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# Commodity Fumigation for Title II PVOs

ASIA REGIONAL

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**LEARNING FROM THE PAST SHAPING THE FUTURE**

Presented By:  
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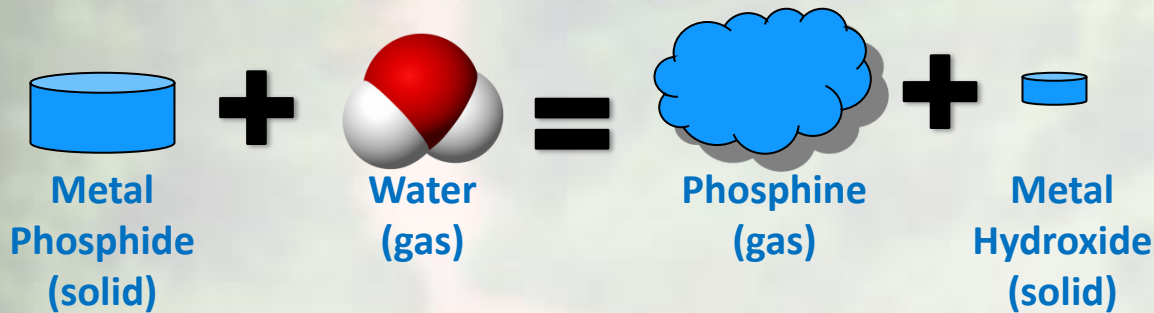
# Learning Objectives

To understand:

- PVO Role in fumigation of commodities
- Fumigant basics and dangers
- USAID's Fumigation PEA and helpful tools
- How to prepare the warehouse for fumigation
- Fumigations Safety Precautions

# Fumigant Basics

What do we use? Metal Phosphides (ex.: Tri-tox, Phostoxin)



Phosphine (gas):

Restricted use pesticide – High acute toxicity to the lungs

Colorless, fish/garlic odor

Highly explosive, corrosive



# Health Concerns of Phosphine

## What are the Symptoms of Poisoning?

- Headache, dizziness, double vision
- Vomiting, diarrhea, difficulty breathing
- Seizures, unconsciousness, and even death



## Some BAD field Practices:

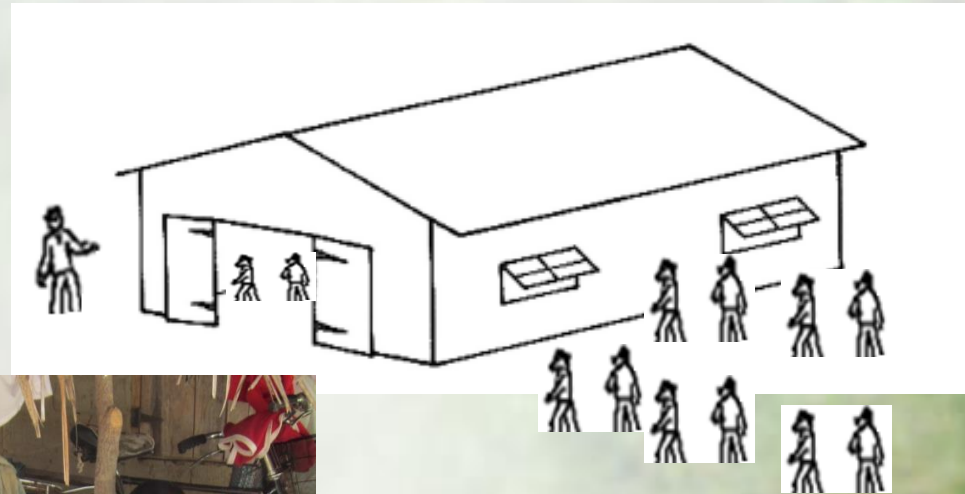
- Given pseudo preventative treatment
- Workers using the “sniff” test
- Complaints of dizziness



