in chambers at atmospheric pressure under tarpaulins, etc., by placing the tablets or pellets on trays or in moisture permeable envelopes. Do not add more than 2 tablets or 10 pellets to each envelope. Honey from treated hives or supers may only be used for bee food.

10 **FUMI-SLEEVE® DUST RETAINER METHOD OF FUMIGATION**

Patent No 4,579,417 and 4,641,573

The presence of residue from FUMITOXIN® tablets or pellets in treated raw agricultural commodities normally presents no problems of toxicity or sanitation. Nevertheless where it is specified no tablets or pellets can be placed directly into the commodity during fumigation, conduct the fumigation in the normal manner following the directions below.

1 Determine the structure can be made relatively tight by sealing all vents, windows, cracks or other openings.

2 Determine the dosage and appropriate number of probings to be used.

3 The FUMI SLEEVE dust retainer is [illegible] on the standard 1 1/4" PVC probe.

4 The probe with dust retainer is then inserted into the commodity.

5 As the probe is **withdrawn** leaving the dust retainer in the commodity, the appropriate number of tablets or pellets are [illegible] into the probe.

6 After the probe is completely removed leaving the dust retainer containing the tablets or pellets in the commodity, tie off the top of the retainer in a common overhand knot.

7 Post the structure (ship hold, barge, container on the ship, railcar, other piggyback structure) with appropriate warning signs as well as a sign showing the number of FUMI SLEEVE dust retainers used.

8 On completion of fumigation remove all retainers from the treated commodity and transport in a well ventilated container to disposal site.

9 **Disposal**

a Complete dust retainer and residue can be buried.

b Although it is not recommended, if the FUMI SLEEVE dust retainer is to be used again, it should be opened, the residue emptied out and buried. The empty dust retainer should be washed and completely dried before re-use.

11 **RODENT BURROW FUMIGATION**

Use of this product in the listed areas is prohibited without first contacting and obtaining permission from the Endangered Species Specialist in the regional offices of the U.S. Fish and Wildlife Services (FWS) nearest you.

1 **Read container label, training booklet,** as well as other supplemental labeling.

2 Locate listed pest burrow.

3 Assess the moisture content of the soil

4 Add tablets or pellets according to label directions (Use lower rates in smaller burrows, or when moist soil conditions exist, and higher rates in larger burrows or when soil moisture is low.)

5 Pack burrow openings with crumpled newspaper

6 Seal tightly by shoveling soil over the openings

7 Check burrows in one or two days and treat re-opened burrows

8 Do not use within 15 feet of inhabited structure

9 Do not apply to burrows which may open under or into occupied buildings

10 Respiratory equipment is not required to be on hand for outside burrow fumigation

PLACARDING OF FUMIGATED AREAS

The applicator must placard or post all entrances to the fumigated area with signs bearing

1 The signal word DANGER/PELIGRO and the SKULL AND CROSSBONES symbol in red

2 The statement, "Area and/or commod-

idity under fumigation, DO NOT ENTER/ NO ENTRE."

3. The statement, "This sign may only be removed after the commodity and/or area is completely aerated (contains 0.3 ppm or less phosphine gas). If incompletely aerated commodity is transferred to a new site, the new site must also be placarded, and workers must not be exposed to more than 0.3 ppm phosphine."

4 The date and time fumigation begins and is completed

5. Name of fumigant used

6 Name, address, and telephone number of the applicator

All entrances to a fumigated area must be placarded. Where possible, placards should be placed in advance of the fumigation in order to keep unauthorized persons away. For railroad hopper cars placarding must be placed securely on both sides of the car near the ladders and next to the top hatch into which the fumigant is introduced.

Do not remove or placard until the treated commodity is aerated down to 0.3 ppm or less. To determine whether aeration is complete, each fumigated site or vehicle must be monitored following directions found under Industrial

Hygiene Monitoring and shown to contain 0.3 ppm or less of phosphine gas in the air space around and, when feasible, in the mass of the commodity. Transfer of incompletely aerated commodity to a new site is permissible, however, the new storage site must be placarded if more than 0.3 ppm is detected. Workers who handle incompletely aerated commodity must be informed and appropriate measures taken (i.e. ventilation or respiratory protection) to prevent exposures from exceeding the TLV's for hydrogen phosphide.

