Commodity Fumigation
Colorado 2013
February 20th
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Univar USA

European Corn Borer

Methyl Bromide Re-registration
- Required of all pesticides
- For methyl bromide, began in early 1990's with submission of several new studies to EPA
- Based on a review of these studies, EPA conducted risk assessments and released them for comment in 2003.
- After several rounds of comments, EPA released a draft “Re-registration Eligibility Decision” (RED) in August of 2006.

Timing of Label Changes
- Additional comments on draft RED were submitted in 2008
- Final RED was expected in 2011, but did not issue. Will perhaps be issued in 2013.
- Label changes, especially buffer zones, are likely to be phased in.
- Label changes will probably not take effect until 2014.

Draft RED
- Recommended continued registration of methyl bromide
- Label changes will be required
  - Respiratory protection will be required at levels above 1 ppm (0-5 ppm, cartridge type; >5 ppm SCBA)
  - Minimum aeration times of 4 hours (active) and 12 hours (passive) will be required
  - Fumigation Management Plans
  - Applicator Education
  - Buffer zones
  - Notification of neighbors within or adjacent to buffer zones.
Ayers, Fumigation/Stored Commodities

Proposed post-harvest allocation for 2012 is 50% less than 2011

Thousands of MT

EPA Production Allocation

Application instructions for raw Agricultural commodities, processed food, structures containing raw or processed food, and Non-Food products

Exposure Times

The label must contain the following:
- Supplemental label booklets are part of the legal label.
- Commodity, Food, and Feed fumigation application directions
- Application instructions for raw Agricultural commodities, processed food, structures containing raw or processed food, and Non-Food products
- Lists of Commodity and Insects/Pests controlled
- Tolerances
- Dosage Rates
- Exposure Times

ALWAYS Read and follow the Label

Pesticide Regulations - FIFRA
- Registration
- Classification
- Applicator Certification
- Labels
- Fumigation Placarding
- Incident Reporting
- Recordkeeping

Physical and Chemical Properties of Meth-O-Gas®
- Odorless and colorless at room temperature.
- Liquid and gas forms are hazardous.
- Methyl bromide is ~3.27 times heavier than air.
- Inhalation may be fatal or cause serious illness and/or delayed lung and nervous system injury.
- Exposure to toxic levels may occur without warning.
- Containers are under pressure.
- Methyl bromide may be incompatible with certain materials.

The Label is the Law
- It is a violation of federal and state law to use a pesticide in a manner inconsistent with its labeling.

The label must contain the following:
- Product identity and information
- Directions for Use instructions
- Safety Information
- Environmental Hazards

Directions for Use
- Sealing the structure
- Securing the structure
- Posting fumigated areas
- Fumigation management plan

Precautionary information
- First aid
- Transportation and storage
- Personal safety
- Fumigation preparation

Securing the structure

Exposure to toxic levels may occur without warning.

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Fumigation Placarding

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Environmental Hazards

Methyl bromide is ~3.27 times heavier than air.

Crop Loss Nomination and Allocations, 2006 – 2013

Proposed post-harvest allocation for 2012 is 50% less than 2011
Respiratory Protection

- **Must** be available at the fumigation site
- NIOSH approved full face SCBA operated in positive pressure demand mode
- **Must** be worn for exposures >TWA or STEL, or unknown exposures
  - "Buddy System" must be followed
- Used according to local regulations
  - Training, medical clearance, fit testing, inspection, maintenance, cleaning, storage

Stationary Vehicle Fumigation

- Trailers, trucks, containers, etc. may be fumigated with methyl bromide gas fumigant, but all aeration procedures must be completed before these are transported over public areas
- Stationary vehicles should be prepared and sealed following general fumigation, tarpaulin and tape sealing instructions

Methyl Bromide Products

<table>
<thead>
<tr>
<th>Chemtura</th>
<th>ICL</th>
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<tbody>
<tr>
<td>Meth-O-Gas 100</td>
<td>Metabrom 100</td>
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<tr>
<td>-CUE &amp; QPS</td>
<td>-CUE &amp; QPS</td>
</tr>
<tr>
<td>Meth-O-Gas Q</td>
<td>Metabrom Q</td>
</tr>
<tr>
<td>-QPS only under regulatory supervision</td>
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Sealing the Structure