# Who must we think about when fumigating?

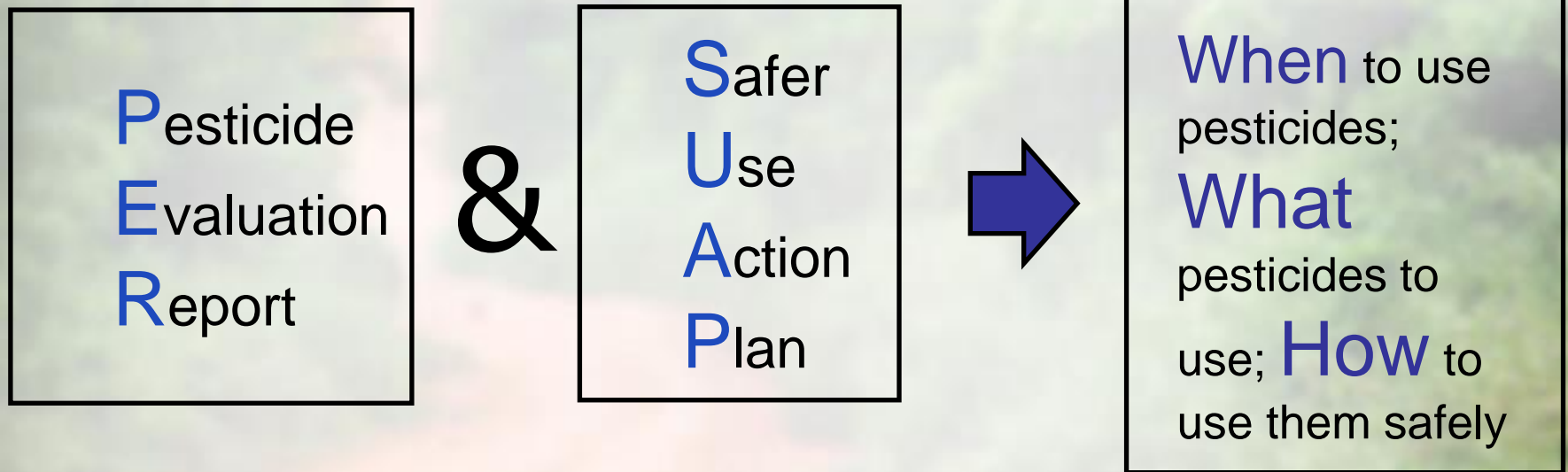
## Identified Groups:

- Fumigant worker
- Warehouse workers
  - Managers
  - Other workers
- Nearby residents
- Beneficiaries



# What is a PERSUAP?

The PERSUAP is a combination of two documents:



- Since your program will procure or use pesticides, prior to starting your program activities a PERSUAP must be in place!
- Commodity managers are generally responsible with their COP in developing the Safe Use Action Plan.

# Fumigation PEA

A new PEA for fumigation is being completed: This document:

- Identifies the ways that human health and environmental health can be affected by fumigation
- Determines appropriate mitigation measures for host countries
- Best management practices for fumigation
- Improve the safety and effectiveness of fumigation practices



COMMODITY PROTECTION BY  
PHOSPHINE FUMIGATION IN  
USAID FOOD AID PROGRAMS  
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT  
PUBLIC REVIEW DRAFT



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# Managing a Fumigation Safely

**For the PERSUAP, the PVO is responsible for:**

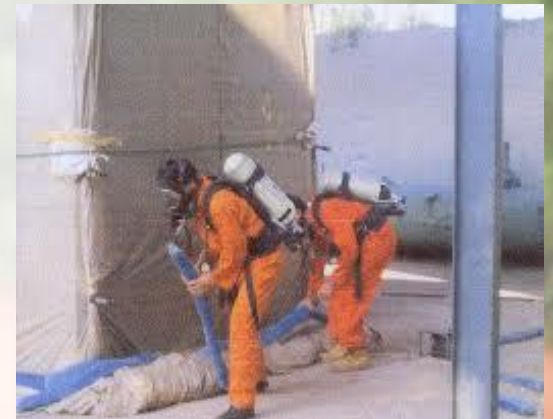
1. Identifying roles and responsibilities for PVO staff during fumigation
2. Assuring that all commodities and the warehouse are prepared for fumigation
3. Providing necessary protective equipment to PVO workers
4. Overseeing on-site handling, transport and disposal of fumigants
5. Being able to implement emergency plans for your facility
6. Keeping good records!!



# Roles and Responsibilities: County Office Level

**REMEMBER: PVOs SHOULD NEVER FUMIGATE!!!!**

- Hire and confirm certification of fumigators
- Higher level coordination of commodity preparation and FMP implementation
- Inform fumigator about special requirements
- Notify the proper authorities
- Report theft of equipment or fumigant



# Roles and Responsibilities: Warehouse Manager

- Ensure FMP is implemented
- Manage fumigation preparations and completion
- Coordinate commodity preparation and FMP implementation
- Confirm that everyone is aware of emergency and accident reporting procedures
- Oversee warehouse workers during fumigation
- Verify effectiveness and obtain on-site certificates
- Monitor for theft of fumigant or equipment.

