

Appendix A

Glossary

Overview

Introduction

This glossary contains acronyms and definitions used in California's Restricted Materials Permit Program. Also included is a list of restricted materials-related web sites.

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Section A.1

Acronyms

Introduction

This section contains acronyms used by the Department of Pesticide Regulation and county agricultural commissioners.

3 CCR	Title 3, California Code of Regulations pertaining to Food and Agriculture
40 CFR	Title 40, Code of Federal Regulations, Protection of Environment
ACP	Agricultural Civil Penalty
CAC	County Agricultural Commissioner
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
DPR	Department of Pesticide Regulation
EIR	Environmental Impact Report
FAC	Food and Agricultural Code
FDA	Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
GWPA	Ground Water Protection Area
NAA	Nonattainment area
NOI	Notice of Intent
NOPA	Notice of Proposed Action
PAC	Private Applicator Certificate
PCA	Agricultural Pest Control Adviser
PCB	Pest Control Business
PSIS	Pesticide Safety Information Series
QAC	Qualified Applicator Certificate
QAL	Qualified Applicator Licensee
Title 3	Title 3, California Code of Regulations--3 CCR, Food and Agriculture
Title 40	Title 40, Code of Federal Regulations--40 CFR, Protection of Environment
USDA	United States Department of Agriculture
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile organic compound

Section A.2

Definitions

Introduction This section defines terms used by the Department of Pesticide Regulation and county agricultural commissioners.

Contiguous: A property whose boundary is not broken by public road(s), rights-of-way, or permanent waterways. Each CAC would identify rights-of-way and permanent waterways in his/her respective county.

Environmental effects: Refers to any damage, either permanent or temporary, to public or private property; or, to the creation of deleterious effects to air or water quality. Examples of environmental effects include: crop damage, loss of use of public or private property, bee kills, livestock poisoning, residues that affect the marketability of a crop, fish or wildlife kills, and contamination of land, water or air.

Environmental Impact Report (EIR): An informational document which is considered by every public agency prior to its approval or disapproval of a project. The purpose of an environmental impact report is to provide public agencies and the public with detailed information about the effect a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project.

Feasible: Capable of being accomplished in a successful manner, within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

Feasible alternatives: Other chemical or non-chemical procedures which can reasonably accomplish the same pest control function with comparable effectiveness and reliability, taking into account economic, environmental, social, and technological factors and timeliness of control.

Feasible mitigation measure: A condition attached to the approval of an activity which, if implemented, would substantially reduce any adverse impact, taking into account economic, environmental, social, and technological factors and timeliness of control.

Ground Water Protection Area (GWPA): A geographically defined area vulnerable to pesticide contamination by either leaching or runoff.

Continued on next page

Definitions, Continued

Non-agricultural use: Includes the sale or use of pesticides in properly labeled packages or containers which are intended for any of the following:

- (a) Home use (includes residential) labels with directions in “per square feet.”
- (b) Use in structural pest control (no agricultural commodity involved).
- (c) Industrial or institutional use.
- (d) The control of an animal pest under the written prescription of a veterinarian.
- (e) Local districts or other public agencies which have entered into and operate under a cooperative agreement with the Department of Public Health pursuant to 116180 of the Health and Safety Code, provided that any exemption under this subdivision is subject to the approval of the director as being required to carry out the purposes of this division.

Nonattainment area (NAA): Geographical area in the State that does not meet either federal or State ambient air quality standards.

Notice of Intent (NOI): Oral or written notification to the commissioner, as specified by the commissioner, prior to the use of a pesticide pursuant to a permit.

Pest control: The use or application of any pesticide. It also means the use of any substance, method, or device to do any of the following:

- (a) Control pests.
- (b) Prevent, destroy, repel, mitigate, or correct any pest infestation or disorder of plants.
- (c) Inhibit, regulate, stimulate, or otherwise alter plant growth by direct application to plants.

Pest control business: A person or business who performs pest control for hire, including, but not limited to, advertising, soliciting, or operating as a pest control business.

Pesticide Safety Information Series (PSIS): A series of leaflets used primarily as a training aid for employees. California regulations require these documents to be part of pesticide handler and field worker training.