It is recommended that the person responsible for removing placards be familiar with the physical, chemical and toxicological properties of hydrogen phosphide. They should also be knowledgeable in how to take gas readings, exposure limits, symptoms and first aid treatment for hydrogen phosphide poisoning.

AERATION OF FUMIGATED COMMODITIES

Foods and Feeds

Tolerances for hydrogen phosphide residues have been established at 0.1 ppm for animal feeds and 0.01 ppm for finished foods. To guarantee compliance with these tolerances, it is necessary to aerate these commodities for 48 hours prior to offering them to the end consumer.

Tobacco

Tobacco must be aerated for at least three days (72 hours) when fumigated in hogsheads or until concentration is below 0.3 ppm and for at least two days (48 hours) when fumigated in other containers. When plastic liners are used, longer aeration periods will probably be required to aerate the commodity down to 0.3 ppm.

As an alternative to these aeration periods, each container of a treated commodity may be analyzed for residue using accepted analytical methods. If residues are less than tolerance levels, the commodity may be shipped to the consumer regardless of the above holding periods.

DISPOSAL INSTRUCTIONS

A. General

The EPA has determined that proper disposal of aluminum phosphide will cause no unreasonable adverse effects to the environment. Contact your State Pesticide or Environmental Control Agency, or Hazardous Waste representative at the nearest EPA Regional Office for guidance.

1. Do not contaminate water, food or feed by disposal of pesticide wastes.
2. Unreacted or partially reacted FUMITOXIN® is acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is

a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Reginal Office for guidance. For specific instructions, refer to we[illegible] deactivation method of disposal and spill and leak procedures, or call your Pestcon Systems, Inc. representative for guidance.

3. Some local and state waste disposal regulations may vary from the following recommendations. Disposal procedures should be reviewed with appropriate authorities to insure compliance with local regulations. Contact your State Pesticide or Environmental Control Agency or Hazardous Waste Specialist at the nearest EPA Regional Office for guidance.

4. Triple rinse flasks and stoppers with water. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Rinsate may be disposed of in a sanitary landfill or by other approved procedures. Or, it is permissible to remove lids and expose empty flasks to atmospheric conditions until residue in the flasks is reacted. Then puncture and dipose of in a sanintary landfill or other approved site, or by other procedures approved by state and local authorities.

5. If properly exposed, the residual dust remaining after a fumigation with FUMITOXIN will be a grayish-white powder and contain a small amount of unreacted aluminum phosphide. THE RESIDUAL DUST FROM INCOMPLETLY EXPOSED FUMITOXIN WILL REQUIRE SPECIAL CARE.

B. **DIRECTIONS FOR DISPOSAL OF SPENT RESIDUAL DUST**

1. In open areas, small [illegible] amounts of residual dust may be disposed of on site by burial or by spreading over the land surface away from inhabited buildings.

2. Residual dust from FUMITOXIN may also be collected and disposed of at a sanitary landfill, incinerator or other approved site, or by other procedures approved by Federal, State or Local authorities.

3. From 2 to 3 kg (4 to 7 lbs) [illegible] from 2 to 3 flasks of FUMITOXIN may [illegible] lected for disposal in a 1 gallon bucket. L[illegible] amounts, up to one half case may be [illegible] in burlap, cotton or other [illegible] light bags for transportation in an open vehicle to the disposal site. Do not collect dust from more than 7 flasks of tablets or 10 flasks of pellets (about 11 kg or 25 lbs) in a single bag. DO NOT PILE BAGS TOGETHER. DO NOT USE THIS METHOD FOR PARTIAL[illegible]

SPENT OR "GREEN" DUST. **CAUTION:** DO NOT COLLECT DUST IN LARGE DRUMS, DUMPSTERS, PLASTIC BAGS OR OTHER CONTAINERS WHERE CONFINEMENT MAY OCCUR

C DIRECTIONS FOR DEACTIVATION AND DISPOSAL OF "GREEN" PARTIALLY SPENT RESIDUAL DUST.

