PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS & DOMESTIC ANIMALS
KEEP OUT OF REACH OF CHILDREN

DANGER - POISON

Aluminum phosphide [illegible] tablets may be fatal if swallowed [illegible] eyes [illegible] clothing. Do not eat, drink or smoke while [illegible] aluminum phosphide fumigants. If a sealed container is [illegible] the material comes in contact with moisture, water [illegible] extremely toxic phosphine gas will be released. If a [illegible] refer to section on respiratory protection [illegible] for appropriate monitoring [illegible] Pure phosphine gas is [illegible] odorless. The odor is due to a [illegible] under certain circumstances. The absence of [illegible] does not mean that phosphine gas is absent. Observe proper [illegible] aeration, reentry, and disposal [illegible] specified elsewhere [illegible] labeling [illegible] prevent over exposure.

NOTE TO PHYSICIAN: Aluminum phosphide [illegible] powder or tablets react with moisture [illegible] and many other liquids to release phosphine gas [illegible] causes [illegible] which is [illegible] by removal [illegible]

[illegible] diarrhea [illegible] several days [illegible] pulmonary edema and may [illegible] dizziness, cyanosis [illegible] heart.

In sufficient quantity phosphine affects the liver, kidneys, lungs, nervous system and circulatory system. Inhalation can cause lung edema and hyperemia, small perivascular brain hemorrhages and brain edema. Ingestion [illegible] lung and brain symptoms but damage to the viscera is more [illegible] Phosphine poisoning may result in (1) pulmonary edema, (2) liver elevated serum [illegible] and alkaline phosphatase, reduced prothrombin, hemorrhage and jaundice, and (3) kidney hematuria and [illegible] Pathology is characteristic of hypoxia. Frequent exposure over a period of days or weeks may cause poisoning. Treatment is symptomatic.

ENVIRONMENTAL HAZARDS

This product is highly toxic to wildlife. Nontarget organisms exposed to phosphine gas in burrows 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.

STORAGE AND HANDLING

Store in a dry, well ventilated area away from heat, under lock and key. Post as a pesticide storage area. Do not contaminate water, food, or feed by storing pesticide in the same areas used to store these commodities. Do not store in buildings inhabited by humans or domestic animals. Aluminum phosphide products [illegible] packages intended for retailers.

DIRECTIONS FOR USE

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

Detailed use and dosage instructions for the fumigation of specified raw agricultural commodities, processed food items, feeds, tobacco, non-food items, cereal mills, feed mills and warehouses as well as for control of moles and burrowing rodents are to be found in the booklet entitled "Applicator's Product Manual For Use With Tri-Tox Tablets And Tri-Tox Pellets". This manual is considered labeling and is as official as the label on the container itself.

SPILL AND LEAK PROCEDURES

A spill, other than incidental to application or normal handling, may produce high levels of gas [illegible] attending personnel must wear 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 aluminum phosphide. Water in contact with unreacted tablets will greatly accelerate the production of phosphine gas which could result in a toxic and/or fire hazard. Wear [illegible] gloves when handling [illegible]

[illegible]

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 Applicator's 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 that the Certified Applicator must be available on site or on the premises. Read and follow the label and Soil Chemicals Corporation product manual which contain complete instructions for the safe use of this product.

Tri-Tox

57% - TABLETS

ACCEPTED
8536-26
MAY 8 1989
[illegible]

ACTIVE INGREDIENT:		
Aluminum Phosphide		57%
INERT INGREDIENTS:		43%
TOTAL:		100%

DANGER **POISON** **PELIGRO**

STATEMENT OF PRACTICAL TREATMENT

PRECAUCION AL USUARIO: Si usted no lee ingles, no use este producto hasta que la etiqueta se la haya sido explicado ampliamente.

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

IF THE GAS FROM ALUMINUM PHOSPHIDE IS INHALED: [illegible] exposed person to fresh air. Keep warm and make sure person can breathe freely. If breathing has stopped, give artificial respiration, mouth-to-mouth or other means of resuscitation. Do not give anything by mouth to an unconscious person.

IF ALUMINUM PHOSPHIDE POWDER, GRANULES, OR TABLETS ARE SWALLOWED: Drink or administer one or two glasses of water and induce vomiting by touching back of throat with finger or, if available, syrup of ipecac. Do not give anything by mouth if victim is unconscious or not alert.

IF POWDER, GRANULES, OR TABLETS OF ALUMINUM PHOSPHIDE GET ON SKIN: Brush material off clothes and shoes in a well ventilated area. Allow clothes to aerate in a ventilated area prior to laundering. Wash contaminated bare skin thoroughly with soap and water.

IF IN EYES: Flush with plenty of water. Get medical attention.

Manufactured by

Sold By:
SOIL CHEMICALS CORPORATION
8770 Highway 25
P.O. Box 782
Hollister, CA 95024-0782
1-800-826-9487
(408) 637-1992

EPA REG. NO. [illegible]

Contents: 500 Tablets • Net Weight: 3.3 lbs. 1500 g

PRECAUTIONS CONTINUED

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

If aluminum flasks have been punctured or damaged so as to leak, the container may be temporarily repaired with aluminum tape or the aluminum phosphide may be transferred from the damaged flask to a sound metal container which should be sealed and properly labeled as aluminum phosphide. Transport the damaged container to an area suitable for pesticide storage for inspection. Further instructions and recommendations may be obtained if required from SOIL CHEMICALS CORPORATION.

