

Appendix E.

Guidance for Preparation of a Fumigation Management Plan

The following are the required parts in creating a Fumigation Management Plan

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A Checklist Guide

Preliminary Planning and Preparation

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FUMIGATION MANAGEMENT PLAN

The certified applicator is responsible for working with the owners and/or responsible employees of the site to be fumigated to develop a Fumigation Management Plan (FMP). The FMP is intended to ensure a safety and effective fumigation. The FMP must address characterization of the site, and include appropriate monitoring and notification requirements, consistent with, but not limited to, the following:

1. Inspect the site to determine its suitability for fumigation.
2. When sealing is required, consult previous records for any changes to the structure, seal leaks, and monitor any occupied adjacent buildings to ensure safety.
3. Prior to each fumigation, review any existing FMP, MSDS, Applicators Manual and other relevant safety procedures with company officials and appropriate employees.
4. 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.
5. 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/aeration. This plan must also demonstrate that nearby residents will not be exposed to concentrations above the allowable limits.
6. Consult with company officials to develop procedures for local authorities to notify nearby residents in the event of an emergency.
7. Confirm the placement of placards to secure entrance into any area under fumigation.
8. Confirm the required safety equipment is in place and the necessary manpower is available to complete a safety effective fumigation.

These factors should 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 site.

In addition to the plan, the applicator must read the entire label 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.

GUIDANCE FOR PREPARATION OF A 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 site.

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, yet allowing for flexibility, safe and effective fumigation can be performed.

Before any fumigation begins, carefully read and review the 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 the type of fumigation that you are to perform is not listed in this Guidance Document you will want to construct a similar set of procedures. Finally, before any fumigation begins you must be familiar with and comply with all applicable state and local laws. The success and future of fumigation are not only dependent on your ability to do your job but also by 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. Elimination of rodent infestation
 - c. Plant pest quarantine
2. Determine the type of fumigation, for example
 - a. Space; tarp, mill, warehouse, food plant

- b. Vehicle; railcar, truck, van, container
- c. Commodity; raw agricultural or processed foods
- d. Grain; vertical silo, farm storage, flat storage
- e. Vessels; ship or barge. In addition to the Applicator's Manual, read the U.S. Coast Guard Regulations 46CFR 147A.

3. Fully acquaint yourself with the site and commodity 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. Draw or have a drawing or sketch of structure to be fumigated, delineating features, hazards, and other structural issues.
- b. The number and identification of persons who routinely enter the area to be fumigated (i.e. Employees, visitors, customers, etc.)
- c. The specific commodity to be fumigated, its mode of storage, and its condition.
- d. The previous treatment history of the commodity, if available.
- e. Accessibility of utility service connections.
- f. Nearest telephone or other means of communication, and 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 locations if the job involves entry into the structure for fumigation.
- k. Review labeling
 - 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. Label recommendations
4. Temperature, humidity, 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 area to be fumigated have been notified prior to application of the fumigant. Consider using a checklist each one initials indicating they have been notified.
2. Instruct all fumigation personnel about the hazards that may be encountered; and about 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 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 log records, document there is no phosphine present above the safe levels, subsequent monitoring is not routinely required. However, spot checks should be made occasionally, especially if conditions significantly change.
- d. Monitoring must be conducted during aeration and corrective action taken if gas levels exceed the allowed levels in an area where bystanders and/or nearby residents may be exposed.

2. Efficacy

- a. Gas readings should be taken from within the fumigated structure to insure proper gas concentrations. If the phosphine levels have fallen below the targeted level the

fumigators, following proper entry procedures, may reenter the structure and add additional product.

b. Document readings.

D. NOTIFICATION

1. Confirm all 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.

E. SEALING PROCEDURES

1. Sealing must be complete.
2. If the site has been fumigated before, review the previous FMP for previous sealing information.
3. Make sure that construction/remodeling has not changed the building.
4. Warning placards must be placed on every possible entrance to the fumigation site.

F. APPLICATION PROCEDURES & FUMIGATION PERIOD

1. Plan carefully and apply all fumigants in accordance with the registrants 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. Provide watchmen when a fumigation site cannot otherwise be made secure from entry by unauthorized persons.
5. When entering structures, always follow OSHA rules for confined spaces.
6. Document that the receiver of in-transit fumigation has been notified and is trained to receive commodity under fumigation.

G. POST-APPLICATION OPERATIONS

1. Provide watchmen when you cannot secure the fumigation site from entry by unauthorized persons during the aeration process.
2. Ventilate and aerate in accordance with structural limitations.
3. Turn on ventilating or aerating fans where appropriate.
4. Use a suitable gas detector before reentry to determine fumigant concentration.
5. Keep written records of monitoring to document completion of aeration.
6. Consider temperature when aerating.
7. Insure aeration is complete before moving vehicle into public roads.
8. Remove warning placards when aeration is complete.