Private Applicator Certificate: Issued by the county agricultural commissioner to a person that has taken and passed the *Private Applicator Certificate Examination* with a score of 70 percent or above, or upon renewal, has taken and passed the Examination or has completed the continuing education training requirement.

Restricted material: State term for restricted use pesticide.

Restricted use pesticide: Federal term for restricted material.

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Definitions, Continued

Sensitive site: A location determined by the county agricultural commissioner or Director based upon his/her evaluation, to contain things that could suffer harm or injury from the pesticide in question, such as people, crops where minor amounts of residue can cause harm, honey bees, wildlife, domestic animals, bodies of water, etc.

Site: An area no larger than the property operator's contiguous property and no smaller than one crop location.

Volatile organic compound (VOC): Carbon compound that contributes to the formation of ground-level ozone, which is harmful to human health and vegetation when present at high enough concentrations.

Section A.3

Web Resources

Introduction The following links contain additional information on restricted materials and related topics. Select the Web address to access the specific Web page.

Topic	Web address
<i>A Guide to Pesticide Regulation In California</i>	http://www.cdpr.ca.gov/docs/pressrls/dprguide/dprguide.pdf
Air Program	http://www.cdpr.ca.gov/docs/emon/airinit/airmenu.htm
California Environmental Quality Act (CEQA)	http://ceres.ca.gov/ceqa/
<i>California Restricted Materials Requirements</i> (DPR-ENF-013A)	http://www.cdpr.ca.gov/docs/enforce/dpr-enf-013a.pdf
Department of Pesticide Regulation (DPR)	http://www.cdpr.ca.gov/
DPR Databases	http://www.cdpr.ca.gov/dprdatabase.htm
<i>DPR Enforcement Branch Headquarters and Regional Offices</i> map	http://www.cdpr.ca.gov/docs/enforce/romap.pdf
<i>Forms Requisition</i> (DPR-197)	http://www.cdpr.ca.gov/docs/enforce/prenffrm/dpr-197.pdf
Fumigant Regulatory Issues	http://www.cdpr.ca.gov/docs/emon/methbrom/fum_regs.htm
Fumigant Resource Center	http://www.cdpr.ca.gov/docs/emon/methbrom/mebrmenu.htm
Ground Water Protection Program	http://www.cdpr.ca.gov/docs/emon/grndwtr/index.htm
<i>How to File Pesticide Use Reports for Field Fumigant Applications</i>	http://www.cdpr.ca.gov/docs/emon/vocs/vocproj/factshts/voc_pur.pdf
Inspection and other forms used by County Agricultural Commissioners	http://www.cdpr.ca.gov/docs/enfcmpli/prenffrm/prenfmnu.htm
Methods Allowed Under Field Fumigant Regulations	http://www.cdpr.ca.gov/docs/emon/vocs/vocproj/newreg.htm
<i>The permit process for restricted pesticides</i>	http://www.cdpr.ca.gov/docs/dept/factshts/permitting.pdf
Pesticide Use Enforcement Program Standards Compendium	http://www.cdpr.ca.gov/docs/enforce/compend.htm

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Definitions, Continued

Introduction (continued)

Topic	Web Address
Reducing VOC Emissions from Field Fumigants	http://www.cdpr.ca.gov/docs/emon/vocs/vocproj/reg_fumigant.htm
<i>Restricted Materials and Permitting</i> , Volume 3, Pesticide Use Enforcement Program Standards Compendium	http://www.cdpr.ca.gov/docs/enfcmpli/compend/vol_3/rstrct_mat.htm
Restricted Materials and Permitting training (PowerPoint) presentation	http://www.cdpr.ca.gov/docs/county/training/restmat/rmp_training.ppt
Restricted Materials Use Requirements	http://www.cdpr.ca.gov/docs/enfcmpli/permitting.htm
Surface Water Protection Program	http://www.cdpr.ca.gov/docs/emon/surfwtr/index.htm
U.S. Environmental Protection Agency (U.S. EPA)	http://www.epa.gov/
U.S. EPA, Region 9 (Arizona , California , Hawaii , Nevada , Pacific Islands & 148 Tribes)	http://www.epa.gov/aboutepa/region9.html
U.S. EPA Restricted and Canceled Uses	http://www.epa.gov/pesticides/regulating/restricted.htm
U.S. EPA Restricted Use Products (RUP) Report	http://www.epa.gov/opprd001/rup/
U.S. EPA Soil Fumigant Toolbox	http://www2.epa.gov/soil-fumigants
U.S. Government	http://www.usa.gov/
Volatile Organic Compounds (VOC) Emissions from Pesticides	http://www.cdpr.ca.gov/docs/emon/vocs/vocproj/vocmenu.htm