PHYSICAL/CHEMICAL HAZARDS

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

Always open containers of aluminum phosphide products outdoors or only in the presence of mechanical ventilation, as under certain conditions they may flash upon opening. When opening, point the container away from the face and body and slowly open the cap. Although the chances for flash are very remote, never open these containers in a flammable atmosphere. These precautions will also reduce the applicator's exposure to phosphine gas.

Pure phosphine gas is practically insoluble in water, 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. Thus, small electric motors, smoke detectors, brass sprinkler heads, batteries, and battery chargers, fork lifts, temperature monitoring systems, switching gear, 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.

STORAGE AND DISPOSAL

STORAGE:

Store in a locked, dry, well ventilated area away from heat. Post as a pesticide storage area. Do not contaminate water, food, or feed by storing pesticide in the same areas used to store these commodities. Do not store in buildings inhabited by humans or domestic animals.

DISPOSAL:

Unreacted or partially reacted aluminum phosphide 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 Regional Office for guidance. For specific instructions, see Spill and Leak Procedures.

Some local and state waste disposal regulations may vary from the following 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.

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 sewer, sanitary landfill, or by other approved procedures. It is also permissible to remove lids and expose empty flasks outdoors until residue in the flasks 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 aluminum phosphide will be grayish-white and contain only a small amount of unreacted material. However, residual dust from incompletely exposed aluminum phosphide will require special care. Refer to attached "Product Manual" for specific instructions.

WARRANTY

Seller does not make warranties expressed or implied on the usage of this product other than those directed on the label. Customer will assume all risks in handling and use of this material contrary to label requirements.

BEST AVAILABLE COPY

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 Applicator's 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 that the Certified Applicator must be available on site or on the premises. Read and follow the label and Soil Chemicals Corporation product manual which contain complete instructions for the safe use of this product.

PRODUCT MANUAL

FOR USE WITH

Tri-Tox® TABLETS

AND

Tri-Tox® PELLETS

EPA REG. N.° 8536-EI 8536-EL
EPA REG. N.° 8536-EA 8536-ET

Manufactured by:

Sold by:

SOIL CHEMICALS CORPORATION
8770 Highway 25
P.O. Box 782
Hollister, CA 95024
1-800-826-9487
(408) 637-1992

PRODUCT MANUAL
FOR Tri-Tox® TABLETS AND Tri-Tox® PELLETS

INTRODUCTION

THIS BOOKLET HAS BEEN PREPARED TO ASSIST THE USER IN THE SAFE AND EFFECTIVE HANDLING OF Tri-Tox® TABLETS AND PELLETS. AS ALL FUMIGANT ARE TOXIC TO MAN AND ANIMALS IF NOT PROPERLY USED, ALL DIRECTIONS FOR USE MUST BE CAREFULLY FOLLOWED. IF THIS IS DONE, THE PRODUCT CAN BE SAFELY HANDLED AND EFFECTIVE INSECT CONTROL WILL BE OBTAINED.

PHYSICAL AND CHEMICAL PROPERTIES OF TRI-TOX®

Tri-Tox® is a formulated product consisting of aluminum phosphide, ammonium carbamate, urea, and edible paraffin. Upon exposure to the atmosphere, the ammonium carbamate dissociates, forming ammonia, a pungent smelling warning gas, and carbon dioxide, a fire suppressant. Within from one to four hours, the active gas hydrogen phosphide (phosphine) begins to evolve as the pellet or tablet slowly decomposes. Hydrogen phosphide has a carbide-like odor and can be readily smelled by most humans at a concentration in the range of 0.02 parts per million. It is a colorless gas with great penetration power due to its high volatility.

Tri-Tox® is offered in two forms, tablets and pellets. The tablet approximately 4/5 inch in diameter. It weighs three grams, and on decomposition releases one gram of hydrogen phosphide. Tablets are packaged either in gas tight tubes and cans or in resealable flasks. Each tube holds 20 tablets and each can holds 15 tubes. Each resealable flask holds 100 or 500 tablets in bulk. The pellet is spherical in form and approximately 3/8 inch in diameter. It weighs 0.6 grams, and on decomposition releases 0.2 grams of hydrogen phosphide. There are 1660 pellets packed in each resealable flask.

The rate of decomposition is dependent on temperature of the commodity and relative humidity of the atmosphere. At temperatures over 68°F (20°C.) decomposition of both tablets and pellets is completed in approximately 72 hours. As temperature decreases, required exposure time is increased. Fumigation must not be attempted when commodity temperature is below 40°F (5°C).

Following decomposition of the tablets and pellets, there remains a gray-white "dust" composed almost entirely of non-poisonous aluminum hydroxide, with a trace amount of the undecomposed aluminum phosphide. The "dust" is eliminated when treated raw agricultural commodities are moved, or it can be collected and properly disposed of following the treatment of processed foods.

