

METHYL BROMIDE FIELD FUMIGATION



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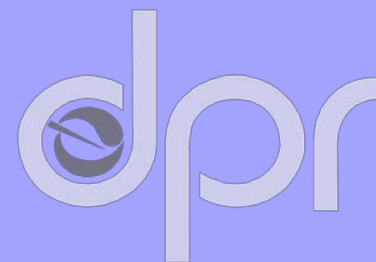




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FEDERAL LABEL CHANGES

Phase 1 (2010)

■ Changes Include:

- Fumigation Management Plan (FMP)
- Mandatory Good Agricultural Practices (GAPs)
- Fumigant Safe Handling Information
- Supervision of Handlers
- Handler Respiratory Protection
- Stop Work Triggers
- Entry Restricted Period
- Tarp Perforation and Removal



Additional Phase 1 training located at
<http://www.cdpr.ca.gov/docs/county/training/soilfum/soilfum.htm>

FEDERAL LABEL CHANGES

Phase 2 (2012)

■ Changes Include:

- Buffer Zone Tables
- Buffer Zone “Credits”
- Buffer Zone Posting Requirements
- Difficult to Evacuate Sites
- Certified Applicator Training
- First Responder Information
- Community Outreach
- Emergency Preparedness and Response Measures
- Fumigation Management Plan (part 2)



Additional Phase 2 training located at
<http://www.cdpr.ca.gov/docs/county/training/soilfum/soilfum2.htm>

DPR REGULATIONS

CALIFORNIA CODE OF REGULATIONS

- For purpose of DPR REGULATIONS, 3CCR , field soil fumigation does not apply to:
 - Golf courses
 - Tree holes
 - Potting soil
 - Raised tarp fumigation and nursery fumigation < 1ac.
 - Greenhouses & other similar structures



Federal label requirements DO apply

DPR REGULATIONS

CALIFORNIA CODE OF REGULATIONS

- California Code of Regulations (3CCR)
 - Division 6. Pesticide and Pest Control Operations
 - 6445 Fumigation- Handling Activities
 - 6447 Methyl Bromide– General Requirements
 - 6447.1 Methyl Bromide Notification Requirements
 - 6447.2 Methyl Bromide Buffer Zone Requirements
 - 6447.3 Methyl Bromide Fumigation Methods

Regulations located at

<http://www.cdpr.ca.gov/docs/legbills/calcode/subchpte.htm#a0204>

PERMIT CONDITIONS

- DPR recommends additional permit conditions for the use of Methyl bromide in field fumigations
 - Pesticide Use Enforcement Program Standards Compendium Vol. 3. Restricted Materials and Permitting
 - Appendix C. Recommended Permit Conditions
 - Section C.7 Soil Fumigation
 - *Subsection C.7.3 Methyl Bromide (soil fumigation) Recommended Permit Conditions

[*http://www.cdpr.ca.gov/docs/enforce/compend/vol_3/append_c_7_3.pdf](http://www.cdpr.ca.gov/docs/enforce/compend/vol_3/append_c_7_3.pdf)

PERMIT CONDITIONS

- Include the following:
 - Evaluation of local conditions and worksite plan
 - Size and duration of buffer zone
 - Work day and hour restrictions
 - Respirator number and type
 - Specific notification procedure
 - Restrictions to address local conditions
 - Tarp repair response and removal plan



TOWNSHIP CAP

- Methyl bromide use does not exceed **171,625 lbs.** in any township during any calendar month
 - CAC denies NOI if cap will be reached
 - Option to track on consecutive 30-day basis
 - CACs coordinate with growers and applicators to allocate methyl bromide use prior to peak season



NOTIFICATION

NOTIFICATION REQUIREMENTS

- Notification to commissioner
 - Notice of Intent (NOI)
- Notification to property owners
 - Initial notification
 - Specific notification
- Notification to employees of other property operators
- Emergency preparedness and response (if applicable)



NOTIFICATION

NOTICE OF INTENT (NOI)

- At least 48 hours prior to fumigation
 - Fumigation can not start earlier than recorded
 - Or later than 12 hours after the start time
 - New NOI must be submitted if fumigation will start after the 12 hours but no 48 hour waiting time
- CAC may allow a single NOI for multiple application blocks to be fumigated sequentially

NOTIFICATION

INITIAL NOTIFICATION

- At least 7 days prior to submission of NOI
- Properties 300 feet of outer buffer zone
 - Schools
 - Residences
 - Hospitals
 - Convalescent homes
 - Onsite employee housing
 - Similar sites identified by the commissioner



NOTIFICATION

INITIAL NOTIFICATION

- Notification must include:
 - Chemical name
 - Name, address, and telephone number of operator of property and CAC
 - Earliest and latest dates the fumigation will start
 - How to request subsequent notification

