

**RESTRICTED USE PESTICIDE**  
**DUE TO HIGH ACUTE INHALATION TOXICITY OF PHOSPHINE GAS**  
**FOR RETAIL SALE TO DEALERS AND CERTIFIED APPLICATORS ONLY. FOR**  
**USE BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT**  
**SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED**  
**APPLICATOR'S CERTIFICATION. REFER TO THE DIRECTIONS IN THIS**  
**APPLICATOR'S MANUAL FOR REQUIREMENTS OF THE PHYSICAL PRESENCE**  
**OF A CERTIFIED APPLICATOR.**

THE COMPLETE LABEL FOR THIS PRODUCT CONSISTS OF THE CONTAINER LABEL AND THE APPLICATOR'S MANUAL WHICH MUST ACCOMPANY THE PRODUCT. READ AND UNDERSTAND THE ENTIRE CONTAINER LABEL AND APPLICATOR'S MANUAL.

A FUMIGATION MANAGEMENT PLAN MUST BE WRITTEN FOR ALL FUMIGATIONS PRIOR TO ACTUAL TREATMENT.

**CONSULT WITH YOUR STATE LEAD PESTICIDE REGULATORY AGENCY TO DETERMINE REGULATORY STATUS, REQUIREMENTS, AND RESTRICTIONS FOR FUMIGATION USE IN THAT STATE. CALL 540-234-9281/1-800-330-2525 IF YOU HAVE ANY QUESTIONS OR DO NOT UNDERSTAND ANY PART OF THIS LABELING.**

**APPLICATOR'S MANUAL FOR**



**PREPAC SPOT FUMIGANT**

Patent No. 4653644

FOR SPOT TREATMENT OF FOOD AND FEED PROCESSING  
MACHINERY AND EQUIPMENT

<b>Active Ingredient: Magnesium Phosphide .....</b>	<b>66%</b>
<b>Inert Ingredients: .....</b>	<b>34%</b>
<b>Total .....</b>	<b>100.0%</b>



**KEEP OUT OF REACH OF CHILDREN**

**DANGER - POISON - PELIGRO**



**FOR BURROWING RODENT APPLICATIONS: THE USE OF THIS PRODUCT IS STRICTLY PROHIBITED WITHIN 100 FEET OF ANY BUILDING WHERE HUMANS AND/OR DOMESTIC ANIMALS DO OR MAY RESIDE, ON SINGLE AND MULTI-FAMILY RESIDENTIAL PROPERTIES AND NURSING HOMES, SCHOOLS (EXCEPT ATHLETIC FIELDS), DAYCARE FACILITIES AND HOSPITALS.**

**PRECAUCION AL USUARIO:** Si usted no puede leer ingles, no use este producto hasta que el marbete le haya sido completamente explicado.

**(TO THE USER:** If you cannot read English, do not use this product until the label has been fully explained to you.)

Manufactured for:

**D & D HOLDINGS, INC.**  
**P. O. Box 116**  
**153 Triangle Drive**  
**Weyers Cave, VA 24486 USA**  
**Telephone: (540)234-9281/1-800-330-2525**  
**Fax: (540)234-8225**  
**Internet: [www.degeschamerica.com](http://www.degeschamerica.com)**  
**E-mail: [degesch@degeschamerica.com](mailto:degesch@degeschamerica.com)**  
**EPA Est. Nos. 40285-VA-001; 40285-VA-002;**  
**40285-OR-001; 40285-LA-001; 36301-TX-001**  
**EPA Reg. No. 72959-7**

**WARRANTY**

Seller warrants that the product conforms to its chemical description and when used according to label directions under normal conditions of use, it is reasonably fit for the purposes stated on the label. To the extent consistent with applicable law, the seller makes no other warranty, either expressed or implied, and Buyer assumes all risks should the product be used contrary to label instructions.

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## 1. FIRST AID

Symptoms of exposure to this product are headaches, 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 inhaled:**

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably by mouth-to-mouth, if possible.
- Contact a poison control center or doctor for treatment advice.

### **If swallowed:**

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

### **If on skin or clothing:**

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

### **If in eyes:**

- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for further treatment advice.

## **HOT LINE NUMBER**

Have the product container, label or Applicator's Manual with you when calling a poison control center or doctor or going for treatment. **CONTACT 1-800-308-4856 FOR ASSISTANCE WITH HUMAN OR ANIMAL MEDICAL EMERGENCIES.** You may also contact DEGESCH AMERICA, INC. – 540-234-9281/1-800-330-2525 or CHEMTREC – 1-800-424-9300 for all other chemical emergencies.

## 2. NOTE TO PHYSICIAN

Magnesium phosphide fumigants react with moisture from the air, water, acids and many other liquids to release phosphine gas. Mild inhalation exposure 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 with 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 (excess of blood in a body part), small perivascular brain hemorrhages 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 lack of urination). Pathology is characteristic of hypoxia (oxygen deficiency in body tissue). Frequent exposure to concentrations above permissible levels 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 judgment:

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 the 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.

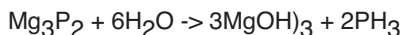
In case of severe poisoning (intensive care unit recommended):

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, venesection should be performed under vein pressure control. Heart glycosides (I.V.) can be used in case of hemoconcentration. Venesection may result in shock. Upon progressive edema of lungs, immediate intubation with a constant removal of edema fluid and oxygen over-pressure respiration, as well as measures required for shock treatment are recommended. In case of kidney failure, extra-corporeal hemodialysis is necessary. There is no specific antidote known for this poisoning.
3. Mention should be made here of suicidal attempts by taking solid aluminum phosphide by the mouth. After swallowing, emptying of the stomach by vomiting, flushing of the stomach with diluted potassium permanganate solution or a solution of magnesium peroxide until flushing liquid ceases to smell of carbide, is recommended. Thereafter, apply medicinal charcoal.

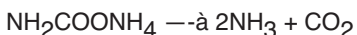
### 3. PRODUCT INFORMATION

DEGESCH metal phosphide products are used often for the protection of stored commodities from damage by insects. However, the **Magtoxin®** Prepac Spot Fumigant has been specially manufactured for the treatment of food and feed processing machinery and equipment to control insect infestations arising inside this equipment. Spot fumigation may be defined as the short-term treatment of processing machinery and equipment with toxic vapors for control of the adult and larval life stages of insects which infest food and feed particles remaining within the equipment. These spot treatments are intended to interrupt the life cycles of the insect pests. Since one or more life stages may survive this short-term treatment, spot fumigants must be repeated periodically to control insect infestation.