HAZARDS TO HUMANS AND DOMESTIC ANIMALS
KEEP OUT OF REACH OF CHILDREN
DANGER - POISON

Aluminum phosphide pellets, granules, or tablets may 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. If a sealed container is opened, or if the material comes in contact with moisture, water, or acids, extremely toxic phosphine gas will be released. If a garlic odor is detected, you must monitor to determine whether phosphine gas is present above the acceptable exposure (see section on Application and Worker Exposure). Since no odor may be detected under certain circumstances, the absence of a 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 over-exposure.

NOTE TO PHYSICIAN: Aluminum phosphide granules, powder, tablets, or pellets react with moisture in the air, acids, and many other liquids to release phosphine gas. Mild inhalation causes malaise, ringing of ears, fatigue, nausea, and pressure in the chest which is relieved by removal to fresh air.

Moderate poisoning causes weakness, vomiting, epigastric pain, chest pain, diarrhea, and dyspnea.

Severe poisoning may occur in a few hours to several days, resulting in pulmonary edema and may lead to dizziness, cyanosis, unconsciousness, and death.

In sufficient quantity, phosphine affects the liver, kidneys, lungs, nervous system, and circulatory system. Inhalation can cause lung edema and hyperemia, small perivascular brain hemorrhages and brain edema. Ingestion can cause lung and brain symptoms, but damage to the viscera 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; and (3) kidney hematuria and anuria. Pathology is characteristic of hypoxia. Frequent exposure over a period of days or weeks may cause poisoning. Treatment is symptomatic.

PRACTICAL TREATMENT STATEMENT

Symptoms of overexposure to phosphine 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 THE GAS FR. ALUMINUM PHOSPHIDE IS 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 POWDER, GRANULES, PELLETS, OR TABLETS ARE SWALLOWED: Drink or administer one or two glasses of water and induce vomiting by touching back of throat with finger or, if available, syrup of ipecac. Do not give anything by mouth if victim is unconscious or not alert.

IF ALUMINUM PHOSPHIDE POWDER, GRANULES, PELLETS, OR TABLETS GET ON CLOTHING OR SKIN: Brush material off clothes and shoes in a well ventilated area. Allow clothes to aerate in a ventilated area prior to laundering. Wash contaminated bare skin thoroughly with soap and water.

IF IN EYES: Flush with plenty of water. Get medical attention.

HOW Tri-Tox® SHOULD BE STORED

Tablets and pellets are received in a carton containing sealed tubes and cans or resealable flasks. As long as the tubes, cans, or flasks remain intact, the storage life of the product is unlimited. Storage should be in a dry, locked, ventilated area and out of the reach of children and unauthorized person.

HOW Tri-Tox® SHOULD BE HANDLED

1. Make certain the label is intact and legible.
2. Read the label.
3. Open containers of tablets or pellets only in open air.
4. Wear dry gloves when handling the product.
5. Do not smoke, eat, or drink when handling a pesticide.
6. Use entire contents of a tube once it is opened. Unopened tubes and resealable flasks may be returned to the locked storage area for later use.
7. Wash hands after use of the product.
8. Do not attempt to reuse empty container. Triple rinse with water, crush, and dispose of properly. Bury cans and stoppers. Flasks may be recycled.

REGISTERED USES: Tri-To
Mental Protection Agency

a. Food/Feed; Nondome
b. Food/Feed; Nondome
c. Food/Feed; Nondome
d. Nonfood/Nonfeed an

Raw Agricultural Com
ley, brazil nuts, buckw
flower seed, grass seed
seed and pod vegetables
seed, walnuts, wheat, an

Processed Food (can r
ery mixes, cereal flour
ars, dried apples, dried
dried peaches, dried pea
dairy creamers, non-fat
pretzels, primary yeast,
processed nutmeats.

Animal Feed and Feed

Non-Foods: Tobacco,
paper, and sisal.

Phosphine residue may
feed and raw agricultura

A tolerance for resid
been set at 0.01 ppm, r
cultural and non croplan

When used as directe
following pests: almon
beetle, confu 4 flour
European grain moth, fl
lesser grain borer, Med
beetle, rusty grain beet

1. Never let Tri-Tox® t
water as this causes
2. Tri-Tox® should neve
tration to reach the
(17,900 parts per mi
of gas produced remai
3. Never confine the p
Such confinement coul
level.
4. Take precautions in
may occur.
5. Never fumigate in ar
film, or copy paper.
exposure to the gas.
6. Suggested exposures
compensated for by i

7. Hydrogen phosphide has great penetrating power and gas may slowly seep through concrete block walls. See that aijoining areas are not occupied during the fumigation period.
8. Hydrogen phosphide does not layer or stratify. Because of its high volatility and penetrating ability, the enclosure being treated must be sealed as tightly as possible if an effective fumigation is to be expected.
9. Disposal of the "dust" remaining after a space fumigation must be carefully and properly done. See section on DISPOSAL for further information.
10. For control of moles and rodents, observe that it should be for outdoor usage only. Do not use within 15 feet (5 meters) of inhabited structures. Do not apply to burrows which may open under or into occupied buildings.