**SAFETY IS EVERYONE'S RESPONSIBILITY**

# Roles and Responsibilities: Warehouse Worker

The #1 role for the worker is to **STAY SAFE!** Do this by:

- Being aware of safety procedures
- Obeying signs and warnings
- Report anything to the Warehouse Manager that seems unsafe

**Remember: Speak up if  
you feel you are at Risk!**



# Preparing the Warehouse for Fumigation



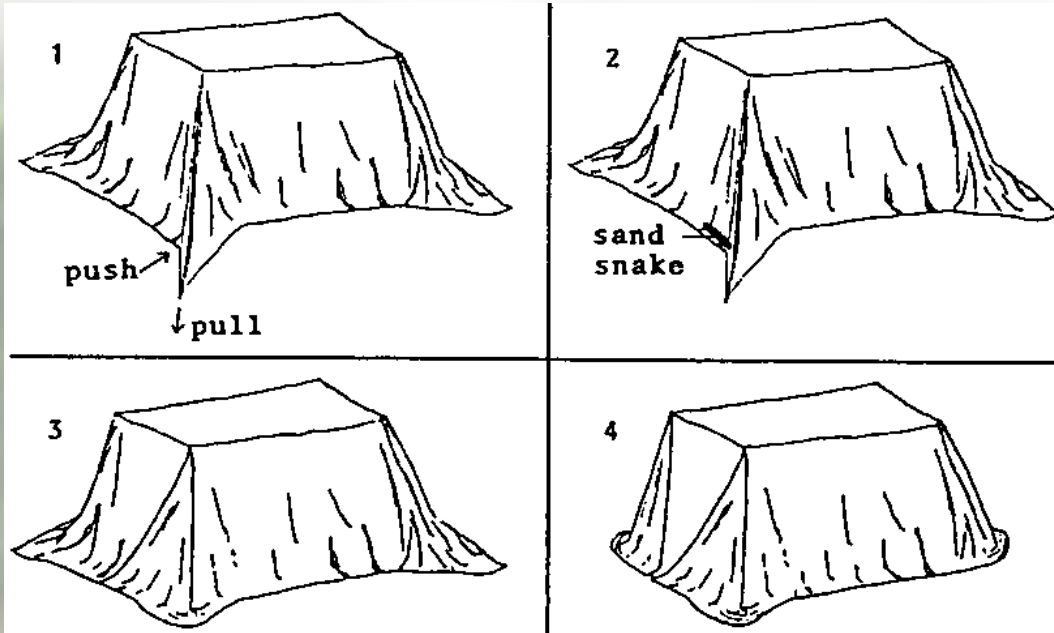
## Appropriate Stacking



## Appropriate Tarpaulin

- Gas proof
- >7 oz. thickness
- Vinyl-coated nylon

# Oversight of Commodity Preparation



**Tarpping and Securing**



**Air Tight Seals**

# Site Preparation

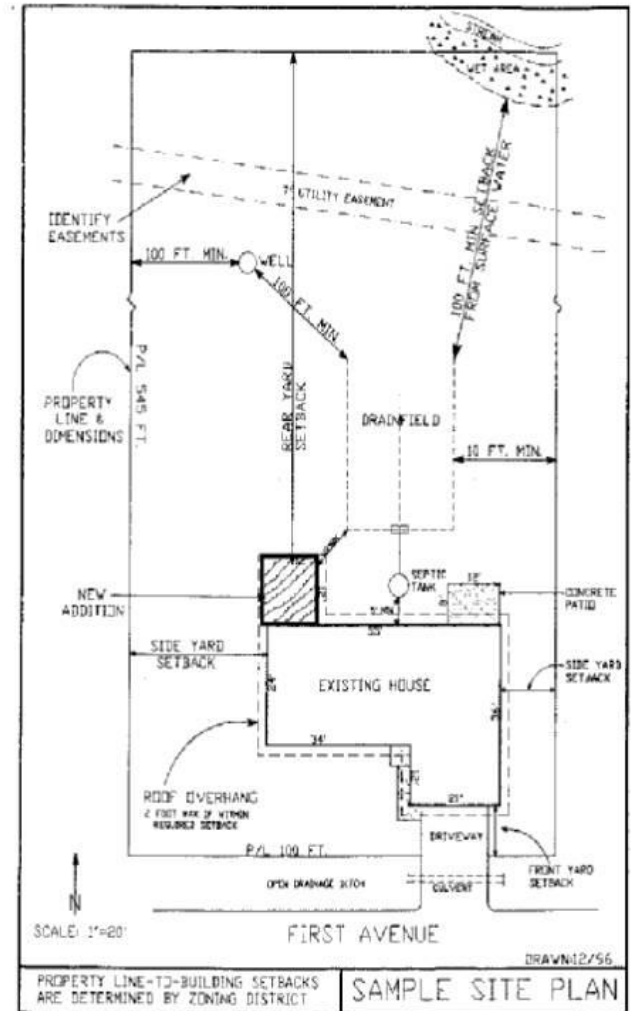
- 1) Assure commodities are properly stacked. This allows for:
  - Allows penetration
  - Equal concentration in the entire stack
  - Air space to allow the fumigant to react
- 2) Be sure the area is secured to prevent accidental entry
  - Where should locks and signs be placed?
  - Residents living up to 750 feet away need to be given 24h notification of fumigation.
- 3) Prepare floor if not air tight – commodities will need to be placed on tarps if floor is not air tight
- 4) Mark out a danger/exclusion zone at least 1.5m around stack