- Many options available: tarp, tape/poly, spray/poly, foam, caulk, etc.
  - >4 ml poly sheathing
  - Tape
  - Spray adhesive
  - Spray foam
  - Foam or steel panels
  - Tarps and sand snakes
Posting Fumigated Areas

- All entrances and all sides of the fumigated space, including vehicles, ships and chambers and any connected area not monitored must have warning signs.
- Do not allow entry by unprotected persons into fumigated areas until the signs are removed (only state-certified applicators may authorize removal of warning signs when concentration ≤ 1 ppm in the fumigated area).

Precautionary Information

Keep Out of Reach of Children

- Toxicity classification-Methyl Bromide
  - Restricted use product due to acute inhalation toxicity
  - For sale to and use only by certified applicators trained in the use of the product

Symptoms of Overexposure

- Symptoms may not appear immediately.
- Early symptoms are:
  - dizziness
  - headache
  - nausea and vomiting
  - weakness
  - collapse
- Delayed symptoms:
  - Lung edema may develop from 2 to 48 hours after exposure and if accompanied by cardiac irregularities can lead to death.
- Repeated overexposure can cause methyl bromide intoxication:
  - blurred vision
  - staggering gait
  - mental imbalance
  - Detection and treatment:
    - Blood bromide testing
      - Levels suggest the occurrence, but not the degree, of exposure.
      - Need baseline on employee
    - Treatment is symptomatic.
    - Recovery probable after periods of non-exposure.

Placarding of Fumigated Areas

- All entrances to the fumigated area must be placarded with signs bearing the following:
  - Skull and crossbones symbol
  - “DANGER/PELIGRO”
  - “Area under fumigation, DO NOT ENTER/NO ENTRE”
  - “Methyl Bromide Fumigant in use”
  - The date and time of fumigation
  - Name, address, and telephone number of the applicator.
  - State regulations may have additional or specific placarding requirements.

Recordkeeping for Commercial and Private Pesticide Applicators

- Maintain written records of all applications for 2 years from the date of the application.
- Records should include:
  - applicator’s name
  - certification number
  - name and address of customer
  - date of treatment, area and commodity treated
  - pest(s) controlled
  - pesticide applied (brand name, EPA registration number, name of pesticide manufacturer)
  - rate used

DOT Transportation Regulations

- Labels and Markings
  - Containers
  - Vehicles
  - Shippers are required to offer vehicle placards to transport vehicle drivers.
  - Commercial Driver’s License (CDL) with Hazmat Endorsement
  - Shipping papers, vehicle manifest or bill of lading required.
  - Incident Reporting
  - Transportation of Hazardous Materials
    - DO NOT transport Meth-O-Gas® in the passenger compartment or trunk of a vehicle.
    - It is illegal to transport single cans of Meth-O-Gas®

Blood bromide testing when concentration <
Placarding

Proper Storage of Meth-O-Gas®
- **Storage Area Requirements**
  - Locked and secured
  - Outdoor storage should be under ambient conditions
  - Indoor storage should be in a well-ventilated area
  - Area must not be occupied by people or animals
  - Posted with an appropriate warning signs
- **Cylinders**
  - **DO NOT** store near heat or an open flame.
  - Cylinders MUST be stored in an upright position, secured to prevent tipping, with bonnets and safety caps in place.

Cylinder Security/Safety
- In Storage, In Transit, In Use

Safe Handling of Meth-O-Gas® Cylinders
- Firmly secure cylinders and transport with hand truck or fork truck.
- **DO NOT** remove the valve bonnet or safety cap until ready for use and replace them when the cylinder is not in use.
- **DO NOT** use a hammer, screwdriver, pry-bars, or pliers on the cylinder.
- Always wear a full-face shield when connecting or disconnecting cylinders.