PROTECTIVE CLOTHING

Wear dry gloves when handling unpackaged tablets or pellets. Wash hands thoroughly after use before smoking or eating

APPLICATOR AND WORKER EXPOSURE

Depending upon temperature and humidity, this product will release phosphine gas slowly upon exposure to moisture from the air. However, because of the potential for applicators and workers to be exposed to phosphine gas during fumigation, the following exposure limits and respiratory protection requirements apply:

EXPOSURE TO PHOSPHINE GAS MAY NOT EXCEED 0.3 PPM MEASURED AS AN 8 HOUR TIME-WEIGHTED AVERAGE (TWA) 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. Engineering controls such as forced air ventilation should be the primary means used to meet this exposure standard.

If the fumigant is applied from outside an enclosed area (for example, a railroad car or an automatic dispenser located outside an enclosed area), the applicator may apply the fumigant and immediately leave the area without being exposed to gas levels in excess of the standard. Therefore, neither monitoring nor respiratory protection equipment is needed during fumigation from outside an enclosed area (such as addition of fumigant to automatic dispensing devices located outdoors, to burrows of rodents or moles away from buildings, to railroad cars located outside, etc.).

If the applicator enters an enclosed indoor area to fumigate, monitoring with a low level detection device is necessary. It is recommended that a sufficient number of readings must be taken where worker exposure is likely to occur in order to establish that the exposure standard is not exceeded. Adjacent indoor areas likely to be occupied should be checked for leaks. If monitoring equipment is not available on a farm and application cannot be done outside a structure, an approved canister respirator must be worn for indoor application. If an approved respirator is not available, application must be done from outside the site to be fumigated.

It is recommended that the applicator or employer document exposure readings in an operation log or manual for each fumigation site. Once exposures have been adequately characterized for a site, subsequent monitoring is not routinely required for each application. However, spot checks should be made, especially if conditions significantly change or if a garlic odor is detected

If the exposure limits cannot be met through engineering controls (such as forced air ventilation) a full-face canister respirator approved by NIOSH/MSHA for aluminum phosphide must be worn. This respirator may be used to enter an area with levels up to 15 ppm or to escape an area with levels up to 1500 ppm. Above these levels or where levels are unknown, a NIOSH/MSHA approved self-contained breathing apparatus (SCBA), positive air pressure type, must be used. The NIOSH/OSHA Pocket Guide, 8-85, DHEW/NIOSH 78-210 lists these and other types of approved respirators and their limits.

A NIOSH/MSHA approved full-face canister respirator must be available on site if the fumigant is applied from within a confined space, and a SCBA respirator must also be available either on site or locally (such as a fire station or rescue squad). The SCBA is needed in the event a spill, leak, or rescue situation arises where the level of phosphine gas exceeds 15 ppm or is unknown. Two trained persons must be present during applications indoors or during reentry into an unaerated space.

AFTER APPLICATION EXPOSURE FOR ANY PERSON MAY NOT EXCEED 0.3 PPM PHOSPHINE (MAXIMUM CONCENTRATION). Such exposures may occur if the commodity or space under fumigation leaks, or when treated commodity is transferred or handled, or if someone reenters an unaerated or partially aerated space, etc. Monitoring should be performed as described above to assure that this exposure limit is not exceeded. If exposures cannot be reduced to acceptable levels, the same respiratory protection requirements apply as above.

Because phosphine gas is highly mobile and may penetrate seemingly gas-tight materials such as concrete and cinder blocks, adjacent indoor areas likely to be occupied must be checked for leaks. Sealing of the fumigated site and/or airflow in the occupied areas must be sufficient to meet the exposure limit of 0.3 ppm (maximum concentration).

A treated commodity does not necessarily need to be aerated immediately, as it may be desirable to store the commodity for a long period without aeration. However, a space or commodity must be aerated to 0.3 ppm or less phosphine in the worker's zone before reentry is allowed. Reentry at higher levels requires the use of an approved respirator (see respirators described above).

Worker exposure during storage, transfer, and handling of a treated commodity (raw, processed, or finished) is covered by the exposure limit of 0.3 ppm (maximum concentration). Monitoring must be conducted as previously described to prevent overexposure at any time during these activities.

Use SCBA equipment such as the MARK II ® manufactured by Survivair or the Ultralite ® manufactured by Mine Safety Appliance Co. Use direct reading gas detection equipment such as a Draeger or Auer detector. The devices consist of a pump, designed to draw a specific volume of air, and a graduated glass tube filled with a chemical that reacts with phosphine. In use, the gas laden air is drawn through the tube and the concentration can then be read from the amount of discoloration that results. There are two types of tubes: high range for assessing the effectiveness of a treatment, and low range for assuring the safety of the workers involved.

PLACARDING 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 commodity under fumigation, DO NOT ENTER/NO ENTRE".
3. The statement, "This sign may only be removed after the commodity is 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 fumigation in order to keep unauthorized persons away. For railroad hopper cars, placarding must be placed on both sides of the car near the ladders and next to the top hatch into which the fumigant is introduced.