NOTIFICATION

SPECIFIC NOTIFICATION

- At least 48 hours prior to the start of the fumigation
- Must be requested by the properties that receive initial notification
- Notification includes:
 - Date and time of the start of the fumigation
 - Anticipated expiration of buffer zones

NOTIFICATION

EMERGENCY PREPAREDNESS AND RESPONSE

- New labels require Emergency Preparedness and Response Measures for neighbors within a specific distance from the buffer zone.
- The certified applicator has 2 options to fulfill this requirement:
 - **Notification** (required in mebr regulations)
 - **Monitoring** (is not needed IF certified applicator follows the notification option, which is NOT identical to the notification required by 3CCR 6447.1(b))

NOTIFICATION

NOTIFICATION CONSOLIDATION

- Recommended Permit Condition consolidates the notification regulations (3CCR 6447.1) with the new label notification requirements.
 - Within 300 feet of the perimeter of the outer buffer zone operators of the following properties receive notification:
 - Schools, residences, hospitals, convalescent homes, onsite employee housing, or businesses.
- In English and Spanish
- Delivered at least 7 days prior to NOI

NOTIFICATION

NOTIFICATION CONSOLIDATION

- Includes
 - Name of Chemical(s)
 - Name of fumigant product(s) and EPA registration #
 - Operator name, business address, and business phone number
 - Contact info for the applicator
 - Commissioner name, business address, business phone number

NOTIFICATION

NOTIFICATION CONSOLIDATION

- Includes (continued)
 - Earliest and latest dates that the fumigation will start (must not range more than 4 weeks)
 - How to request specific notification (date and time)
 - Location of the application block
 - Early signs and symptoms of fumigant exposure
 - What to do if exposed
 - How to find additional information about fumigants.

WORKSITE PLAN

- Operator of property shall submit a worksite plan
 - To the Commissioner (CAC)
 - 7 days prior to submitting notice of intent (NOI)
- CAC shall retain the worksite plan for 1 year after expiration of permit



WORKSITE PLAN

- Method of fumigation
- Acreage and ID of each application block
- Application rate
- Notification procedures
- Work day and work hour restrictions
- Tarp repair response and removal plan
- Description of any activities within buffer zones
- Description of work day, work hour limitation/respiratory protection

FUMIGANT MANAGEMENT PLAN (FMP)

- Established by the US EPA
- Intention is to guide Applicators in planning the fumigation, complying with the label, and preparing incase of an emergency.
- Completed prior to start of fumigation
- Supervising Certified Applicator is responsible for verifying it is up to date and accurate.

FMP/WORKSITE PLAN

“SUPER FMP”



- CAC has the option to combine the worksite plan and FMP into one document
- Information included:
 - Everything on the FMP
 - Notification procedures to property operators
 - Any activities within the buffer zone(s)
 - Any workday/work hour limitations and respiratory protection

APPLICATION

- Field or portion of field treated in a 24 hour period
- Shall not exceed 40 acres unless approved by the director
- Tarps must be used for all applications, except for deep shank orchard replant
- Additional information on approved application methods can be found at <http://www.cdpr.ca.gov/docs/county/training/methbrom/mbfmpics.pdf>

APPLICATION

APPLICATION RATE

- Calculation
 - Pounds per acre of active ingredient in formulated product
 - MeBr 57/43 at 360 pounds/ acre
 - Rate = $360 \times 57\%$
or $360 \times .57 = 205.2$ pounds/ acre

APPLICATION

POSTING TREATED FIELD

- Post no more than 24 hours prior to start of fumigation
- Remove signs within 3 days from end of REI
- Post at usual points of entry
- Max posting interval 600 ft.
- No fieldworker entry until REI elapsed and signs removed

APPLICATION

POSTING TREATED FIELD

- Signs must include:
 - Skull and crossbones symbol
 - The words
 - “DANGER”, “NO ENTRE”, “PESTICIDES” and “PESTICIDAS” on the upper part of the sign
 - “KEEP OUT” and “NO ENTRE” on the lower portion of the sign

APPLICATION POSTING TREATED FIELD

- Signs must include:
 - If REI more than 7 days include on the lower part
 - Date of unrestricted entry
 - Name of operator of property
 - Field identification

BUFFER ZONES

GENERAL RULES

- Measured from edge of application block
- Restrictions begin at start of injection
- In effect at least 48 hours after completion of application (*New Label Requirement*)
- If school is within 300 ft. of the perimeter of the outer buffer zone, the injection shall be completed at least 36 hours prior to the start of a school session

BUFFER ZONES

GENERAL RULES

- 2 Buffer zones, an Inner and an Outer
- Label Buffer Zone credits are not allowed
- Distances and duration is dependent on:
 - Size of application block
 - Application rate
 - Application method