DEGESCH metal phosphide fumigants are acted upon by atmospheric moisture to produce phosphine gas. **Magtoxin®** contains magnesium phosphide ( $Mg_3P_2$ ) as their active ingredient and will liberate phosphine via the following chemical reaction:



Phosphine gas is highly toxic to insects, vertebrate pests, humans and other forms of animal life. In addition to its toxic properties, the gas will corrode certain metals and may ignite spontaneously in air at concentrations above its lower flammable limit of 1.8% v/v (18,000 ppm). These hazards will be described in greater detail later on in this Applicator's Manual for DEGESCH **Magtoxin**® Prepac Spot Fumigant. **Magtoxin**® also contains ammonium carbamate which liberates ammonia and carbon dioxide as follows:



These gases are essentially non-flammable and act as inerting agents to reduce fire hazards. The ammonia gas also serves as a warning agent.

The **Magtoxin**® Prepac Spot Fumigant consists of a gas-permeable blister pack of **Magtoxin**® Pellets. Each **Magtoxin**® Prepac Strip is roughly 4-1/4" x 16" and contains 33 blisters, each blister containing 2 pellets for a total of 66 pellets per strip. **Magtoxin**® pellets weigh approximately 0.6g each and release 0.2g of phosphine gas. Each **Magtoxin**® Prepac then will release 13.2g of phosphine gas. The strips are connected end-to-end, 5 Prepac strips in a row and sealed into gas-tight aluminum foil pouches. The pouches are packed into covered metal pails, 12 pouches or 60 **Magtoxin**® Prepac per pail. Each pail contains 3960 **Magtoxin**® pellets, which weigh a total of 2376g and will liberate 792g of phosphine gas. The pails are constructed to conform to D.O.T. Specification 37A; Steel Drums.

Upon opening the aluminum foil pouch, atmospheric moisture penetrates the porous fleece material on the top and bottom of the **Magtoxin**® Prepac. The **Magtoxin**® pellets then begin to react to produce small quantities of phosphine gas which diffuses out through the fleece into the surrounding space. This reaction starts slowly, gradually accelerates and then tapers off as the magnesium phosphide is spent. The rate of decomposition of the **Magtoxin**® Prepac will vary depending upon moisture and temperature conditions. For example, when moisture and temperature are high, decomposition of **Magtoxin**® Prepac may be complete in less than 10 hours. However, at lower ambient temperatures and relative humidity levels, decomposition may require 4 days or more.

After decomposition, **Magtoxin**® leaves a dark gray powder composed almost entirely of magnesium hydroxide and other approved inert ingredients. This powder will be retained inside the fleece of the Prepac strip and may be retrieved after fumigation so as not to contaminate the treated commodity. The spent **Magtoxin**® Prepac must not be allowed to contaminate the processed food or feed. Therefore, it must be retrieved after fumigation prior to starting up the processing line unless the spot fumigant has been applied to a fumiport or in some other fashion so as to ensure that it is retained and will not enter the food or feed stream. If properly exposed, the spent **Magtoxin**® Prepac will normally contain only a small amount of unreacted magnesium phosphide and may be disposed of without hazard. This is not considered a hazardous waste. However, partially spent residual from incompletely exposed **Magtoxin**® Prepacs will require special care. Precautions and instructions for further deactivation and disposal will be given later in this Manual.

**Magtoxin**® Prepacs are supplied in gas-tight containers and their shelf life is unlimited as long as the packaging remains intact. However, once opened for fumigation, the entire

contents of the aluminum foil pouch must be used as it cannot be resealed. Storage and handling instructions are given in detail under Section 18 of this Applicator's Manual.

## 4. PRECAUTIONARY STATEMENTS

### 4.1 Hazards to Humans and Domestic Animals

**DANGER:** Magnesium phosphide from **Magtoxin® Prepac Spot Fumigant** or dust may be fatal if swallowed. Do not get in eyes, on skin or on clothing. Do not eat, drink or smoke while handling magnesium phosphide fumigants. If a sealed container is opened, or if the material comes into contact with moisture, water or acids, these products will release phosphine gas which is an extremely toxic gas. If a garlic odor is detected, refer to the Industrial Hygiene Monitoring instructions found in Section 14.5 of this manual for appropriate monitoring procedures.

Pure phosphine gas is odorless; the garlic odor is due to a contaminant. Since the odor of phosphine may not be detected under some circumstances, the absence of a garlic odor does not mean that dangerous levels of phosphine gas are absent. Observe proper re-entry procedures in Section 14.4 of this Manual to prevent overexposure.

### 4.2 Environmental Hazards

This product is very highly toxic to wildlife. Non-target organisms exposed to phosphine gas will be killed. Do not apply directly to water or wetlands (swamps, bogs, marshes and potholes). Do not contaminate water by cleaning of equipment or disposal of wastes.

### 4.3 Physical and Chemical Hazards

Magnesium phosphide-based fumigants such as Plates, Strips, Prepac Spot Fumigant and partially spent materials will release phosphine if exposed to moisture from the air or if it comes into contact with water, acids and many other liquids. Magnesium phosphide is considerably more reactive than is aluminum phosphide and will liberate gas more rapidly. This is particularly true in the presence of liquid water and at higher temperatures. Since phosphine gas may ignite spontaneously at levels above its lower flammable limit of 1.8% v/v (18,000 ppm), it is important not to exceed this concentration. Ignition of high concentrations of phosphine gas can produce a very energetic reaction. Explosion can occur under these conditions and may cause severe personal injury. **Never allow the buildup of phosphine to exceed explosive concentrations.** Do not confine spent or partially spent metal phosphide fumigants as the slow release of phosphine gas from this material may result in formation of an explosive atmosphere. Magnesium phosphide fumigants should not be stacked, piled up or contacted with liquid water. This may cause a temperature increase, accelerate the rate of gas production and confine the gas so that ignition could occur.

It is preferable to open containers of magnesium phosphide products in open air as under certain conditions, they may flash upon opening. Containers may also be opened near a fan or other appropriate ventilation that will rapidly exhaust contaminated air. When opening pouches of **Magtoxin® Prepac**, point the pouch away from the face and body and tear or cut open the far end. Although the chances for a flash are very remote, never open containers of metal phosphide fumigants in a flammable atmosphere. These precautions will also reduce the fumigator's exposure to phosphine gas.



Pure 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, other copper alloys and precious metals such as gold and silver are susceptible to corrosion by phosphine. Thus, small electric motors, smoke detectors, brass sprinkler heads, batteries and battery chargers, fork lifts, temperature monitoring systems, switching gears, communication devices, computers, calculators and other electrical equipment should be protected or removed before fumigation. Phosphine gas will also react with certain metallic salts and, therefore, sensitive items such as photographic film, some inorganic pigments, etc., should not be exposed. Immediately after addition of **Magtoxin® Prepac**, turn off any lights and unessential electrical equipment.