Confinement of partially spent residual dust, as in a closed container, or collection and storage of large quantities of dust may result in a fire hazard. Small amounts of hydrogen phosphide may be given off from traces of unreacted aluminum phosphide, and confinement of the gas may result in a flash

Prior to disposal it is necessary to further deactivate partially spent residue following an incomplete exposure time or following a fumigation which has produced large quantities of partially spent material You must use either the wet or dry method described below

a DIRECTIONS FOR WET METHOD DEACTIVATION AND DISPOSAL OF LARGE QUANTITIES (OVER 5 FLASKS) OF PARTIALLY SPENT OR GREEN DUST

1 Deactivating solution is prepared by adding the appropriate amount of low sudsing liquid detergent or surfactant to water

in a drum or other suitable container. A 2% solution of detergent (4 cups to 30 gallons) is suggested. The container should be filled with deactivating solution to within a few inches of the top

2 Residual dust is poured slowly into the deactivating solution and stirred so as to thoroughly wet all of the residual dust This must be done in the outdoor air and not the fumigated structure Dust from FUMITOXIN® tablets or pellets should be mixed in **no less than** 10 gallons of water-detergent solution for each case of material used

3 Dispose of the deativated residue-water suspension, with or without preliminary decanting, at a sanitary landfill or other suitable site approved by local authorities Where permissible, the slurry may be poured into a storm sewer (if you have allowed this mixture to stand for no less than 36 hours), or out onto the ground

4 **CAUTION:** Wear appropriate respiratory protection during wet deactivation of partially spent material Do not stand over the container holding the slurry at any time Do not dispose of residual dust in a toilet. Do not allow quantities of dry, residual dust from FUMITOXIN to be collected or stored

b. DIRECTIONS FOR DRY METHOD OF DEACTIVATION AND DISPOSAL OF SMALL (NOT MORE THAN 5 FLASKS) OF PARTIALLY SPENT DUST.

1. Smaller amounts, not more than 5 flasks, of partially spent dust may be spread in an open area away from inhabited buildings and restricted from access to by humans or animals and allowed to be further deactivated by atmospheric exposure.

2. This dust may then be buried or transported to appropriate sites and disposed of as directed in "Directions for Disposal of Spent Dust."

SPILL AND LEAK PROCEDURE

A spill, other than incidental to application or normal handling may produce high levels of gas and, therefore, attending personnel must wear SCBA when the concentration of hydrogen phosphide gas is unknown. Other NIOSH/MSHA approved respiratory protection may be worn if the concentration is known. Do not use water at any time to clean up a spill of FUMITOXIN®. Water in contact with unreacted tablets, pellets or bags will greatly accelerate the production of hydrogen phosphide gas which could result in a toxic and/or fire hazard. Wear dry gloves of cotton

or other suitable material when handling aluminum phosphide.

A. Return all intact aluminum flasks to cardboard cases or other suitable packaging which has been properly marked according to DOT regulations. Notify consignee and shipper of damaged cases.

B. If aluminum flasks have been punctured or damaged so as to leak, the container may be temporarily repaired with aluminum tape or the FUMITOXIN® may be transferred from the damaged flasks to a sound metal container which should be sealed and properly labeled as aluminum phosphide. Transport the damaged containers to an area suitable for pesticide storage for inspection. Contact Pestcon Systems, Inc. for further instructions.

C. If a spill has occurred which is only a few minutes old, collect the tablets and pellets and place them back into the original flasks, if they are intact, and stopper tightly. Place the tablets and pellets in a sound metal container if the original flasks are damaged **CAUTION.** These flasks may flash upon opening at a later date.

D. If the age of the spill is unknown or if the tablets or pellets have been contaminated with soil, debris, water, etc., gather up the spillage and place it into small open buckets having a

capacity no larger than about 1 gallon. Do not add more than one flask of spillage material, 1 to 1.5 kg (2 to 3 lbs.) to the bucket. If on-site, wet deactivation is not feasible, these open containers should be transported in open vehicles to a suitable area. Wet deactivation may be carried out as described away from inhabited buildings. Alternatively, small amounts of spillage from 4 to 5 flasks (4 to 8 kg., 9 to 18 lbs.) may be spread out in an open area to be deactivated by atmospheric moisture.