BUFFER ZONES

INNER BUFFER ZONE

- Minimum distance of 30 feet
- Entry is limited to
 - Transit by vehicle or bicycle
 - Fumigation handling activities
- Must not include buildings (operator owned) unless they are:
 - Unoccupied and do not share a common wall



BUFFER ZONES

INNER BUFFER ZONE

- Inner buffer zone may extend into:
 - Roadways and similar sites used for travel
 - Agricultural property if...
 - Written permission is received
 - Buffer zone boundary is posted
 - Workers are notified in a manner they understand

BUFFER ZONES

POSTING INNER BUFFER ZONE

- Signs posted no sooner than 24 hours prior to the start of application
- Signs removed after BZ period up to 3 days after the end of BZ period
- Visible from a distance of 25 feet
- Max posting interval 200 feet
- Placed on BZ perimeter and all usual points of entry

BUFFER ZONES

POSTING INNER BUFFER ZONE

- Sign must include:
 - Do not walk symbol
 - “DO NOT ENTER/NO ENTRE”
 - Name of fumigant
 - Name of product
 - “Fumigant BUFFER ZONE”
 - Contact information for the certified applicator in charge of the fumigation



“METHYL BROMIDE
INNER BUFFER ZONE”,
“KEEP OUT”, and “NO
ENTRE”

BUFFER ZONES

OUTER BUFFER ZONE

- Minimum outer BZ distance is 100 feet
- Exception: Minimum 60 feet if:
 - Tarpaulin/Shallow/Broadcast (“Noble Plow”)
and
 - 10 acres or less
and
 - Application rate is 235 lbs./acre or less

BUFFER ZONES

OUTER BUFFER ZONE

- No Posting Requirements
- Entry Limited to:
 - Transit by vehicle or bicycle
 - Fumigation handling activities, and
 - Activities approved by CAC
 - No persons are allowed more than 12 hours in 24 hours

BUFFER ZONES

OUTER BUFFER ZONE

- Outer buffer zone may extend into:
 - Roads, highways, similar sites
 - Other property:
 - With permission from other property operator
 - No occupied housing within buffer zone
 - No schools, convalescent hospitals or sensitive sites on property
 - Workers are notified in a manner they understand

BUFFER ZONES

BUFFER ZONE DETERMINATION

Use the Methyl Bromide Field Fumigation Buffer Zone Determination (Rev. 3/13) document*
to determine the buffer zone

- Table 1: Fumigation Methods and Emission Ratios
- Table 2: Outer BZ distances
- Table 3: Outer BZ distances for § 6447.3(a)(3)(B)1.
- Table 4: Inner BZ distances
- Table 5: BZ duration (hours)

BUFFER ZONES

DETERMINING OUTER BZ DISTANCE

- Using the Methyl Bromide Field Fumigation Buffer Zone Determination (Rev. 3/13) document
 - 1. Verify approved fumigation method (Table 1)
 - 2. Determine corresponding emission ratio (Table 1)
 - 3. Determine emission rate and acreage
 - Emission Ratio X Application Rate (AI) = Emission Rate
 - 4. Find outer BZ distance by using the emission rate and total acres on Table 2 or 3

BUFFER ZONES

EMISSION RATIO/RATE

- Emission ratio:

Rate of MeBr volatilized based on fumigation method (listed in the guidance manual)

- Emission rate:

Emission ratio X application rate

- Adjust rate if strip fumigation



BUFFER ZONES

DETERMINING INNER BZ DISTANCE

- Using the Methyl Bromide Field Fumigation Buffer Zone Determination (Rev. 3/13) document
 - Using Table 4. Inner Buffer Zone Distances (feet) for Field Soil Fumigation
 - Select appropriate “Acreage” in left-hand column
 - Select appropriate “Emission Rate” from the top row
 - Buffer Zone distance is where the “Acreage” and “Emission Rate” intersect

BUFFER ZONES

OVERLAPPING BZ DISTANCES

- More than 12 hrs but less than 36 hrs from the end of injection to beginning of next fumigation (labels prohibit overlap during the first 12 hours)
- Combine acreages to determine BZ
- Look up BZ distance on Methyl Bromide Buffer Zone Determination document
- Total combined acreages not to exceed 40 acres

BUFFER ZONES

DETERMINING BUFFER DURATION

- Using the Methyl Bromide Field Fumigation Buffer Zone Determination (Rev. 3/13) document
 - Table 5A, 5B. Buffer Zone Duration
 - BZ duration is based on:
 - Application Rate
 - Acreage
 - Fumigation Method
 - BZ duration must be based on combined acreage of the application blocks with overlapping methyl bromide outer buffer zones