Do not remove a placard until the treated commodity is completely aerated. To determine whether aeration is complete, each fumigated site or vehicle must be monitored and shown to contain 0.3 ppm or less phosphine gas in the air space around and, when feasible, in the mass of the commodity.

It is recommended that the person removing the placard be trained. Training should cover physical, chemical, and toxicological properties of phosphine; how to take gas readings; the exposure limits for phosphine; and symptoms of and first aid treatment for poisoning.

AERATION OF FUMIGATED COMMODITIES FOR TOLERANCE PURPOSES

Tolerances for phosphine residues have been established at 0.1 ppm for raw agricultural commodities and animal feeds, and 0.01 ppm for finished foods. To assure compliance with these tolerances, it is necessary to aerate these commodities 48 hours prior to offering them to the end consumer. Tobacco must be aerated for at least three days when fumigated in hogsheads. As an alternative to these aeration periods, each container of a treated commodity may be analyzed for residues 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.

PHYSICAL/CHEMICAL HAZARDS

Aluminum phosphide tablets, pellets, and partially spent dust will release phosphine gas if exposed to moisture from the air or if they come 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.

Always open containers of aluminum phosphide products outdoors, or indoors in the presence of mechanical ventilation, for under certain condition they may flash upon opening. When opening, point the container away from the face and body and slowly loosen the cap. Although the chances for flash are very remote, never open these containers in a flammable atmosphere. These precautions will also reduce the applicator's exposure to phosphine gas.

Pure phosphine gas is practically insoluble in water 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 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 gear, 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.

STORAGE AND DISPOSAL

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

Unreacted or partially reacted aluminum phosphide 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 Regional Office for guidance. For specific instructions, see Spill and Leak Procedures.

Some local and state waste disposal regulations may vary from the following 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.

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 sewer, sanitary landfill, or by other approved procedures. It is also permissible to remove lids and expose empty flasks outdoors until residue in the flasks 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 aluminum phosphide will be grayish-white and contain only a small amount of unreacted material. However, residual dust from incompletely exposed aluminum phosphide will require special care.

DIRECTIONS FOR DISPOSAL OF SPENT RESIDUE FROM ALUMINUM PHOSPHIDE

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

Spent residual dust, bags, or other packaging containing spent aluminum phosphide 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.

2 to 3 kg (4 to 7 lbs.) of spent dust from 2 to 3 flasks of aluminum phosphide may be collected for disposal in a 1-gallon bucket. Larger amounts, up to about one-half case may be collected in burlap, cotton, or other types of porous cloth 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 collect dust, bags, or other types of packaging in large drums, dumpsters, plastic bags, or other containers where confinement may occur.

DIRECTIONS FOR DEACTIVATION OF PARTIALLY SPENT RESIDUE FROM ALUMINUM PHOSPHIDE

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

Partially spent product must be deactivated further, prior to ultimate disposal. This is especially true in cases of incomplete exposure which has resulted in so-called "green dust" or following a fumigation which has produced large quantities of partially spent material.

Residual dust from aluminum phosphide may be deactivated as follows using the "Wet Method":

Deactivating solution is prepared by adding the appropriate amount of low sudsing detergent or surfactant to water in a drum or other suitable container. The container should be filled with deactivating solution to within a few inches of the top.

Residual product is poured slowly into the deactivating solution and stirred in order to thoroughly wet all the spent aluminum phosphide. This must be done in the open air and not within an enclosed space. Residue from aluminum phosphide tablets or pellets should be mixed into no less than about 10 gallons of water-detergent solution for each case of material used.

Dispose of the deactivated 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 or out onto the ground.

Respiratory protection is required during wet deactivation of partially spent material. Do not cover the container holding the slurry at any time. Do not dispose of dust in a toilet. Do not allow quantities of dry product residue from aluminum phosphide to be collected or stored without deactivation.

SPILL AND LEAK PROCEDURES

A spill, other than incidental to application or normal handling, may produce high levels of gas and, therefore, attending personnel must wear 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 aluminum phosphide. Water in contact with unreacted tablets or pellets will greatly accelerate the production of phosphine gas which could result in a toxic and/or fire hazard. Wear cotton gloves when handling pesticides.

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.

If aluminum flasks have been punctured or damaged so as to leak, the container may be temporarily repaired with aluminum tape or the aluminum phosphide 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. Further instructions and recommendations may be obtained, if required, from Soil Chemicals Corporation.

If a spill has occurred which is only a few minutes old and the tablets and pellets are intact, place them back into the original flasks and stopper the flasks. If the original flasks are damaged, place the collected tablets and pellets in a sound metal container. Caution: These flasks may flash upon opening at some later time.

If the age of the spill is unknown or if the tablets and 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 about one flask of spilled 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 away from inhabited buildings. Wet deactivation may then be carried out as described under storage and disposal.

If the contaminated material is not completely reacted by exposure to atmospheric moisture, deactivate the product by the "Wet Method" as follows:

Deactivating solution is prepared by adding the appropriate amount of low sudsing detergent or surfactant to water in a drum or other suitable container. A 2% solution or 4 cups in 30 gallons is suggested. The container should be filled with deactivating solution to within a few inches of the top.