# Site Preparation

5) Note location of:

- Doors, windows, vents and drains
- Adjacent offices and buildings
- Fans and breakers
- Water sources
- Emergency safety equipment
- Sensitive electronics (may be corroded by gas)

6) Determine if anyone works or lives within a space where the gas to escape and they could inhale it (vents or openings to offices)



# Protective Equipment and Health Risk

Receptors	Type of Exposure	Relative Risk
Fumigation worker <b>with</b> protective equipment	Breathing during fumigation and venting	Green
Workers (e.g., warehouse manager, resident)	Breathing during fumigation and venting	Yellow
Fumigation worker <b>without</b> protective equipment	Breathing during fumigation and venting	Red

Increasing Risk Level





# What Safety Equipment Should our Fumigator be Wearing?



**Eye Protection**

**Respiratory Protection**

**Coveralls**

**Clean Dry Gloves**

# Planning for an Emergency

- Have emergency contact numbers available
- Prepare a map to the nearest hospital
- Make sure protective equipment is up to date and workers understand how to use it
- First aid kits
  - Located in appropriate areas
  - Well stocked
  - Includes instructions
- Provide training on safety to employees
- Make Material Safety Data Sheets (MSDS) available

## Post Application

Phosphine has a garlic odor BUT at this concentration it is unsafe. Thus, don't rely on a 'sniff' test, but pay attention any odors.

Evacuate if you smell this!

- Monitoring of phosphine can be achieved with three different monitoring device
- Important air concentrations to remember:
  - 200 ppm is fatal in one hour.
  - 7 ppm causes definite poisoning symptoms
  - 0.3 ppm is maximum safe exposure

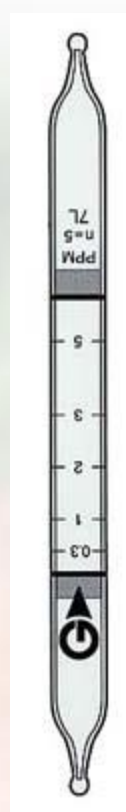


## Post Application Monitoring Devices



### Direct Read-out Meter

- Accurate from 0-200 ppm
- Alarm that goes off at 0.3 ppm



### Color-Metric Tube Detectors

- Color change over a range from 0.15-5 ppm



### Draeger Tube Detectors

- Range from 0.01-10,000 ppm

# Handling Contaminated Clothing

- Gloves should be used to handle contaminated clothing.
  - Moisture on hands or gloves could cause unreacted product to react.
- Aerate used gloves and other clothing that may be contaminated in a well-ventilated area prior to laundering.
- Do not leave in a closed car or lockers.
- Brush off shoes
- Wash hands thoroughly when finished.



**Quiz: What is wrong with this picture?**

**Boxes of Fumigant Containers**



# Disposal of Excess Fumigant

When you find unspent or unreacted fumigant:

- Take precautions with unreacted material (to be done by a certified professional only).
- Dispose of in a sanitary landfill or approved pesticide collection area
- Do not flush down the sewer or septic system

# Disposal of Fumigant Containers

If you need to dispose of fumigant containers, make sure you:

- Do not reuse or refill aluminum flasks.
- Triple rinse flasks and stoppers with water.
- Puncture container so it can not be refilled
- Dispose of in a location that is approved and does not contaminate water, food or feed.
- Offer for recycling, if available.







**Questions?**

For more information contact:

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