Fumigation Safety
- Planning and Preparation
  - Use checklists
  - Teamwork
  - Communication
  - Training
  - Protective equipment
  - Monitor Meth-O-Gas® concentrations
    - During fumigation
    - Clearing for re-entry
  - Recordkeeping

OSHA Regulations
- Safe Work Place Practices
- Hazard Communication Program
- Material Safety Data Sheets (MSDS)
- Safety Training
- Identification of chemicals
- Process Safety Management
- Incident Reporting
Respiratory (Lungs) Protection

- **MUST** use Self-contained breathing apparatus (SCBA) in the presence of Meth-O-Gas®, if the methyl bromide air concentration is unknown, or is greater than 5 ppm.
- SCBA Requirements

Respiratory Protection

**Fit testing:**
- Types of Fit Testing:
  - Qualitative – using odors such as isoamyl acetate, irritant smoke, saccharin or Bitrex
  - Quantitative – non-hazardous aerosol measured inside a mask fitted with a probe
- Exercises that must be completed during fit-testing include:
  - Speaking
  - Normal and deep breathing
  - Turning head
  - Grimace
  - Bending over

Types of Detection Devices

- Halogen (Halide) Torch
- Thermal Conductivity Analyzer (Fumiscope)
- Electronic Detectors
  - Electrochemical
  - Photoionization Detector
  - Infrared
  - Colormetric Detector Tubes

Monitoring with the Fumiscope

Fumiscope measures oz. per 1,000 ft.³

- 1 oz. = 240 ppm
- Fumiscope not to be used as a clearance device

Personal Protection

- Face shield or safety glasses with brow and temple sideshields
- **NO** goggles
- **NO** contact lenses
- Wear long-sleeved shirts and long pants.
- Shoes and socks - no sandals.
- **DO NOT** wear gloves.

Use the proper protection. Be Safe!

Site Preparation for Meth-O-Gas® Fumigation

- Site Preparation
  - Prepare Fumigation Route
  - Place the Meth-O-Gas® containers to be released in position but not opened.
- Review Equipment Needs
- Take Safety Precautions
Release the Meth-O-Gas®

- Follow all label directions.
- Wear appropriate PPE for the type of release.
- Use fans to distribute the gas.

After release of Meth-O-Gas®

- Sign-out the fumigation crew
- Lock the last door or point of entrance.
- Review any changes with the guard.
- Check for leaks.
- Monitor the concentration of methyl bromide during the fumigation.
- Monitor adjacent areas for leaks.
- Ensure all recordkeeping requirements are met.

Clearing for Re-entry

- Planning and preparation
- Have protective equipment ready
- Aeration
- Desorption
- Monitor methyl bromide air concentrations with detector tubes.
- Must aerate to a methyl bromide air concentration of 5ppm or less.
- Keep a record of clearing activities.

Post Fumigation

- Remove all equipment and materials
- Notify guard, all applicable authorities, and facility management of completion of fumigation.
- Take down warning signs when aeration is complete and the air concentration of methyl bromide is 5ppm or less.
- Release the facility.

In Case of an Accident

- Protect yourself
- Call for help
- Follow proper Emergency Response and First Aid Procedures
- Make the required notifications.
  - ChemTrec® (1-800-424-9300)
  - Great Lakes Chemical (1-800-949-5167)
  - National Response Center (1-800-424-8802)

Return/Disposal of Meth-O-Gas® Containers

- Cylinders
  - Are returnable containers.
  - Call Chemtura Customer Service Department at 1-800-428-7947 to make arrangements.
  - If non-GLCC cylinders, contact supplier for container return.
Summary

- Always read and follow the label directions.
- Fumigants are DEADLY. Treat them with care and respect.
- Plan and prepare for each step of the fumigation process.
- Know and use proper safety precautions.
- Properly store and maintain PPE and detection devices.
- Use a checklist to ensure all requirements are complete.
- Keep accurate and complete records.
- Never make assumptions. If you don’t know, ask.

Questions?
Thank You!