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Appendix B

California Restricted Materials Requirements

Overview

About this section

This section contains a quick look-up of the California Restricted Materials Requirements in English and Spanish. For the complete regulations, see 3 CCR section 6400 et seq.

Section	Topic	See Page
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B.2	Requisitos Para Materiales Restringidos en California	B-5

CALIFORNIA RESTRICTED MATERIALS REQUIREMENTS

A FEDERAL RESTRICTED USE PESTICIDES

(Included by reference as California Restricted Materials)
Pesticides display the RESTRICTED USE PESTICIDE (RUP) statement on the pesticide container similar to the statement shown here. RUPs require an RUP statement enclosed in a box, at the top of the front panel of the label.



RESTRICTED USE PESTICIDE
DUE TO (reason for restricted use classification)
For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

Some product labels require a Certified Applicator be "physically present" at the use site.

B CALIFORNIA RESTRICTED MATERIALS

This section is written in a quick reference format; refer to Title 3, California Code of Regulations (3 CCR) section 6400 for complete text.

Acrolein, labeled for use as an aquatic herbicide	Dazomet, labeled for production of agricultural plant commodities	Methamidophos – unregistered	Propanil (3,4-dichloropropionanilide)
Aldicarb – unregistered	Dicamba*	Methidathion	Sodium cyanide
All dust (except products containing only exempt pesticides)**	2,4-dichlorophenoxyacetic acid (2,4-D)*	Methomyl††	Sodium fluoroacetate (compound 1080) – unregistered
Aluminum phosphide	2,4-dichlorophenoxybutyric acid (2,4-DB)*	Methyl bromide	Sodium tetrathiocarbonate – unregistered
Any pesticide containing active ingredients listed under section 6800(a), labeled for agricultural, outdoor institutional, or outdoor industrial use ¹	2,4-dichlorophenoxypropionic acid (2,4-DP)*	2-methyl-4-chlorophenoxyacetic acid (MCPA)*	Strychnine**
Any pesticide pursuant to Section 18 of FIFRA (Emergency exemption)	1,3-Dichloropropene (1,3-D)	Methyl isothiocyanate (MITC), labeled for the production of agricultural plant commodities	Sulfotepp – unregistered
4-Amino pyridine	Difenacoum	Mevinphos – unregistered	Sulfuryl fluoride
Azinphos-methyl – unregistered	Difethialone	Molinate - unregistered	Thiobencarb
Brodifacoum	Disulfoton** – unregistered	Oxydemeton-methyl	Tribufos
Bromadiolone	Endosulfan**	Paraquat	Tributyltin, organotin, or a tri-organotin compound formulated as an antifouling paint, coating, or compound and labeled for the control of fouling organisms in an aquatic environment
Calcium cyanide – unregistered	Ethoprop, labeled for turf	Parathion-methyl – unregistered	Zinc phosphide**
Carbaryl ^{†**†}	Fenamiphos – unregistered	Phorate	
Carbofuran – unregistered	Lindane** – unregistered	Phosphine gas	
Chloropicrin	Magnesium phosphide	Potassium n-methyldithiocarbamate (metam-potassium), labeled for the production of agricultural plant commodities	
3-Chloro-p-toluidine hydrochloride	Metam sodium, labeled for the production of agricultural plant commodities		

EXCEPTIONS FROM RESTRICTION

** Products labeled only for one or more of the following uses: home use, structural pest control, industrial use, institutional use, public agency vector control district use per Health and Safety Code section 116180.

† Carbaryl formulated as a bait or used directly on livestock or poultry; additional exceptions include those in ** above.