Read and follow the complete label which contains instructions for the safe use of the pesticide. Additional copies are available from:

DEGESCH AMERICA, INC.  
153 TRIANGLE DRIVE  
P. O. BOX 116  
WEYERS CAVE, VA 24486 USA  
Tel.: (540)234-9281/1-800-330-2525  
Fax: (540)234-8225  
Internet: [www.degeschamerica.com](http://www.degeschamerica.com)

## **DIRECTIONS FOR USE**

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

### **5. EQUIPMENT WHICH MAY BE FUMIGATED**

Spot fumigation is the short-term treatment with phosphine for control of the adult and larval life stages of insects, which infest food particles remaining within food processing machinery and equipment in the specific sites listed below:

- Empty Bins, Silos and Holding Tanks
- Elevator boots, heads, filters, conveyers, spouting and purifiers
- Food processing equipment, such as sifters, rollers, dusters
- Related equipment in mills, food and feed processing plants and breweries.

### **6. PESTS CONTROLLED**

**MAGTOXIN®** Prepac Spot Fumigant has been found effective against the following insects and their preadult stages – that is, eggs, larvae and pupae:

almond moth  
Angoumois grain moth  
bean weevil  
bees  
cadelle  
cereal leaf beetle

European grain moth  
flat grain beetle  
fruit flies  
granary weevil  
greater wax moth  
hairy fungus beetle

Mediterranean flour moth  
pink bollworm  
raisin moth  
red flour beetle  
rice weevil  
rusty grain beetle

cigarette beetle  
confused flour beetle  
dermestid beetles  
dried fruit beetle  
dried fruit moth

Hessian fly  
Indian meal moth  
Khapra beetle  
lesser grain borer  
maize weevil

saw-toothed grain beetle  
spider beetles  
tobacco moth  
yellow mealworm  
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 100% control are leaks, poor gas distribution, unfavorable exposure conditions, etc. In addition, some insects are less susceptible to phosphine than others. If maximum control is to be attained, extreme care must be taken in sealing, higher dosages must be used, exposure periods lengthened, proper application procedures followed and temperature and humidity conditions must be favorable.

## 7. EXPOSURE CONDITIONS

Spot fumigations with **Magtoxin®** must not be conducted when air temperatures are below 40°F (5°C). The minimum duration of the spot fumigation is 34 hours. This exposure period serves not only to control the infestation, but to allow ample time for reaction of the Prepac. Deactivation and disposal of **Magtoxin®** Prepac's that are only partially spent will require extra care and precautions. See recommendations given under "Disposal Instructions" found in Section 22 of this Manual. The minimum exposure time of 34 hours is not long enough to ensure control of pupae or eggs. In addition, much of the equipment to be treated is of loose or open construction and cannot readily be sealed. Other than in bins and tanks, it is not unusual for virtually all of the phosphine gas to have leaked out in 24 hours or less. Since this type of treatment merely interrupts the life cycle of the insect pests, spot fumigations need to be performed at regular intervals, of one month or less, until the problem is brought under control.

It is recommended that gas concentration measurements be made and/or test insect cages be placed inside the treated equipment to determine efficacy and to ensure that sealing has been adequate. A good rule of thumb for obtaining satisfactory results is a minimum of 50 to 100 ppm phosphine gas remaining 10 hours after application of the **Magtoxin®** Prepac Spot Fumigant. Once a particular facility has been treated successfully several times and trouble spots eliminated, the frequency of efficacy checks and/or concentration may be reduced.

There are many situations in which the use of **Magtoxin®** Prepac Spot Fumigant alone will not solve the infestation problem, and it is generally necessary to use other sanitation techniques. The equipment should be cleaned and run to empty prior to spot fumigation. Dead stock should be removed by vacuuming or other means. Fogging with EPA-approved pesticides is recommended in conjunction with spot fumigation to aid in controlling infestations outside of the machinery and in pieces of equipment which it is not practical or possible to seal. In addition to careful sealing prior to treatment, it is a good idea to repair and maintain equipment in proper working condition so as to reduce leaks.

## 8. DOSAGE RATES

Phosphine is a mobile gas and will penetrate to all parts of the Treatment area. Therefore, dosage must be based upon the total volume of the space being treated. Each

**Magtoxin®** Prepac contains 33 blisters, each holding 2 **Magtoxin®** Pellets. Each **Magtoxin®** Pellet will liberate 0.2 grams of phosphine gas for a total of 13.2g of gas per Prepac. The Prepacs are supplied in a continuous roll of five Prepacs connected end to end. The appropriate amount of fumigant for application to the machinery may be cut from the roll of Prepacs using sharp scissors or other cutting tool.

### 8.1 Maximum Allowable Dosages for Fumigation with Magtoxin® Prepac

10 **Magtoxin®** Prepacs per 1320 cubic feet  
(100 grams of phosphine gas per 1000 cubic feet)

### 8.2 Advisory Magtoxin® Prepac Dosages for Various Types of Fumigation

The recommended dosage is 1-2 Prepacs per 1320 cubic feet in equipment that is relatively gas tight or which can readily be sealed. This corresponds to a dose of 10-20 grams of phosphine gas per 1000 cubic feet.

It is permissible to use up to 10 Prepacs per 1320 cubic feet, 100 grams of phosphine gas per 1000 cubic feet, in sifters, purifiers and other pieces of equipment which cannot readily be sealed.

Increased dosage will not completely compensate for gas leaks from poorly sealed or open equipment. In many cases, use of fogging or other sanitation techniques should be relied upon rather than increasing dosage of **Magtoxin®** Prepac Spot Fumigant.

Do not exceed the maximum allowable rates specified above in Section 8.1.

## 9. PROTECTIVE CLOTHING

GLOVES:

- Wear dry gloves of cotton or other material if contact with magnesium phosphide or its dust is likely.
- Gloves should remain dry during use.
- Wash hands thoroughly after handling magnesium phosphide products.
- Aerate used gloves and other contaminated clothing in a well-ventilated area prior to laundering.

## 10. RESPIRATORY PROTECTION

### 10.1 When Respiratory Protection Must Be Worn

Respiratory protection is required when concentration levels of phosphine are unknown or when concentrations exceed permissible exposure limits..

### 10.2 Permissible Gas Concentration Ranges for Respiratory Protection Devices

A NIOSH/MSHA approved full-face gas mask – phosphine gas canister combination may be used at levels up to 15 ppm or following manufacturers use condition instructions for escape. Above 15 ppm or in situations where the phosphine gas concentration is unknown, a NIOSH/MSHA approved, SCBA must be worn. The NIOSH/OSHA Pocket Guide DHHS (NIOSH) 97-140 or the NIOSH ALERT – Preventing Phosphine Poisoning and Explosions During Fumigation, lists these and other types of approved respirators and the concentration limits at which they may be used.