TARP REMOVAL/PERFORATION

TARPS THAT QUALIFY FOR A BZ CREDIT

- Methyl bromide applications using any tarp that qualifies for a buffer zone reduction credit (***even if the credit is not applied***)
 - Removal/Perforation may take place at minimum, 9 days (216 hours) after the application is complete

List of qualifying tarps can be found at
<http://www.epa.gov/pesticides/tarpcredits/>

TARP REPAIR RESPONSE PLAN

- Include in worksite plan
- Identify who is responsible for detection and repair
- Decision to repair made by a certified applicator:
 - Permittee
 - Authorized representative
 - Pest control operator

TARP REPAIR RESPONSE PLAN

- Decision factors:
 - Hazards to public, residents, or workers
 - Proximity to occupied structures
 - Size of damaged area
 - Timing of damage
 - Feasibility and response time of repair
 - Environmental factors (e.g. wind speed/direction)

TARP REPAIR RESPONSE PLAN

- Repair requirements :
 - Testing must be done by certified applicator wearing SCBA
 - Less than 5 ppm, without respirator
 - 1 hour limit
 - Less than 5 ppm, with respirator
 - 10 hour limit
 - 5 ppm or more, SCBA required

WORKER SAFETY

EXPOSURE RECORDS

- For all fumigation-handlers: shovelers, copilots, drivers and supervisors; tarp cutters and removers
- Include: handler's name, activity, date, work days/hours, duration, EPA registration number, brand name
- Maintain for two years at central location

WORKER SAFETY

RESPIRATORY REQUIREMENTS

- When required by these regulations, employees shall wear National Institute for Occupational Safety and Health (NIOSH)-certified respiratory protection, specifically recommended by the manufacturer for use in atmospheres containing less than 5 ppm methyl bromide, during the entire duration of the fumigation-handling activity.
- Air-supplying respiratory protection may be used in lieu of chemical cartridge respirators

WORKER SAFETY

WORK HOUR LIMITS

TABLE 1-MORE THAN 3 WORKDAYS PER MO.-W/RESPIRATOR

Method	Rate (lbs.)	Driver	Appliator	Shovel Copilot	Super-visor	Cutter	Removal
NT/S/Be	200	9*	NA	NA	9*	NA	NA
NT/D/Br	400	10*	NA	NA	No limit ¹	NA	NA
T/S/Br	400	8*	NA	4*	4*	No limit ¹	No limit ²
T/S/Be	250	No limit	NA	8*	8*	No limit ¹	No limit ²
T/D/Br	400	8*	NA	4*	4*	No limit ¹	No limit ²
Hot Gas	225	NA	5*	NA	5*	No limit ¹	No limit ²

WORKER SAFETY

WORK HOUR LIMITS

TABLE 2-THREE WORKDAYS PER MONTH-NO RESPIRATOR

Method	Rate (lbs.)	Driver	Appli-cator	Shovel Copilot	Super-visor	Cutter	Removal
NT/S/Be	200	4*	NA	NA	4*	NA	NA
NT/D/Br	400	4*	NA	NA	7*	NA	NA
T/S/Br	400	4*	NA	3*	3*	4	7
T/S/Be	250	4*	NA	4*	4*	4	7
T/D/Br	400	4*	NA	3*	3*	4	7
Hot Gas	225	NA	2*	NA	2*	4	7

WORKER SAFETY

REVISED WORK HOURS ADJUSTMENT

- Work hours may be increased if actual application rate is less than the method maximum rate
- With or without respirator
- Adjusted work hours = (max rate for method actual application rate) x max hrs per 24 hrs

EARLY ENTRY



- No entry allowed except to perform fumigation-handling activities
- Full face respirator must be worn except for:
 - Repair
 - Tarpaulin cutting
 - Tarpaulin removal

ENTRY RESTRICTED PERIOD

- Old labels allow worker reentry after 48 hours
- Reentry time lengthened
 - Highly variable fumigant dissipation rate (soil conditions, application method, tarp type) so could still have high concentrations after 48 hours
- Minimum reentry is 5 days
 - Properly equipped handlers ok, no worker reentry
 - Actual re-entry varies based on application methods

ENTRY RESTRICTED PERIOD

4 SCENARIOS FOR ERP



Untarped



Tarped – Broadcast application



Tarped – Bedded. Perforate but not removed within 14 days



Tarped – Bedded. Perforated and/or remove after 14 days

ENTRY RESTRICTED PERIOD

<i>If</i> application is...	<i>and</i> tarp is...	_____ days after application is completed	workers may enter...
1. Untarped	-	-	5 days after application is complete
2. Tarped	Perforated & Removed	within 14 days	after tarp is removed
3. Tarped	Perforated BUT <u>Not</u> Removed	within 14 days	48 hours after perforating tarps
4. Tarped	Perforated and/or Removed	more than 14 days	5 days after application is complete

The End



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