E. Procedure for wet deactivation of spills.

1. Deactivating solution is prepared by adding the appropriate amount of low sudsing liquid detergent or surfactant to water in a drum or other suitable container. A 2% solution or 4 cups in 30 gallons is recommended. The container should be filled with deactivating solution to within a few inches of the top.
2. The tablets or pellets are poured slowly into the deactivating solution and stirred so as to thoroughly wet all of the FUMITOXIN®. This must be done in the open air. FUMITOXIN tablets or pellets should be mixed into no less than about 15 gallons of water-detergent solution for each case of spilled material.

3. Allow the mixture to stand, with occasional stirring, for at least 36 hours.
4. Dispose of the slurry of deactivated material, with or without preliminary decanting, at a sanitary landfill or other suitable site approved by local authorities. Where permissible, this slurry may be poured out onto the ground or into a storm sewer.

CAUTION: Wear appropriate respiratory protection during wet deactivation of unexposed FUMITOXIN®. Never place pellets, tablets, or dust in a closed container such as a dumpster, sealed drum, plastic bag, etc., as flammable concentrations can develop and a flash of hydrogen phosphide gas is likely to occur. THE EPA HAS DETERMINED THAT PROPER DISPOSAL OF ALUMINUM PHOSPHIDE WILL CAUSE NO UNREASONABLE ADVERSE EFFECTS TO THE ENVIRONMENT.

FOR ASSISTANCE CONTACT:

PESTCON SYSTEMS, INC.

5511 Capital Center Drive, Ste. 302
Raleigh, N.C. 27606
Telephone: 800-548-2778 or 919-859-2500
Fax: 919-859-2155

OR

CHEMTREC (800) 424-9300

WE RECOMMEND THAT YOU GIVE YOUR COMPANY PHYSICIAN AND/OR THE EMERGENCY CENTER CLOSEST TO THE JOB SITE A COPY OF THIS PAGE:

Note to Physician:

Aluminum phosphide in tablets, pellets and bags react with moisture from the air, water, acids and many other liquids to release hydrogen phosphide (phosphine) gas. Mild exposure to inhalation causes malaise (indefinite feeling of sickness), ringing of ears, fatigue, nausea, and pressure in the chest which is relieved by removal to fresh air. Moderate poisoning causes weakness, vomiting, pain just above the stomach, chest pain, diarrhea and dyspnea (difficulty in breathing). Symptoms of severe poisoning may occur within a few hours to several days, resulting in pulmonary edema (fluid in lungs) and may lead to dizziness, cyanosis (blue or purple skin color), unconsciousness, and death.

In sufficient quantity, phosphine affects the liver, kidneys, lungs, nervous system, and circulatory system. Inhalation can cause lung edema (fluid in lungs) and hyperemia (fluid in brain). Ingestion can cause lung and brain symptoms but damage to the viscera (body cavity organs) is more common. Phosphine poisoning may result in (1) pulmonary edema, (2) liver elevated serum GOT, LDH and alkaline phosphatase, reduced

prothrombin, hemorrhage and jaundice (yellow skin color) and (3) kidney hematuria (blood in urine) and anuria (abnormal lack of urination). Pathology is characteristic of hypoxia (oxygen deficiency in body tissue). Frequent exposure to subacute concentrations over a period of days or weeks may cause poisoning. Treatment is symptomatic.

The following measures are suggested for use by the physicians in accordance with their own judgement.

In its milder forms, symptoms of poisoning may take some time (up to 24 hours) to make their appearance, and the following is suggested.

1. Give complete rest for 1 - 2 days, during which the patient must be kept quiet and warm
2. Should a patient suffer from vomiting or increased blood sugar, appropriate solutions should be administered. Treatment with oxygen breathing equipment is recommended as is the administration of cardiac and circulatory stimulants.

In case of severe poisoning (intensive care unit is recommended):

1. Where pulmonary edema is observed, steroid therapy should be considered and close medical supervision is recommended. Blood transfusions may be necessary
2. In case of manifest pulmonary edema, vene-

PRECAUTIONARY STATEMENTS
Hazards to Humans and Domestic Animals

DANGER FUMITOXIN® pellets or dust can be fatal if swallowed. Do not get in eyes, on skin or on clothing. Do not eat, drink or smoke while handling aluminum phosphide fumigants. When a sealed container is opened, allowing material to come in contact with moisture, water or acids, toxic phosphine gas will be released. If a garlic odor is detected, for appropriate monitoring procedures refer to section on Industrial Hygiene Monitoring in the Applicator's Manual. Pure phosphine gas is odorless; the odor is due to a contaminant. Since an odor may not be detected under certain circumstances, the absence of a garlic odor does not mean that phosphine gas is absent. Observe proper application, aeration, re-entry and disposal procedures specified elsewhere in the labeling to pr[illegible]

Physical and Chemical Hazards

Aluminum phosphide pellets and partially spent dust will release hydrogen phosphide if exposed to moisture from the air or if it comes into contact with water, acids and many other liquids. Piling of pellets [illegible] fragmentation may cause a temperature increase and confine the release of gas so that ignition could occur.