### **10.3 Requirements for Availability of Respiratory Protection.**

If metal phosphide products are to be applied from within the structure to be 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 in case it is needed.

## **11. REQUIREMENTS FOR CERTIFIED APPLICATOR TO BE PRESENT AND RESPONSIBLE FOR ALL WORKERS AS FOLLOWS:**

- A. A Certified Applicator must be physically present, responsible for, and maintain visual and/or voice contact with all fumigation workers during the application of the fumigant and also during the opening of the product containers. Once the application is complete and the structure has been made secure, the certified applicator does not need to be physically present at the site.
- B. A Certified Applicator must be physically present, responsible for, and maintain visual and/or voice contact with all fumigation workers during the initial opening of the fumigation structure for aeration. Once the aeration process is secured and monitoring has established that aeration can be completed safely, the certified applicator does not need to be physically present and trained person(s) can complete the process and remove the placards.
- C. DEGESCH Magtoxin® Prepac Spot Fumigant may not be applied directly to railcars, containers or other transport vehicles for in-transit fumigation.

## **12. AUTHORIZED TRAINING**

The trained person(s) must be trained by a Certified Applicator following the EPA accepted product applicator's manual; or by other training which is accepted by local and/or state authorities. When training has been completed and the employee demonstrates safety knowledge proficiency, the training date must be logged and maintained in the employee's safety training record for a minimum of three years. Refresher training must be done on an annual basis.

This training must cover the following items found in this manual:

- a. How to aerate the area and verify no more than 0.3 ppm phosphine remains in the storage area,  
OR
- b. How to transfer the commodity to another storage area without prior aeration and ensure that worker safety limits are not being exceeded during the transfer.
- c. How to determine when respiratory protection must be worn.
- d. How to protect workers and nearby persons from exposure to levels above the 8-hour time weighted average (TWA) of 0.3 ppm or the 15 minute short-term exposure limit (STEL) of 1.0 ppm phosphine.
- e. Proper removal of placards.
- f. How to follow proper residual disposal instructions.

## **13. GAS DETECTION EQUIPMENT**

There are a number of devices on the market for the measurement of phosphine gas at both industrial hygiene and fumigation levels. Glass detection tubes used in conjunction with the appropriate hand-operated air sampling pumps are widely used.

These devices are portable, simple to use, do not require extensive training and are relatively rapid, inexpensive and accurate. Electronic devices are also available for both low level and high phosphine gas readings. Such devices should be used in full compliance with manufacturers' recommendations.

## **14. NOTIFICATION REQUIREMENTS**

### **14.1 Authorities and on-site workers:**

As required by local regulations, notify the appropriate local officials (fire department, police department, etc.) of the impending fumigation. Provide to the officials an MSDS and complete label for the product and any other technical information deemed useful. Offer to review this information with the local official(s).

### **14.2 Incidents involving these products:**

Registrants must be informed of any incident involving the use of this product. Please call PROSAR: 1-800-308-4856 or (540)234-9281/1-800-330-2525 so the incident can be reported to Federal and State Authorities.

### **14.3 Theft of products:**

Immediately report to the local police department thefts of metal phosphide fumigants.

## **15. APPLICATOR AND WORKER EXPOSURE**

### **15.1 Phosphine Gas Exposure Limits**

Exposures to phosphine must not exceed the 8-hour time-weighted average (TWA) of 0.3 ppm or the 15 minute short-term exposure limit (STEL) of 1.0 ppm phosphine. All persons are covered by these exposure standards.

### **15.2 Application of Fumigant**

At least two persons, a certified applicator and trained person, or two trained persons under the direct supervision of the certified applicator must be present when entry into a structure for application of the fumigant is required. Depending upon temperature and humidity, DEGESCH **Magtoxin®** Spot Fumigant releases phosphine gas slowly upon exposure to moisture from the air. The release rate is considerably more rapid than with **PHOSTOXIN®**. If the fumigator's exposure exceeds the allowable exposure limit, approved respiratory protection must be worn. Monitoring must be conducted in order to characterize the application and determine the fumigator's exposure. It is often advisable to wear respiratory protection during application of fumigant under hot and humid conditions, particularly when considerable time must be spent in preparation of the **Magtoxin®** Prepac for application.

### **15.3 Leakage from Fumigated Sites**

Phosphine gas is highly mobile and given enough time may penetrate seemingly gas-tight materials such as concrete and cinder block and may escape from sealed or partially sealed equipment. Doors leading to work areas housing treated equipment must be placarded and entry prior to aeration prohibited, unless approved respiratory protection is worn or gas levels less than 0.3 ppm have been measured. Sealing of the fumigated site and/or airflow into occupied area must be sufficient to bring down the phosphine concentration to a safe level of 0.3 ppm or below.

#### **15.4 Aeration and Re-entry**

Treated machinery and equipment and work areas housing this equipment must be aerated after spot fumigation until the level of phosphine gas is 0.3 ppm or below. Aeration of equipment is generally complete in one hour. Residual commodity in treated tanks or bins must be monitored to ensure that liberation of gas does not result in the development of unacceptable levels of phosphine gas. Do not allow entry into areas housing equipment that has been treated by any person before the level of phosphine reaches 0.3 ppm or below unless protected by an approved respirator.

#### **15.5 Industrial Hygiene Monitoring**

Phosphine exposures must be documented in an operations log or manual at each fumigation area and operation where exposures may occur. Monitor airborne phosphine concentrations in all indoor areas to which fumigators and other workers have had access during fumigation and aeration. Perform such monitoring in workers' breathing zones. This monitoring is mandatory and is performed to determine when and where respiratory protection is required. Once exposures have been adequately characterized, spot checks must be made, especially if conditions change significantly or if an unexpected garlic odor is detected or a change in phosphine level is suspected.

#### **15.6 Engineering Controls and Work Practices**

If monitoring shows that workers may be exposed to concentrations in excess of the permitted limits, then engineering controls (such as forced air ventilation) and/or appropriate work practices (such as windows in rooms housing equipment kept open or a fan or hood area may be employed) must be used to reduce exposure to within permitted limits. In any case, appropriate respiratory protection must be worn if phosphine exposure limits are exceeded.

### **16. PLACARDING OF FUMIGATED AREAS**

All entrances into a structure where equipment is being fumigated must be placarded. Placards must be made of substantial material that can be expected to withstand adverse weather conditions and must bear the wording as follows:

1. The signal word DANGER/PELIGRO and the SKULL AND CROSSBONES symbol in red.
2. The statement "Structure and/or equipment under fumigation. DO NOT ENTER/NO ENTRE".
3. The Statement, "This sign may only be removed by a certified applicator or a person with documented training after the structure and/or equipment is completely aerated (contains 0.3 ppm or less of phosphine gas)".
4. The date the fumigation begins.
5. Name and EPA registration number of fumigant used.
6. Name, address and telephone number of the fumigation company and/or applicator.
7. A 24-hour emergency response telephone number.