†† Fly baits containing not more than 1% methomyl

* 2,4-D labeled only for use as a plant growth regulator

For 2,4-D; 2,4-DB; 2,4-DP; Dicamba (Phenoxy); MCPA:

- * Liquid formulations packaged in containers of 1 quart or less
- * Liquid formulations packaged in containers of 1 gallon or less that contain 15% or less of the active ingredient
- * Liquid formulations labeled for use without further dilution
- * Dry formulations packaged in containers of 1 pound or less. (For dicamba/phenoxy labeled to be further diluted.)
- * Dry formulations packaged in containers of 50 pounds or less, containing 10% or less of the active ingredient, and labeled for use without further dilution

APPLICATORS WHO HAVE MET THE CERTIFICATION REQUIREMENTS FOR RESTRICTED MATERIALS PURSUANT TO FOOD AND AGRICULTURAL CODE SECTION 14015

CERTIFIED COMMERCIAL APPLICATORS

(PERSONS OTHER THAN PRIVATE APPLICATORS USING RESTRICTED PESTICIDES)

- Journeyman Pilots
- Qualified Applicator Licensees
- Qualified Applicator Certificate Holders
- Structural Pest Control Field Representatives
- Structural Pest Control Operators
- Vector Control Technicians

A PESTICIDES ONLY IN "A" ABOVE – NO PERMIT REQUIRED

B PESTICIDES IN "B" ABOVE -- PERMIT REQUIRED; EXCEPTIONS APPLY

CERTIFIED PRIVATE APPLICATORS

(GROWERS, NURSERYMEN, AND OTHERS USING RESTRICTED PESTICIDES TO PRODUCE AGRICULTURAL COMMODITIES)

- Private Applicator Certificate Holders

A PESTICIDES ONLY IN "A" ABOVE – NO PERMIT REQUIRED

B PESTICIDES IN "B" ABOVE -- PERMIT REQUIRED; EXCEPTIONS APPLY

EXCEPTIONS FROM PERMIT REQUIREMENT

- No permit required for pesticides used by persons licensed by the Structural Pest Control Board per Food and Agricultural Code section 14006.6(d).
- No permit required for antifouling paints or coatings containing tributyltin per 3 CCR section 6414(c).
- ¹No permit required for certified applicators using pesticides listed in 3 CCR section 6800(a) (*Potential to Pollute Ground Water*) outside of a Ground Water Protection Area: Atrazine Bentazon (Basagran®) Bromacil Diuron Norflurazon Prometon Simazine

REQUISITOS PARA MATERIALES RESTRINGIDOS EN CALIFORNIA

A PESTICIDAS DE USO RESTRINGIDO A NIVEL FEDERAL

(Incluidos por referencia como Materiales Restringidos en California)
Los pesticidas muestran una declaración como PESTICIDA DE USO RESTRINGIDO (RESTRICTED USE PESTICIDE (RUP) semejante a la que aquí se muestra, en el envase. Los RUPs requieren una declaración encerrada en un cuadro al margen superior del panel frontal de la etiqueta.



RESTRICTED USE PESTICIDE

DUE TO (reason for restricted use classification)
For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

Las etiquetas de algunos productos requieren que un Aplicador Certificado esté "presente físicamente" en el sitio donde se use.

B MATERIALES RESTRINGIDOS DE CALIFORNIA

Esta sección está escrita en formato resumido; para el texto completo, revise: Title 3, California Code of Regulations (3 CCR) section 6400.