The tablets or pellets are poured slowly into the deactivating solution and stirred in order to thoroughly wet all the product. This should be done in the open air. Aluminum phosphide tablets or pellets should be mixed into no less than about 15 gallons of water-detergent solution for each case of spent material. Allow the mixture to stand, stirring occasionally, for about 36 hours. The resultant slurry will then be safe for disposal.

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 into a storm sewer or out onto the ground.

Respiratory protection is required during wet deactivation of unexposed product. Never place pellets, tablets, or 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.

DIRECTIONS FOR USE

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

DOSAGE AND EXPOSURE INFORMATION

Hydrogen phosphide is an acute poison and is highly effective against insects. As true with all fumigants, insect control depends upon both dosage and exposure time. Hydrogen phosphide is effective at very low concentrations providing exposure time is long enough. As already stated, however, exposure time cannot be shortened by increasing dosage. At very high concentrations, hydrogen phosphide can have a narcotic effect on insects which actually reduces mortality.

Because there are a number of factors which alter the effectiveness of a fumigant (e.g. temperature, tightness of seal, type of storage space), a range of dosages and exposure times are suggested. The user must assess the conditions under which the fumigation will be done and determine what dosage best suits his needs.

SUGGESTED DOSAGE SCHEDULE

RAW AGRICULTURAL COMMODITIES:	
BULK ANIMAL FEEDS (except nuts):	60-180 tablets or 120-300 pellets per 1000 bushels.
PEANUTS:	60-125 tablets per 1000 cubic feet.
NUTS:	30 tablets or 100-200 pellets per 1000 cubic feet storage space.
PROCESSED FOODS:	30-60 tablets or 100-200 pellets per 1000 cubic feet storage space
STORED TOBACCO:	20-30 tablets or 100-150 pellets per 1000 cubic feet storage space
CEREAL MILLS, FEED MILLS, AND WAREHOUSES:	20-30 tablets or 100-150 pellets per 1000 cubic feet storage space.
CONTROL OF MOLES AND BURROWING RODENTS:	2-4 tablets per burrow

SUGGESTED EXPOSURE TIMES (FOR ALL USES)

COMMODITY TEMPERATURE FAHRENHEIT	CENTIGRADE	EXPOSURE TIME TABLETS	PELLETS
Below 40°	5°	Do not fumigate*	
40-53°	5-11°	7-10 days	6-9 days
54-59°	12-15°	5 days	4 days
60-68°	16-20°	4 days	3 days
Over 68°	20°	3 days	2 days

* Do not fumigate - except tobacco for export.

Remember: Efficacious results depend upon proper dosage, adequate exposure times, correct application techniques, and well sealed enclosures.

APPLICATION PROCEDURES

This fumigant is a highly hazardous material and may only be used by individuals trained in its proper use. Before using, read and follow all precautions and directions on the label and in the product manual.

Persons applying this fumigant must complete an EPA approved training program for fumigants.

At least two trained persons must be present when this fumigant is applied from within a confined space, or during reentry into a fumigated or partially aerated site.

Prior to applying this product, you must inspect the site to be fumigated to determine if it can be made sufficiently gas tight. You should also develop a plan for monitoring how to most efficiently and safely apply the fumigant, including emergency procedures, etc. Notify appropriate company employees and local officials having jurisdiction (fire department, rescue squad, police, etc.) over the fumigation site. Follow all local and state regulations.

Shipholds, barges, containers or ships, railroad cars, and containers shipped piggyback by rail may be fumigated in transit. However, trucks, vans, trailers, and similar transport vehicles cannot be moved over public roads or highways until the fumigation is completed.

Do not fumigate commodities with this product when commodity temperature is below 40°F (5°C). (Note Exception: Tobacco for export.)

FUMIGATION OF SILO TYPE STORAGE:

1. Calculate required number of tablets or pellets based on dosage selected and quantity of commodity to be treated.
2. Determine the amount of ventilation in both the basement and on the bin floor where the fumigant will be applied.
3. Open all containers outside the building.
4. Tablets may be applied to grain on the transfer belt by hand. Pellets are best applied using an automatic pellet dispenser. They may be dispensed into the upleg of the elevator from the work room floor, or onto the grain as it travels along the transfer belt on the bin floor.
5. Place a warning sign on the bin cover, on the bin floor, and on the bin valve in the basement. Date the sign indicating when the fumigation commenced.
6. Each day before work starts, the bin floor and basement should be checked for the presence of gas.
7. Elevator personnel may carry out their normal duties when Tri-Tox® is used to treat grain in upright silo storage.