Where possible, place placards in advance of the fumigation to keep unauthorized persons away.

Do not remove placards until the treated equipment and/or area is aerated down to 0.3 ppm phosphine gas or less. To determine whether aeration is complete, each fumigated structure/equipment must be monitored and shown to contain 0.3 ppm or less phosphine gas in the air space around it.

## 17. **SEALING OF STRUCTURES**

The equipment to be fumigated must first be inspected to determine if it can be made sufficiently gas tight. Careful sealing is required so that adequate gas levels are retained. Eliminate drafts inside the equipment by closing off sections which have openings. Take any other steps to prevent air movement inside the equipment which could negatively affect the fumigation. Seal all openings with tape, tarping, etc. to prevent escape of phosphine gas into rooms housing the equipment. Sites to be fumigated must be tightly sealed. If possible, recommend for the permanent installation of fumiports inside the equipment so as to eliminate the possibility of contamination and the requirement for immediate recovery of the applied dose prior to restart.

**DO NOT FUMIGATE EQUIPMENT AND/OR A STRUCTURE THAT CANNOT BE SEALED SUFFICIENTLY GAS TIGHT.**

## 18. **AERATION OF FUMIGATED EQUIPMENT**

Aerate fumigated equipment/structure to 0.3 ppm or less of phosphine.

### **19. STORAGE INSTRUCTIONS**

- Do not contaminate water, food or feed by storing pesticides in the same areas used to store these commodities.
- Store **Magtoxin®** in a dry, well-ventilated area away from heat, under lock and key. Post as a pesticide storage area.
- Do not store **Magtoxin®** Prepacs in areas where temperature may exceed 130°F
- Do not store in buildings where humans or domestic animals reside. Keep out of reach of children.
- DEGESCH **Magtoxin®** Prepacs are supplied in gas-tight pouches. However, once opened for fumigation, the entire contents of the aluminum foil pouch must be used as it cannot be resealed.
- The shelf life of **Magtoxin®** is virtually unlimited as long as the pouches are not opened.

#### **19.1 Labeling of Storages**

The labeling of the storage area should take into account the needs of a variety of organizations. These should include, but not be limited to: company policy, insurance carrier, Occupational Safety and Health Administration (OSHA), Emergency Planning and Community Right-to-Know and local emergency response professionals. At a minimum, the storage must be marked with the following signs and must be locked:

1. Danger, Poison (with skull and cross bones)
2. Authorized Personnel Only
3. National Fire Protection Association (NFPA) Hazard Identification Symbols for the pesticide storage

The NFPA has developed Hazard Identification Symbols. This standardized system is designed to provide, at a glance, the information regarding the health, fire and reactivity hazards associated with hazardous materials. The following are the hazard categories and degree of hazard for magnesium phosphide:

<u>Category</u>	<u>Degree of Hazard</u>
Health	4 (Severe Hazard)
Flammability	4 (Severe Hazard)
Reactivity	2 (Moderate)
Special Notice Key	W

NOTE: When using the NFPA Hazard Identification System, the characteristics of all hazardous materials stored in a particular area must be considered. The local fire protection district should be consulted for guidance on the selection and placement of such signs.

## 20. TRANSPORTATION INSTRUCTIONS

The United States Department of Transportation (DOT) classifies magnesium phosphide as Dangerous When Wet material and it must be transported in accordance with DOT regulations.

**20.1 TRANSPORT DESIGNATIONS** - The following transport designations apply to magnesium phosphide

Identification No.:	UN 2011
Proper Shipping Name:	Magnesium phosphide
Hazard Class:	4.3 (6.1)
Packing Group:	PG I
Shipping Label:	Dangerous When Wet/Poison
Shipping Placard:	Dangerous When Wet

### 20.2 **Transportation Special Permit:**

Special Permit: DOT-SP11329

Purpose and Limitation: "...The motor vehicles used under the terms of this special permit are not required to be placarded..."

Modes of Transportation Authorized: Motor vehicle (Only private motor vehicles used in pest control operations are authorized to transport the packages covered by the terms of this special permit.)

NOTE: You must have a copy of this special permit with you during transportation. For a copy of this permit contact:

DEGESCH AMERICA, INC.  
153 Triangle Drive  
P. O. Box 116  
Weyers Cave, VA 24486  
Tel.: (540)234-9281/1-800-330-2525  
Internet: [www.degeschamerica.com](http://www.degeschamerica.com)



## 21. REQUIRED WRITTEN FUMIGATION MANAGEMENT PLAN

The certified applicator is responsible for working with the owners and/or responsible employees of the structure and/or area to be fumigated to develop and follow a Fumigation Management Plan (FMP). State, county and local authorities may also have specific requirements. The FMP must be written PRIOR TO EVERY treatment. The FMP is intended to ensure a safe and effective fumigation. The FMP must address characterization of the structure and/or area, and include appropriate monitoring and notification requirements, consistent with, but not limited to, the following:

1. For burrowing rodent applications: The use of this product is strictly prohibited within 100 feet of any building where humans and/or domestic animals do or may reside, on single or multi-family residential properties and nursing homes, schools (except athletic fields), daycare facilities and hospitals.
2. Inspect the structure and/or area to determine its suitability for fumigation.
3. When sealing is required, consult previous records for any changes to the structure, seal leaks and monitor any occupied adjacent buildings to ensure safety.
4. Prior to each fumigation, review any existing FMP, MSDS, complete product label and other relevant safety procedures with company officials and appropriate employees.
5. Consult company officials in the development of procedures and appropriate safety measures for nearby workers that will be in and around the area during application and aeration.
6. Consult with company officials to develop an appropriate monitoring plan that will confirm that nearby workers and bystanders are not exposed to levels above the allowed limits during application, fumigation and aeration. This plan must also demonstrate that nearby residents will not be exposed to concentrations above the allowable limits.
7. Consult with company officials to develop procedures for local authorities to notify nearby residents in the event of an emergency.
8. Confirm the placement of placards to secure entrance into any area under fumigation.
9. Confirm the required safety equipment is in place and the necessary manpower is available to complete a safe and effective fumigation.
10. DEGESCH **Magtoxin®** Prepac Spot Fumigant may not be applied directly to railcars, containers or other transport vehicles for in-transit fumigation.

These factors **must** be considered in putting a FMP together. It is important to note that some plans will be more comprehensive than others. All plans should reflect the experience and expertise of the applicator and circumstances at and around the structure and/or area.

In addition to the plan, the applicator must read the complete label which includes the container label and Applicator's Manual and follow its directions carefully. If the applicator has any questions about the development of a FMP contact **DEGESCH AMERICA, INC.** for further assistance.