Acrolein, etiquetada para uso como herbicida acuático	Chloropicrin	Methamidophos – sin registrar	Propanil (3,4-dichloropropionilide)
Aldicarb – sin registrar	3-Chloro-p-toluidine hydrochloride	Methidathion	Sodium cyanide
All dust (excepto productos que solo contienen pesticidas exentos)**	Dazomet, etiquetado para la producción de cultivos agrícolas	Methomyl ^{††}	Sodium fluoroacetate (compound 1080) –sin registrar
Aluminum phosphide	Dicamba*	Methyl bromide	Sodium tetrathiocarbonate – sin registrar
Cualquier pesticida que contenga ingredientes activos listados bajo la sección 6800(a), etiquetados para uso agrícola, exteriores institucionales, o para uso industrial en exteriores ¹	2,4-dichlorophenoxyacetic acid (2,4-D)*	2-methyl-4-chlorophenoxyacetic acid (MCPA)*	Strychnine**
Cualquier pesticida bajo la Sección 18 de FIFRA (exención de emergencia)	2,4-dichlorophenoxybutyric acid (2,4-DB)*	Methyl iodide – sin registrar	Sulfotepp – sin registrar
4-Amino pyridine	2,4-dichlorophenoxypropionic acid (2,4-DP)*	Methyl isothiocyanate (MITC), etiquetado para la producción de cultivos agrícolas	Sulfuryl fluoride
Azinphos-methyl – sin registrar	1,3-Dichloropropene (1,3-D)	Mevinphos – sin registrar	Thiobencarb
Brodifacoum	Difenacoum	Molinate – sin registrar	Tribufos
Bromadiolone	Difethialone	Oxydemeton-methyl	Tributyltin, organotin, o un compuesto de tri-organotin, formulado como pintura, revestimiento, o compuesto anti-incrustante y etiquetado para el control de organismos incrustantes en un ambiente acuático
Calcium cyanide – sin registrar	Disulfoton** – sin registrar	Paraquat	Zinc phosphide**
Carbaryl [†] ** [†]	Endosulfan**	Parathion-methyl – sin registrar	
Carbofuran – sin registrar	Ethoprop, etiquetado para pasto	Phorate	
	Fenamiphos – sin registrar	Phosphine gas	
	Lindane** – sin registrar	Potassium n-methyldithiocarbamate (metam-potassium), etiquetado para la producción de cultivos agrícolas	
	Magnesium phosphide		
	Metam sodium, etiquetado para la producción de cultivos agrícolas		

EXCEPCIONES A LAS RESTRICCIONES

** Productos etiquetados para uno o más de los usos siguientes: el hogar, control de plagas en estructuras, uso industrial, uso institucional, uso por agencias públicas para distritos de control de vectores conforme a la sección 116180 del Código de Salubridad y Seguridad.

[†] Carbaryl formulado como cebo, o utilizado directamente en ganado o aves de corral; excepciones adicionales incluyen los indicados ** arriba.

^{††} Cebos para moscas que contienen no más de 1% de methomyl

* 2,4-D etiquetado sólo como regulador de crecimiento en plantas

Para 2,4-D; 2,4-DB; 2,4-DP; Dicamba (Phenoxy); MCPA:

* Formulaciones líquidas envasadas en recipientes de 1 cuarto de galón o menos

* Formulaciones líquidas envasadas en recipientes de 1 cuarto de galón o menos que contienen 15% o menos del ingrediente activo

* Formulaciones líquidas etiquetadas para su uso sin más dilución

* Formulaciones en seco empacadas en recipientes de 1 libra o menos. (Para dicamba/phenoxy etiquetados para ser diluidos.)

* Formulaciones en seco empacadas en recipientes de 50 libras o menos, contiene 10% o menos del ingrediente activo, y etiquetadas para su uso sin más dilución.

APLICADORES QUE HAN CUBIERTO LOS REQUISITOS DE CERTIFICACIÓN PARA MATERIALES RESTRINGIDOS CONFORME A LA SECCIÓN 14015, DEL CÓDIGO DE ALIMENTOS Y AGRICULTURA

APLICADORES COMERCIALES CERTIFICADOS

(OTRAS PERSONAS APARTE DE APLICADORES PRIVADOS, QUE USAN PESTICIDAS RESTRINGIDOS)

- Pilotos principiantes
- Poseedores de Licencia de Aplicador Calificado
- Poseedores de Certificado como Aplicador Calificado
- Representantes de campo del Control de Plagas en el ramo Estructural
- Operadores de Control de Plagas Estructurales
- Técnicos de Control de Vectores

A PESTICIDAS SÓLO EN "A" ARRIBA – NO REQUIERE PERMISO

B PESTICIDAS EN "B" ARRIBA -- REQUIEREN PERMISO; APLICAN EXCEPCIONES

APLICADORES PRIVADOS CERTIFICADOS

(AGRICULTORES, OPERADORES DE VIVEROS, Y OTROS QUE USAN PESTICIDAS RESTRINGIDOS PARA PRODUCIR CULTIVOS AGRÍCOLAS)