It is recommended that you open aluminum phosphide products in open air or near a fan which exhausts outside immediately. Never open in flammable atmosphere because on rare occasions it may flash. When opening, point the container away from the face and body. These precautions will also reduce the applicators exposure to hydrogen phosphide (phosphine) gas.

Pure hydrogen phosphide (phosphine) gas is practically insoluble in water, fats and oils, and is stable at normal fumigation temperatures. However, it may react with certain metals and cause corrosion, especially at higher temperatures and relative humidities.

Metals such as copper, brass, and other copper alloys, and precious metals such as gold and silver are susceptible to corrosion by phosphine, especially at high temperatures and humidity. Thus items such as small electric motors, smoke detectors, brass sprinkler heads, batteries and battery chargers, forklifts, temperature monitoring systems, electrical switch gear, communication devices, computers, calculators, watches, and other electronic equipment should be protected or removed before fumigation. Hydrogen phosphide will also react with certain metallic salts and therefore sensitive items such as photographic film, copying papers and some inorganic pigments, etc. should not be exposed.

Note to Physician: Aluminum phosphide in pellets react with moisture from the air, water, acids and many other liquids to release hydrogen phosphide (phosphine) gas. Mild exposure by inhalation causes malaise (indefinite feeling of sickness), ringing of ears, fatigue, nausea, and pressure in the chest which is relieved by removal to fresh air. Moderate poisoning causes weakness, vomiting, pain just above the stomach, chest pain, diarrhea and dyspnea (difficulty in breathing). Symptoms of severe poisoning may occur within a few hours to several days, resulting in pulmonary edema (fluid in lungs) and may lead to dizziness, cyanosis (blue or purple skin color), unconsciousness, and death.

In sufficient quantity, phosphine effects the liver, kidneys, lungs, nervous system and circulatory system. Inhalation can cause lung edema (fluid in lungs) and hyperemia (excess of blood in a body part), small perivascular brain hemorrhage and brain edema (fluid in brain). Ingestion can cause lung and brain symptoms but damage to the viscera (body cavity organs) is more common. Phosphine poisoning may result in (1) pulmonary edema, (2) liver: elevated serum GOT, LDH and alkaline phosphatase, reduced prothrombin, hemorrhage and jaundice (yellow skin color), and (3) kidney: hematuria (blood in urine) and anuria (abnormal or lack of urination). Pathologous characteristic of hypoxia (oxygen deficiency in blood tissue). Frequent exposure to subacute concentrations over a period of days or weeks may cause poisoning. Treatment is symptomatic.

BEST AVAILABLE COPY

Direction for Use

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

THIS PRODUCT IS ACCOMPANIED BY AN APPROVED APPLICATOR'S MANUAL. READ AND UNDERSTAND THE ENTIRE LABELING. ALL PARTS OF THE LABELING ARE EQUALLY IMPORTANT FOR SAFE AND EFFECTIVE USE OF THIS PRODUCT. CALL PESTCON SYSTEMS, INC. OR EPA IF YOU HAVE ANY QUESTIONS, OR DO NOT UNDERSTAND ANY PART OF THIS LABELING.

Refer to the Applicator's Manual for detailed precautions, recommendations and directions for use.

PM 3? 5857-2

RESTRICTED USE PESTICIDE
DUE TO ACUTE INHALATION TOXICITY OF HIGHLY TOXIC PHOSPHINE GAS

For retail sale to, and use only by Certified Applicators for those uses covered by the applicators certification or persons trained in accordance with the attached product manual working under the direct supervision and in the physical presence of the Certified Applicator. Physical presence means on site or on the premises. Refer to Pestcon Systems, Inc. Applicator's Manual for complete instructions for the safe use of this product.