The FMP and related documentation, including monitoring records, must be maintained for a minimum of 2 years.

## **STEPS FOR PREPARATION OF THE REQUIRED WRITTEN FUMIGATION MANAGEMENT PLAN**

### **Purpose**

A Fumigation Management Plan (FMP) is an organized, written description of the required steps involved to help ensure a safe, legal and effective fumigation. It will also assist you and others in complying with pesticide product label requirements. The guidance that follows is designed to help assist you in addressing all the necessary factors involved in preparing for and fumigating a structure and/or area.

This guidance is intended to help you organize any fumigation that you might perform **PRIOR TO ACTUAL TREATMENT**. It is meant to be somewhat prescriptive, yet flexible enough to allow the experience and expertise of the fumigator to make changes based on circumstances which may exist in the field. By following a step-by-step procedure, which allow for flexibility, a safe and effective fumigation can be performed.

Before any fumigation begins, carefully read and follow the complete label which includes the container label and the Applicator's Manual. This information must also be given to the appropriate company officials (supervisors, foreman, safety officer, etc.) in charge of the site. Preparation is the key to any successful fumigation. If you do not find specific instructions for the type of fumigation that you are to perform listed in this Guidance Document you will want to construct a similar set of procedures using this document as your guide or contact DEGESCH AMERICA, INC. for assistance. Finally, before any fumigation begins you must be familiar with and comply with all applicable federal, state and local regulations. The success of the fumigation is not only dependent on your ability to do your job but also upon carefully following all rules, regulations and procedures required by governmental agencies.

### **A CHECKLIST GUIDE FOR A FUMIGATION MANAGEMENT PLAN**

This checklist is provided to help you take into account factors that must be addressed prior to performing all fumigations. It emphasizes safety steps to protect people and property. The checklist is general in nature and cannot be expected to apply to all types of fumigation situations. It is to be used as a guide to prepare the required plan. Each item must be considered. However, it is understood that each fumigation is different and not all items will be necessary for each fumigation site.

#### **A. PRELIMINARY PLANNING AND PREPARATION**

1. Determine the purpose of the fumigation.
  - a. Elimination of insect infestation
  - b. Plant pest quarantine
  
2. Determine the type of fumigation, for example
  - a. Food and Feed Processing Machinery and Equipment
  - b. Mills and Roll Stands
  - c. Shaker Boxes and Sifters
  - d. Purifiers
  - e. Hoppers and Bins
  - f. Air Filters

3. Fully acquaint yourself with the structure and equipment to be fumigated, including.
  - a. The general structure layout, construction (materials, design, age, maintenance) of the structure, fire or combustibility hazards, connecting structures and escape routes, above and below ground and other unique hazards or structure characteristics. Prepare, with the owner/operator/person in charge, a drawing or sketch of structure to be fumigated, delineating features, hazards and other structural characteristics.
  - b. The number and identification of persons who routinely enter the area to be fumigated (i.e., employees, visitors, customers, etc.)
  - c. The specific equipment to be fumigated and its condition.
  - d. The previous treatment history of the equipment, if available.
  - e. Accessibility of utility service connections.
  - f. Nearest telephone or other means of communication. Mark the location of these items on the drawing/sketch.
  - g. Emergency shut-off stations for electricity, water and gas. Mark the location of these items on the drawing/sketch.
  - h. Current emergency telephone numbers of local Health, Fire, Police, Hospital and Physician responders.
  - i. Name and phone number (both day and night) of appropriate company officials.
  - j. Check, mark and prepare the points of fumigation application to facilitate accounting during application of the fumigant and its recovery after exposure and aeration.
  - k. Review the entire label which includes both the container label and Applicator's Manual.
  - l. Exposure time considerations.
    1. Fumigant to be used.
    2. Minimum fumigation period, as defined and described by the label use directions.
    3. Down time required to be available
    4. Aeration requirements
    5. Cleanup requirements, including dry or wet deactivation methods, equipment, and personnel needs, if necessary.
    6. Measured and recorded commodity temperature and moisture.
  - m. Determination of dosage
    1. Cubic footage or other appropriate space/location calculations
    2. Structure sealing capability and methods
    3. Maximum allowable label dosage rates
    4. Temperature, humidity, and wind
    5. Commodity/space volume
    6. Past history of fumigation of structure
    7. Exposure time

## B. PERSONNEL

1. Confirm in writing that all personnel in and around the structure and/or area to be fumigated have been notified prior to application of the fumigant. Consider using a checklist that each employee initials indicating they have been notified.
2. Instruct all fumigation personnel to read the Applicator's Manual. Fumigation personnel must be trained in the proper method of application, the hazards that may be encountered, and the selection of personal protection devices including detection equipment.

3. Confirm that all personnel are aware of and know how to proceed in case of an emergency situation.
4. Instruct all personnel on how to report any accident and/or incidents related to fumigant exposure. Provide a telephone number for emergency response reporting.
5. Instruct all personnel to report to proper authorities any theft of fumigant and/or equipment related to fumigation.
6. Establish a meeting area for all personnel in case of emergency.

## C. MONITORING

### 1. Safety

- a. Monitoring phosphine concentrations must be conducted in areas to prevent excessive exposure and to determine where exposure may occur. Document where monitoring will occur.
- b. Keep a log or manual of monitoring records for each fumigation site. This log must at a minimum contain the timing, number of readings taken and level of concentrations found in each location.
- c. When monitoring, document even if there is no phosphine present above the safe levels. In such cases, subsequent monitoring is not routinely required. However spot checks must be made occasionally, especially if conditions change significantly.

### 2. Efficacy

- a. For stationary structures, phosphine readings **MUST** be taken from within the fumigated structure to insure proper gas concentrations. If the phosphine concentrations have fallen below the targeted level the fumigators, following proper entry procedures, may re-enter the structure and add additional product.
- b. All phosphine concentration readings must be documented.

## D. NOTIFICATION

1. Confirm the appropriate local authorities (fire departments, police departments, etc.) have been notified as per label instructions, local ordinances if applicable, or instructions of the client.
2. Prepare written procedure (“Emergency Response Plan”), which contains explicit instructions, names and telephone numbers so as to be able to notify local authorities if phosphine levels are exceeded in an area that could be dangerous to bystanders and/or domestic animals.

## E. SEALING PROCEDURES

1. Sealing must be adequate to control the pests. Care should be taken to insure that sealing materials would remain intact until the fumigation is complete.
2. If the equipment or structure has been fumigated before, review the previous FMP for previous sealing information.

3. Make sure that construction/remodeling has not changed the building in a manner that will affect the fumigation.
4. Warning placards must be placed on every possible entrance to the structure housing the equipment.