FUMIGATION OF FLAT STORAGE:

1. Make certain the structure is tight enough to be fumigated successfully. Seal structure as needed.
2. Make certain there are no adjoining structures occupied by man or animals.
3. Determine the quantity of tablets or pellets required.
4. During fumigant application, leave all doors or other openings open to create a cross ventilation. Application can proceed for 2 - 4 hours or until the odor of phosphine is detected in the overspace.
5. Apply the tablets or pellets by using a probe. Make probes every 4 - 5 feet horizontally across the grain in both directions. The number of tablets or pellets used per probe is determined by dividing the amount of fumigant to be used by the number of probings to be made. The fumigant is dropped in the probe at intervals as the pipe is withdrawn from the grain.
6. A plastic tarpaulin may be pulled over the grain surface following application of the fumigant. This reduces convection currents and increases the effectiveness of the fumigant. Care must be taken to see that the plastic is removed when the fumigation is completed. (Remove within 5 - 6 days or sweating of the grain may occur).
7. Close and seal all external openings.
8. Placard and lock entrances.
9. Following the exposure period, create a cross draft to aid in aeration by opening doors and windows.
10. Make certain all warning signs are removed when the aeration is completed.

FUMIGATION OF RAILCARS:

1. Boxcars and hopper cars of bulk raw agricultural commodities and animal feeds are fumigated in the same manner as silos or flat storages. The tablets or pellets may be added to the commodity as it flows into the railcar, or placed on the floor of the empty car, or placed onto the surface of the commodity, or probed into the commodity after loading is completed.
2. Processed foods and bagged raw commodities and animal feeds are fumigated by placing the tablets or pellets in moisture permeable envelopes or on trays, which in turn are fastened to a substantial support within the car. Care must be taken to see that the fumigant or its reacted residue do not come into contact with processed foods.
3. Close and seal all hatches or doors. On hopper cars, make sure the vents at the end of the car are sealed with masking tape. Placards approved by the Department of Transportation must be applied onto each door of the box cars, near the ladder on the hopper cars, as well as on the top hatch covers. Date the signs indicting when fumigation commenced and when the car may be opened.
4. Notify the consignee that the car is to be received under fumigation.

FUMIGATION UNDER TARPAULINS:

1. Cover the stack of product to be fumigated with polyethylene (1 5-2 mil. is satisfactory). Secure the edges of the tarpaulin to the floor using sand snakes, tape, or other suitable material.
2. Spread tablets or pellets on trays and insert under the edge of the tarpaulin. Reseal tarpaulin to the floor in that location.
3. Placard the stack on all exposed sides indicating that fumigation is in progress. Date and sign the warning placard indicating when cover may be removed.
4. Maintain adequate ventilation around the stack at all times. If this is done, workers do not have to vacate the premises.
5. Following the exposure period, collect all residual "dust" and dispose of it according to label directions. Remove tarpaulins, if desired. All warning signs must be removed and destroyed.

FUMIGATION OF CEREAL MILLS, FEED MILLS, WAREHOUSES:

1. Seal the enclosure to be treated using appropriate sealing materials (except exit door).
2. Where necessary, notify police and fire officials having jurisdiction over the area.
3. Determine dosage required and calculate the amount of fumigant needed. Open all containers out of doors.
4. Spread tablets or pellets on kraftpaper trays laid on the floor, with application starting at the farthest point from the exit door.
5. Lock and seal exit door. Post guards, if required.
6. Placard all entrances with warning signs.
7. Notify local hospital that fumigation is underway and explain the fumigant being used.
8. When fumigation is completed, open all doors and windows to commence aeration. It will be necessary to wear a gas mask if the building must be entered before aeration is complete.
9. Using gas detection devices, document that all gas is gone before turning structure back for reoccupancy.
10. Collect and properly dispose of all fumigant "dust". Remove and discard all warning placards.

CONTROL OF MOLES AND BURROWING RODENTS:

Tri-Tox® Tablets are also registered for usage on the control of Marmot sp., Wood Chucks, Yellow-Belly Marmots (Rockchuck), Prairie Dogs (except Utah Prairie Dogs) Norway and Roof Rats, House Mice, Ground Squirrels, Moles, Voles, Gophers, Chipmunks.

DIRECTIONS FOR USE AGAINST BURROWING PESTS:

Add from 2 to 4 Tri-Tox® Tablets to the burrow and seal tightly by shoveling soil over the entrance, after first packing the opening with crumpled newspaper. This will prevent the soil from covering the tablets and slowing down their action. Use lower rates in smaller burrows under moist soil conditions and higher rates in larger burrows when soil moisture is very low. Treat reopened burrows a second time 1 to 2 days after the initial treatment. For use on crop and noncrop lands.

ENVIRONMENTAL HAZARDS

This product is very highly toxic to wildlife. Non-target organisms exposed to phosphine gas in burrows 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.

ENDANGERED SPECIES RESTRICTIONS

The use of any pesticide in a manner that may kill or otherwise harm an endangered or threatened species or adversely modify their habitat is a violation of federal laws. The use of this product is controlled to prevent death or harm to endangered or threatened species that occur in the following counties or elsewhere in their range.