ACCEPTED [illegible] 6 1981 [illegible] Pesticide Act [illegible] 5857-2

Fumitoxin®

PELLETS

FOR USE AGAINST LISTED INSECTS WHICH INFEST STORED COMMODITIES, SPECIFIED PROCESSED FOODS, AND ANIMAL FEEDS

ACTIVE INGREDIENT – ALUMINUM PHOSPHIDE	55%
INERT INGREDIENTS	45%
	100%

KEEP OUT OF REACH OF CHILDREN
DANGER/PELIGRO – POISON

PRECAUCION AL USARIO. Si usted no lee ingles, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

Statement of Practical Treatment: Symptoms of overexposure are headache, dizziness, nausea, difficult breathing, vomiting, and diarrhea. In all cases of overexposure get medical attention immediately. Take victim to a doctor or emergency treatment facility.

If excessive amounts of gas from aluminum phosphide are inhaled: Get exposed person to fresh air. Keep warm and make sure person can breathe freely. If breathing has stopped, give artificial respiration. Do not give anything by mouth to an unconscious person.

If aluminum phosphide pellets, or powder are swallowed: Drink or administer one or two glasses of water and induce vomiting by touching back of throat with finger, or if available administer syrup of ipecac. Do not give anything by mouth if victim is unconscious or not alert.

If powder or granules of aluminum phosphide get on skin or clothing: Brush or shake material off clothes in a well ventilated area. Check that all pockets and cuffs are empty. Allow clothes to aerate in a ventilated area prior to laundering. Do not leave contaminated clothing in occupied and/or confined areas such as automobiles, vans, motel rooms, etc. Wash contaminated skin thoroughly with soap and water.

If dust from pellets gets in eyes: Flush with plenty of water. Get medical attention.

See side panel for additional precautionary statements.

Manufactured for:

PESTCON SYSTEMS, INC

5511 Capital Center Drive., Ste. 302
Raleigh, N.C. 27606

TELEPHONE (800) 548-2778

Contents Approx. 1,660 pellets
Net Weight 1000 g (2 lbs 3.28 ozs)

EPA REG. NO. 5857-2
EPA EST. NO. 46060-CI-04

Storage Instructions

1. Store FUMITOXIN [illegible] storage area [illegible] these commodities.
2. Do not store in buildings whe[illegible]
3. FUMITOXIN pellets are suppl[illegible] atmospheric moisture [illegible]
4. The shelf life of FUMITOXIN [illegible]

Disposal Instructions

Do not contaminate water, food or [illegible]

Unreacted or partially reacted FUM[illegible] of Federal Law. If these wastes ca[illegible] Pesticide or Environmental Contro[illegible] Office for guidance. For specific [illegible] Applicator's Manual.

Since local and state waste dispos[illegible] should be reviewed with appropriat[illegible] Pesticide or Environmental Control [illegible] guidance.

Triple rinse flasks and stoppers w[illegible] sanitary landfill [illegible] sanitary landfill [illegible] and expose empty flasks [illegible] in a sanitary landfill or other appr[illegible]

If properly exposed the residual du[illegible] and contain only a small amount [illegible] exposed FUMITOXIN may require s[illegible]

Spill and Leak Procedures

General Precautions and Directio[illegible]

A spill, other than incidental to ap[illegible] attending personnel must wear SC[illegible] unknown. Other NIOSH/MSHA appro[illegible] use water at any time to clean up[illegible] accelerate the production of hydroge[illegible] cotton or other material when hand[illegible]

Return all intact aluminum flasks [illegible] according to DOT regulations. Non[illegible]

If aluminum flasks have been punct[illegible] aluminum tape or the FUMITOXIN [illegible] should be sealed and properly label[illegible] for pesticide storage for inspection [illegible] Further information and recommend[illegible]

General Information: FUMITOXIN [illegible] atmospheric humidity. FUMITOXIN [illegible] stages — that is eggs, larvae, and [illegible] which may be fumigated.

WARRANTY: Seller warrants that [illegible] label directions under normal cond[illegible] no other warranty, either express or [illegible] instructions.

Classified by UL Inc. as to fire haz[illegible] and supplemental labeling. FUMITOX[illegible] toxic phosphine gas. Spontaneous i[illegible]