#### F. APPLICATION PROCEDURES & FUMIGATION PERIOD

1. Plan carefully and apply all fumigants in accordance with the label requirements.
2. When entering into the area under fumigation, always work with two or more people under the direct supervision of a certified applicator wearing appropriate respirators.
3. Apply fumigant from the outside where appropriate.
4. Recommend for the permanent installation of fumiports inside the equipment so as to eliminate the possibility of contamination and the requirement for immediate recovery of the applied dose prior to restart.
5. Provide watchmen when the possibility of entry into the fumigation site by unauthorized persons cannot otherwise be assured.
6. When entering structures, always follow OSHA rules for confined spaces.
7. Turn off any electric lights in the fumigated area of the structure as well as all non-essential electrical motors.

#### G. POST-APPLICATION OPERATIONS

1. Provide watchmen when the fumigation structure cannot be secured from entry by unauthorized persons during the aeration process.
2. Aerate in accordance with structural limitations.
3. Turn on ventilating or aerating fans where appropriate.
4. Use a suitable gas detector before re-entry into a fumigated structure to determine fumigant concentration.
5. Keep written records of monitoring to document completion of aeration.
6. Consider temperature when aerating.
7. Remove warning placards when aeration is complete.
8. Inform business/client that employees/other persons may return to work or otherwise be allowed to re-enter the aerated structure.

## 22. **APPLICATION PROCEDURES**

A FMP must be written PRIOR to all applications.

A FMP must be devised for application, exposure period, aeration and disposal of the fumigant so as to keep to a minimum any human exposure to phosphine and to help assure adequate control of the insect pests.

The most important aspect in spot fumigation is a thorough understanding of the equipment and all of the various product and air flow patterns. The fumigator should review schematics and/or diagrams of the facility and a walking survey should be conducted to inspect the food processing machinery and equipment.

## 22.1 The following instructions are intended to provide general guidelines for typical fumigations.

- Spot treat equipment monthly with **Magtoxin®** Prepacs or as needed to supplement general fumigations.
- Run machinery to empty the process stream and remove dead stocks where possible prior to application of **Magtoxin®** Prepacs.
- Using sharpe scissors or similar cutting device, cut the appropriate amount of fumigant from the roll of Prepacs and apply to the equipment
- Be careful not to cut into the blisters and allow intact pellets or spent dust to fall into the machinery.
- Make sure the Prepacs are flat and are not folded over during application.
- Prominently mark or otherwise indicate the points of application so that the applied dose may be readily located and recovered after aeration.
- Under no conditions may processed food be permitted to come in contact with **Magtoxin®** or its spent residual.
- Immediately after application, close all doors and windows so as to reduce drafts and air currents in the building during the exposure period.
- Do not allow any portion of the **Magtoxin®** Prepac to enter the food processing stream.
- At the end of the fumigation and prior to restarting the machinery, collect all spent or partially spent **Magtoxin®** from the treated equipment, unless applications have been made to fumiports or similar devices within the processing equipment which will retain the fumigant blisters.
- Transport this material to an appropriate site for further deactivation and ultimate disposal following instructions given elsewhere in this Applicator's Manual under "Disposal Instructions".

## 22.2 Food and Feed Processing Machinery and Equipment

Various pieces of commonly encountered food processing equipment are listed in the following along with comments relating to their successful spot treatment with **Magtoxin®** Prepacs.

### 22.3 Mills and Roll Stands

These are frequently separated front and back and the dosage should be applied in both sections. Mills and roll stands are generally sufficiently gas tight or can readily be sealed so as to obtain satisfactory results.

### 22.4 Shaker Boxes and Sifters

Shaker boxes and sifters are generally not gas tight but may be spot treated without further sealing if air currents within the process stream are eliminated. It is recommended that the **Magtoxin®** Prepac dose be applied at the bottom.

### 22.5 Purifiers

Purifiers cannot be successfully spot fumigated unless they are completely sealed. Fogging with an EPA-approved pesticide is recommended in facilities where sealing of the purifiers is not practical or too labor intensive.

### 22.6 Hoppers and Bins

Hoppers and bins are generally sufficiently gas tight with little or no sealing. Valves and vents should be closed prior to dosing.

## 23. DISPOSAL INSTRUCTIONS

### 23.1 General

Do not contaminate water, food or feed by storage or disposal.

Unreacted or partially reacted **Magtoxin®** is acutely hazardous. Improper disposal of excess pesticide 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 Regional Office for guidance. For specific instructions, see Section 23 of this manual, Spill and Leak Procedures.

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

Dispose of containers in a sanitary landfill or by other procedures approved by state and local authorities.

If properly exposed during the fumigation period, **Magtoxin®** Prepac's will contain virtually no unreacted magnesium phosphide. However, because of the short term of the spot treatment and because these fumigations are sometimes performed under cooler and drier conditions, it is required that all Prepac's be subjected to further deactivation prior to ultimate disposal.

#### **Container Disposal:**

The pails are non-refillable containers. Do not reuse or refill. Offer for recycling, if available. Triple rinse pails, lids and pouches with water if they have been contacted by magnesium phosphide dust. Then offer pails 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, by pouring it out onto the ground or by other approved procedures. It is permissible to remove lids and expose empty pails to atmospheric conditions until residue is reacted. Then puncture and dispose of in a sanitary landfill or other approved site, or by other procedures approved by state and local authorities. If properly exposed, the residual dust remaining after a fumigation with **Magtoxin®** will be a grayish-white powder and contain only a small amount of unreacted magnesium phosphide. However, residual dust from incompletely exposed **Magtoxin®** requires special care.

### 23.2 Directions for Disposal of Exposed **Magtoxin®** Prepac's

Confinement of partially spent **Magtoxin®**, as in a closed container or plastic bag, may result in a fire hazard. Phosphine gas may be given off from unreacted magnesium phosphide and confinement of the gas may result in a flash. Unreacted or improperly exposed **Magtoxin®** **must** be further deactivated before disposal at a landfill.

Spent or partially spent **Magtoxin®** Prepac's may be collected for disposal in well-ventilated containers such as wire baskets (available from DEGESCH

AMERICA, INC.) or porous cloth bags of burlap, cotton or other suitable material. **Caution:** Confinement and the danger of a flash may result from over filling the ventilated or porous containers. It is preferable to carry out deactivation at the fumigation site. If this is not possible, the Prepacs may be loaded directly into open vehicles for transportation to the deactivation site. **Caution:** Protect the spent or partially spent Prepacs from contact with water as this might result in a flash. Do not pile the cloth bags together.

### 23.3 Directions for Deactivation of Magtoxin® Prepacs

**Magtoxin®** Pac Spot Fumigant must be further deactivated prior to ultimate disposal. This is particularly true in cases of incomplete exposure or following a fumigation which has produced large quantities of partially spent material.