9. Inform business/client that employees/other persons may return to work or otherwise be allowed to reenter.

APPLICATION PROCEDURES

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

The following instructions are intended to provide general guidelines for typical fumigations. These instructions are not intended to cover every type of situation nor are they meant to be restrictive. Other procedures may be used if they are safe, effective and consistent with the properties of aluminum phosphide products.

FLAT STORAGES

Treatment of these types of storages often require considerable physical effort. Therefore, sufficient manpower should be available to complete the work rapidly enough to prevent excessive exposure to hydrogen phosphide gas. Vent flasks outside the storage, conduct fumigations during cooler periods, and employ other work practices to minimize exposures. It is likely that respiratory protection will be required during application of fumigant to flat storages. Refer to the sections on Applicator and Worker Exposure and Respiratory Protection.

1. Inspect the site to determine its suitability for fumigation.
2. Determine if the structure is in an area where leakage during fumigation or aeration would adversely effect nearby workers or bystanders if concentrations were above the permitted exposure levels.
3. Develop an appropriate Fumigation Management Plan. (Refer to FMP guidelines.)
4. Consult previous records for any changes to the structure. Seal vents, cracks and other sources of leaks.
5. Apply tablets or pellets by surface application, shallow probing, deep probing or uniform addition as the bin is filled. Storages requiring more than 24 hours to fill should not be treated by addition of fumigant to the commodity stream as large quantities of hydrogen phosphide may escape before the bin is completely sealed.

Probes should be inserted vertically at intervals along the length and width of the flat storage. Pellets or tablets may be dropped into the probe at intervals as it is withdrawn.

Surface application may be used if the bin can be made sufficiently gas tight to contain the fumigant gas long enough for it to penetrate the commodity. In this instance, it is advisable to place about 25 percent of the dosage in the floor level aeration ducts. Check the ducts prior to addition of PHOSTOXIN® to make sure that they contain no liquid water.

6. Placement of plastic tarp over the surface of the commodity is often advisable, particularly if the overhead of the storage cannot be well sealed.
7. Lock all entrances to the storage and post fumigation warning placards.

VERTICAL STORAGES (concrete upright bins and other silos in which grain can be rapidly transferred)

1. Inspect the site to determine its suitability for fumigation.
2. Determine if the structure is in an area where leakage during fumigation or aeration would expose nearby workers or bystanders to concentrations above the permitted levels.
3. Develop an appropriate Fumigation Management Plan. (Refer to FMP guidelines.)
4. Consult previous records for any changes to the structure. Close openings and seal cracks to make the structure as airtight as possible. Prior to the fumigation, seal the vents near the bin top which connect to adjacent bins.
5. Pellets or tablets may be applied continuously by hand or by an automatic dispenser on the headhouse/gallery belt or into the fill opening as the commodity is loaded into the bin. An automatic dispenser may also be used to add PHOSTOXIN® into the commodity stream in the up leg of the elevator.
6. Seal the bin deck openings after the fumigation has been completed.
7. Bins requiring more than 24 hours to fill should not be fumigated by continuous addition into the commodity stream. These bins may be fumigated by probing, surface application, or other appropriate means. Exposure periods should be lengthened to allow for diffusion of gas to all parts of the bin if PHOSTOXIN® has not been applied uniformly throughout the commodity mass.
8. Place warning placards on the discharge gate and on all entrances.

FUMIGATION MANAGEMENT PLAN

The purpose of this Fumigation Management Plan is to assist _____
_____ in _____, Oklahoma to ensure the safety of their
employees, community and the environment. It is also designed to ensure an effective fumigation and to assist the
company in meeting phosphine label requirements.

Owner/Manager of Responsibility

Name: _____

Address: _____

Day Telephone Number: _____

Night Telephone Number _____

E-mail _____

Certified Applicator in Charge

Name: _____

Address: _____

Day Telephone Number: _____

Night Telephone Number _____

E-mail _____

Certification Number: _____

Year of Expiration: _____

Emergency Telephone Numbers

Local Police: _____

Local Fire Department: _____

Local Hospital: _____

Sheriff's Office: _____

Chemtrec: 1-800-424-9300

Poison Control: 1-800-222-1222

Fumigant Company: _____

ODAFF _____

Date of Site Inspection: / /

or referred to previous FMP of / /

Date of consultation with facility officials in developing FMP & worker safety plan / /

Date of consultation with facility officials in developing monitoring plan / /

Date of consultation with facility officials in procedures for notifying local authorities to notify nearby residents in the event of an emergency. / /

Date of consultation with facility officials in placement of placards / /

Date of consultation with facility officials in having required safety equipment / /

It would be feasible for the facility and fumigator to document the above consultations in text format.

The following information **supports** the concept of the FMP.

Reason for Fumigation - pest(s), buyer requirements, etc.

Type of Fumigation: silo, warehouse, corrugated steel, etc.

Previous fumigation history.
