Methyl Bromide: Montreal Protocol
Phase-Out, Critical Use Exemptions, and Quarantine and Preshipment

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Taken from Methyl Bromide Alternatives Outreach 2009 and 2010 Presentations by EPA
What is Methyl Bromide?

- Compound chiefly used as a fumigant against insects, termites, rodents, weeds, nematodes, and soil-borne diseases.
- Properties:
  - Colorless gas or volatile liquid which is usually odorless.
  - Evaporates Quickly
  - Soluble in Water
  - Highly Toxic
  - Ozone Depleting Substance
Montreal Protocol

- 1987 – Treaty to Protect Ozone Layer
- 1992 – Methyl Bromide Listed as Ozone Depleting Substance
- 1995 – Agreement to phase out methyl bromide by 2010 in developed countries
  - Exempts from 2005 phaseout amount “necessary to satisfy uses agreed by them (Parties) to be critical”
- 2015 – Developing countries phase out methyl bromide
1987 - Treaty to Protect Ozone Layer

1992 - Methyl Bromide listed as Ozone Depleting Substance

1995 - Agreement to phase out MeBr by 2010 in developed countries

1997 - Exemption process created

2009 - CUE requests submitted for 2011

2015 - Developing countries Phase out MeBr
Methyl Bromide – Use Categories Under Montreal Protocol

- Critical Use Exemption Process
  - No technically and economically feasible alternatives
  - Loss of use will lead to a market disruption
  - Parties establish criteria
- Emergency Exemption
  - One time use of up to 20 metric tons
- Quarantine and PreShipment (WPS)
  - Official government agency (federal or state) established quarantine
    - Commodities, Nursery plants for planting, Soil treatment for propagative material
  - Preshipment is 21 days before shipment under regulations established before 1995 (e.g. Kenya timber)
  - QPS Exempt from phase-out under Montreal Protocol
MeBr CUE Process

- EPA develops nomination document
  - OPP estimates technical range of MeBr needed for each applicant on a sector and state level
- EPA + State + USDA determine amount to nominate
- Methyl Bromide Technical Options Committee (MBTOC) reviews requests for Parties and provides written document by May
  - Countries can send additional information to support requests
- Parties review recommendations and make a decision at Meeting of the Parties in November
  - E.g. Latest request (2.5% of baseline) was sent to parties in Feb. 2011 for MeBr to be used in 2013
- After 2013 only 3 countries will request CUE’s (Australia, Canada, and U.S.)
US Performance During the Phaseout

1) Consumption equals production plus imports minus exports.
2) Consumption past 2005 is under the Critical Use Exemption.
Methyl Bromide Nomination History

Nominated

Technical Range

Approved by Parties

Year

2005
2006
2007
2008
2009
2010
2011

% of 1991 Baseline

0
5
10
15
20
25
30
35
40
45

37%
32%
26%
21%
16.7%
12.7%
Reduced MeBr CUE Based On

- **Technical Reasons**
  - Post-harvest alternatives - sulfuryl fluoride (Profume)
  - Soil alternatives - iodomethane (Midas), 3-Way Mixture (chloropicrin + 1,3-D + metam sodium), dimethyl disulfide (Paladin) registered in many states but still being tested
  - Better tarps - lower emissions keep fumigant in ground longer allow lower rates
  - Better sanitation

- **Economic Reasons**
  - Lower productions led to price increases
  - As supplies shrink smaller users cannot get fumigant (e.g. Michigan vegetable grower say their local distributor does not sell MeBr)
MeBr – Quarantine Uses Now An Issue

- Quarantine and Preshipment Uses are ~ 3 million kg/year in U.S.
- MeBr CUE uses = QPS uses by 2011
- European Commission has ended all quarantine use of MeBr in Europe
- Only 21 countries have reported their QPS uses to the Montreal Protocol
- Many uses have not been clearly identified in U.S.
  - USDA uses are well defined
  - Other uses are not easy to identify
Soil Fumigant Regulatory Activities Update

Status of 2006 RED Mitigation Measures

August 2011
Soil Fumigants

- Methyl Bromide
  - Brom-O-Gas, Terr-O-Gas, Tri-con
- Chloropicrin
  - Chloro-O-Pic
- *1,3-Dichloropropene*- RED completed previously
  - InLine, Telone II, Telone, Telone C-17, C-35
- Metam Sodium
  - Metam CLR, Vapam, Busan, Nemasol, Sectagon 42, Sistan
- Metam Potassium
  - K-Pam HL, Metam KLR, Raisan K-50, Sectagon K-54
- Dazomet
  - Basamid, Dacron
Focus On Protecting Neighbors

Wind blows emissions from a field to a neighborhood (e.g., house or school).

Other risks were evaluated

- Generally worker risks appear manageable.
- No dietary, drinking water or ecological risks.
2010 Mitigation

- Restricted Use
  - Handler PPE
  - Site monitoring
  - Posting treated area
  - 5-day entry prohibition
- GAPs
- FMPs
- Registrant-training

2011 Mitigation

- Registrant-compliance assistance
- Registrant-training
- Registrant-first responder & community info
- Buffer zones
  - Buffer credits
  - Overlap options
  - Posting buffer zones
  - Sensitive site restrictions
Restricted Use Pesticide

- Prior to 2010 labels-RUP for
  - methyl bromide
  - 1,3-dichloropropene
  - chloropicrin
- New labels-RUP for agricultural uses
  - metam sodium/potassium
  - dazomet
GAPs

- Air temp
  - 90 degrees maximum

- Wind speed
  - Solid stream (2-25 mph)
  - Mid-release and above (2-10 mph)

- Soil temp
  - 90 degree maximum

- Soil moisture
  - 60-80% of field capacity
Fumigant Management Plans

Prior to 2010
- No FMP required

  - New labels
    - Require site-specific FMP
      - plan all aspects of a safe and effective fumigation
      - prevent accidents and identify procedures for accident/unforeseen events
      - demonstrate compliance with label and a tool for verifying compliance.

- Templates available
2010 Mitigation

- Restricted Use
  - Handler PPE
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2011 Mitigation

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2011 Buffer Zones

- Prior to 2011
  - No buffers
- New labels – will include buffer zone look up tables
  - Rate, acres treated, app. Method & available credits
  - In effect 48 hours after application
  - Minimum of 25 feet for all soil fumigants
2011 Buffer Reduction Credits

- Organic Matter
  - 1-2% = 10%
  - 2-3% = 20%
  - +3% = 30%

- Clay Content
  - +27% = 10%

- Soil Temperature
  - 50-70°F = 10%
  - 40-49°F = 20%

- Tarps
  - 15% or 30% depending on tarp type

Maximum Buffer Reduction Credit = 80%
Fumigants - Additional Information

► Post-Harvest Use of Methyl Bromide
  ○ EPA reviewing comments from 2006 RED
    ● Economic impacts of increased aeration
    ● Emissions from fumigated products and packaging
    ● Activities of post-fumigation workers – worker exposure study

► New Registrations
  ○ New Active Ingredient: DMDS
    ● Tomato, Pepper, Eggplant, Cucumber, Melon, Strawberry, Ornamental, Forest Nursery
  ○ New Uses: Furfural - Golf courses and sod farms

► Registration Review
  ● Most fumigants enter registration review in 2013
For More Information

www.epa.gov/oppsrrd1/reregistration/soil_fumigants

- Or search for “soil fumigant implementation”

- Outreach materials
- Fact Sheets
- Presentations
- Tools and templates
Questions

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