Spent or partially spent **Magtoxin®** Prepacs may be deactivated as follows using the "Wet Method."

Water is used for deactivation of **Magtoxin®** Prepacs and other magnesium phosphide fumigants by the "Wet Method". Detergent solution is not required for magnesium phosphide fumigant. Fill a drum or other container to be used for wet deactivation with water to within an inch or two of the top. Do not allow a large headspace above the surface of the water.

Magnesium phosphide will react quite rapidly and very vigorously with liquid water. Therefore, small amounts of partially spent material should be tested initially by immersion in water prior to proceeding with large scale wet deactivation. One or two individual Prepacs should be evaluated first to determine their level of activity.

In a well-ventilated area, out-of-doors, submerge in water the entire mass of exposed Prepacs. They may float to the surface and, therefore, it is necessary to hold them under water by use of a suitable weight. **Caution:** Partially spent Prepacs may ignite if they are allowed to float to the surface. Active **Magtoxin®** Prepacs should be submerged at least 4 to 6 inches to prevent smoking of the liberated phosphine gas. Prepacs may be placed in wire baskets for immersion in water.

Reaction of the magnesium phosphide with water is practically complete within about 15 to 30 minutes. However, **Magtoxin®** Prepacs should be totally immersed for at least 6 hours to ensure total hydrolysis. **Caution: Removal of Prepacs from water before they are largely deactivated may result in a fire.** They may then be taken to an approved site for disposal. Dispose of the water at a sanitary landfill or other approved site or means. Where permissible, the water may be poured out onto the ground or it may be poured into a storm sewer.

**Caution: Wear a NIOSH/MSHA approved full-face gas mask – hydrogen phosphide canister combination if exposed to levels between 0.3 ppm to 15 ppm or a Self-Contained Breathing Apparatus (SCBA) if exposure is unknown or above 15 ppm during wet deactivation of partially spent material. Do not cover the container being used for wet deactivation. Do not dispose of dust in a toilet.**



Partially Spent Magtoxin® Prepacs may also be deactivated as follows using the “Dry Method.”

Extension of the fumigation period is the simplest method for further deactivation of partially spent **Magtoxin®** Prepacs prior to ultimate disposal. Alternatively, exposed materials may be further deactivated by storing the Prepacs out-of-doors, protected from rain and ground water, in locked wire baskets or other similarly ventilated containers. As time permits, or when the container is full, the deactivated **Magtoxin®** Prepacs may be taken to an approved site for disposal. Storage of partially spent Prepacs in a closed container may result in a fire hazard. Large numbers of partially spent Prepacs stored in open containers may ignite if contacted by liquid water.

## 24. SPILL AND LEAK PROCEDURES

### 24.1 General Precautions and Directions

A spill, other than incidental to application or normal handling, may produce high levels of gas and, therefore, attending personnel must wear self-contained breathing apparatus (SCBA) or its equivalent when the concentration of phosphine 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 **Magtoxin®**. Water in contact with unreacted metal phosphide will greatly accelerate the production of phosphine gas which could result in a toxic and/or fire hazard. Wear dry gloves of cotton or other material when handling metal phosphides.

Return all intact aluminum foil pouches of **Magtoxin®** Prepacs to original pails or other suitable packaging which has been properly marked according to DOT regulations. Notify consignee and shipper of damaged pouches and pails.

If pails or foil pouches have been punctured or damaged so as to leak, they may be temporarily repaired with aluminum tape. Transport the damaged pails/pouches to an area suitable for pesticide storage for inspection. **Caution:** The punctured pouches may flash upon opening at some later time. Further instructions and recommendations may be obtained, if required, from **DEGESCH America, Inc.**

If the foil pouches of **Magtoxin®** Prepacs have been damaged so severely that they cannot be temporarily repaired, these materials may be wet deactivated on site using the procedure described in Section 22.3. If on-site wet deactivation is not feasible, the damaged containers should be transported in open vehicles to a suitable area. Wet deactivation may then be carried out as described in Section 23.2. Alternatively, spillage may be spread out in an open area away from inhabited buildings to be deactivated by atmospheric moisture. Care should be taken to ensure that the Prepacs are not carried away by the wind. If desired, they may be weighted down by several inches of sand or soil or by other suitable means. Do not use this procedure during periods of rain or if the soil is wet. After deactivation, the spent **Magtoxin®** Prepacs may be gathered for disposal at approved sites.

### 24.2 Directions for Deactivation by the Wet Method

If the contaminated material is not to be held until completely reacted by expo-

sure to atmospheric moisture, deactivate the product by the “Wet Method” as follows:

**Caution: If worker protection standards will be exceeded during wet deactivation of unexposed or incompletely exposed Prepacs, NIOSH/MSHA approved respiratory protection must be worn. Wear a full-face gas mask – phosphine gas canister combination if exposed to levels between 0.3 ppm to 15 ppm or a Self-Contained Breathing Apparatus (SCBA) if exposure is unknown or above 15 ppm.** Never place metal phosphide products or their dust in a closed container such as a dumpster, sealed drum, plastic bag, etc., as flammable concentrations and a flash of phosphine gas are likely to develop. Do not cover the deactivation vessel at any time. Do not dispose of **Magtoxin®** dust in a toilet.

Water is used for deactivation of **Magtoxin®** Prepacs and other magnesium phosphide fumigants. Detergent solution is **not** required. Fill several drums or other containers to be used for wet deactivation with water to within an inch or two of the top. Do **not** allow a large headspace above the surface of the water.

Magnesium phosphide reacts very vigorously with water and, therefore, only 1 or 2 unexposed **Magtoxin®** Prepacs should be wet deactivated at one time. Cut individual Prepacs from the roll. Never attempt deactivation of an entire roll. Unexposed Prepacs will likely ignite if they are allowed to float to the surface of the water. They may be placed into wire baskets or similar containers, weighted and dropped into the water for deactivation. The Prepacs should be submerged to at least 4 to 6 inches to prevent smoking of the liberated phosphine gas.

Reaction of the magnesium phosphide with water is practically complete within about 15 to 30 minutes. However, **Magtoxin®** Prepacs should be totally immersed for at least 6 hours to ensure total hydrolysis. It is suggested that one or more drums or barrels be set up for the first half hour immersion, until bubbling has practically ceased, after which the Prepacs are transferred to a second drum for the remainder of the wet deactivation period. **Caution:** Removal of **Magtoxin®** Prepacs from water before they are largely deactivated may result in fire. Deactivated Prepacs may then be taken to an approved site for disposal. Dispose of the water at a sanitary landfill or other approved site or means. Where permissible, the water may be poured out onto the ground or it may be poured into a storm sewer.

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