STATE (REGIONAL OFFICE FWS) Species	COUNTY (UNLESS SPECIFIED)	
Arizona (Albuquerque, N.M.)		
Black-footed ferret	STATEWIDE	
CALIFORNIA (PORTLAND, OR.)		
San Joaquin Kit-Fox	KERN	MERCED
	KINGS	MONTEREY
	TULARE	SAN BENITO
	FRESNO	SAN LUIS OBISPO
	VENTURA	SANTA BARBARA
Blunt-nosed Leopard Lizard	KERN	MADERA
	KINGS	MERCED
	FRESNO	TULARE
COLORADO (DENVER, CO.)		
Black-footed ferret	STATEWIDE	
FLORIDA (ATLANTA, GA.)		
Black-footed ferret	STATEWIDE	
MONTANA (DENVER, CO.)		
Black-footed ferret	STATEWIDE	
NEBRASKA (DENVER, CO.)		
Black-footed ferret	STATEWIDE	
NEW MEXICO (Albuquerque, N.M.)		
Black footed ferret	STATEWIDE	
NORTH DAKOTA (DENVER, CO.)		
Black-footed ferret	STATEWIDE	
OKLAHOMA (ALBUQUERQUE, N.M.)		
Black-footed ferret	STATEWIDE	
SOUTH DAKOTA (DENVER, CO.)		
Black-footed ferret	STATEWIDE	
TEXAS (ALBUQUERQUE, N.M.)		
Black-footed ferret	STATEWIDE	
UTAH (DENVER, CO.)		
Desert Tortoise	WASHINGTON	
Black-footed ferret	STATEWIDE	
WYOMING (DENVER, CO.)		
Black-footed ferret	STATEWIDE	

Use of this product in the above 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 Service (FWS) nearest you.

INTRANSIT SHIP FUMIGATION

IMPORTANT:

Shipboard, intransit ship, or shiphold fumigation is also governed by U.S. Coast Guard Regulations. Refer to and comply with these regulations prior to fumigation.

PROCEDURES:

1. Prior to fumigating a vessel for intransit cargo fumigation, the Master of the vessel, or his representative, and the fumigator must determine whether the vessel is suitably designed and configured to allow for the safe occupancy by the ship's crew throughout the duration of the fumigation. If it is determined that the design and configuration of the vessel does not allow for safe occupancy by the ship's crew throughout the duration of the fumigation, then the vessel will not be fumigated unless all crew members are removed from the vessel. The crew members will not be allowed to reoccupy the vessel until the vessel has been properly aerated and a determination has been made by the Master of the vessel and the fumigator that the vessel is safe for occupancy.
2. The person responsible for the fumigation must notify the Master of the vessel, or his representative, of the requirements relating to personal protection equipment*, detection equipment, and that a person qualified in the use of this equipment must accompany the vessel with cargo under fumigation. Emergency procedures, cargo ventilation, periodic monitoring and inspections, and first aid measures must be discussed with and understood by the Master of the vessel or his representative.
3. During the fumigation or until a manned vessel leaves port or the cargo is aerated, the person in charge of the fumigation shall insure a qualified person using gas or vapor detection equipment tests the spaces adjacent to the fumigated areas for leakage. If leakage of the fumigant is detected, the person in charge of the fumigation shall take action to correct the leakage, or shall inform the Master of the vessel, or his representative, of the leakage so that corrective action can be taken.
4. If the fumigation is not completed and the vessel aerated before the manned vessel leaves port, the person in charge of the vessel shall insure that at least two units of personal protection equipment and one gas or vapor detection device, and a person qualified in their operation be on board the vessel during the voyage

* Personal protection equipment means a gas mask or respirator for the fumigant, jointly approved by the Mining Enforcement and Safety Administration and the National Institute of Occupational Safety and Health: a gas mask and canister approved for use up to 15 ppm. Above 15 ppm or at unknown concentrations, a SCBA or its equivalent must be used.

PRECAUTIONS AND PROCEDURES DURING VOYAGE:

1. Using appropriate gas detection equipment, monitor spaces adjacent to areas containing fumigated cargo and all regularly occupied areas for fumigant leakage. If leakage is detected, the area should be evacuated of all personnel, ventilated, and action taken to correct the leakage before allowing the area to be reoccupied.
2. Do not enter fumigated area except under emergency conditions. If necessary to enter a fumigated area, appropriate personal protection equipment must be used. NEVER enter fumigated area alone. At least one other person, wearing personal protection equipment, should be available to assist in case of an emergency.

PRECAUTIONS AND PROCEDURES DURING DISCHARGE:

1. If necessary to enter holds prior to discharge, test spaces directly above grain surface for fumigant concentration, using appropriate gas detection and personal safety equipment. Do not allow entry into fumigated areas without personal safety equipment unless fumigant concentrations are at safe levels, as indicated by a suitable detector.
2. Remove and dispose of all sealing materials and warning signs.

BARGE FUMIGATION

When fumigating unmanned barges, the tablets or pellets may be fed into raw agricultural commodities and bulk animal feeds as the barge is being loaded, or may be probed in after loading is completed. When treating raw commodities, or feeds not stored in bulk, or processed foods, the tablets or pellets must be contained and fastened to a support. Dosage and exposure time on unmanned barges is identical to the use for the same commodities fumigated in land based structures or storage areas.

Following application of the fumigant, the barge must be sealed and warning placards attached. Notify consignee if the barge is to be fumigated intransit. Prior to the unloading of unmanned fumigated barges, make appropriate tests to ascertain safety of cargo and ballast area.

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. For further information contact: U.S.Coast Guard, Hazardous Materials Branch, Washington, DC 20593.