- Poseedores de Certificados de Aplicador Privado

A PESTICIDAS SÓLO EN "A" ARRIBA – NO REQUIEREN PERMISO

B PESTICIDAS EN "B" ARRIBA -- REQUIEREN PERMISO; APLICAN EXCEPCIONES

EXCEPCIONES AL REQUISITO DE PERMISO

- No se requiere permiso para pesticidas usados por personas licenciadas por la Junta de Control de Plagas Estructurales, conforme a sección 14006.6(d) del Código de Alimentos y Agricultura
- No se requiere permiso para pinturas o revestimientos anti-incrustantes que contengan tributyltin, conforme a la sección 6414 del Título 3 del Código de Reglamentos de California (3 CCR)
- ¹No se requiere permiso para aplicadores certificados que usen pesticidas listados en la sección 6800(a) del 3 CCR (Con Potencial de Contaminar Aguas Subterráneas) afuera de una Área de Protección de Agua Subterránea:

Atrazine Bentazon (Basagran®) Bromacil Diuron Norflurazon Prometon Simazine

Appendix C

General Drift Minimization

Introduction The following drift minimization measures are recommended permit conditions for those pesticides that are restricted materials, in addition to the drift minimization measures described on the pesticide label. Applicators are encouraged to utilize these measures for other pesticides whenever possible to minimize environmental contamination from drift.

I. AIRCRAFT

- A. Aircraft application equipment used to apply a pesticide spray solution shall be configured as follows:
1. Functional boom length, measured from outboard nozzle to outboard nozzle, shall not exceed 75% of the overall wing span or rotor length.
 2. Boom pressure shall not exceed 40 pounds per square inch for the nozzles being used.
 3. The flow of liquid from each nozzle shall be controlled by a positive shutoff system.
 4. Nozzle orifices shall be directed backward, neutral to the airstream.
 5. Aircraft shall be equipped with:
 - (a) Jet nozzles having an orifice of not less than one-sixteenth of an inch in diameter. Nozzles shall not be equipped with any device or mechanism which would cause a sheet, cone, fan, or similar type dispersion of the discharged material, except helicopters operating at 60 miles per hour or less may add a number 46 (or equivalent) or larger whirlplate;
 - (b) Helicopters operating at 60 miles per hour or less may, instead of (a), be equipped with fan nozzles with a fan angle number not larger than 80 degrees and a flow rate not less than one gallon per minute at 40 pounds per square inch pressure (or equivalent); or
 - (c) After evaluation, the director may authorize other nozzles for aircraft use.
- B. Aerial applications of a pesticide spray solution shall meet the following requirements:
1. Apply only when there is a positive air flow. Wind speed shall not be more than ten miles per hour at the application site, as measured by an anemometer positioned four feet above the ground.
 2. Discharge shall start after entering the target site; discharge height shall not exceed ten feet above the crop or target; discharge shall be shut off whenever necessary to raise the equipment over obstacles; discharge shall be shut off before exiting the target site.

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General Drift Minimization, Continued

II. GROUND

- A. Vehicle-mounted or towed ground equipment, other than handguns, used to make applications shall be equipped with:
 - 1. Nozzles having an orifice not less than one-sixteenth of an inch in diameter (or equivalent) and operated at a boom pressure not to exceed the manufacturer's recommended pressure for the nozzles being used; or
 - 2. Low-pressure fan nozzles with a fan angle number not larger than 80 degrees and nozzle orifice not less than 0.2 gallon per minute flow rate (or equivalent) and operated at a boom pressure not to exceed 15 pounds per square inch.

 - B. Applications of a pesticide spray solution made by vehicle-mounted or towed ground equipment shall meet the following requirements:
 - 1. Apply only when wind speed is ten miles per hour or less at the application site, as measured by an anemometer positioned four feet above the ground.
 - 2. Discharge shall start after entering the target site; discharge shall be shut off before exiting the target site.
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Appendix D

Recommended Permit Conditions for Rice Pesticides

Overview

Introduction This document provides recommended permit conditions for pesticide applications to rice.

About this section This section contains the following topics:

Section	Topic	See Page
D.1	Instructions to County Agricultural Commissioners on Rice Pesticide Permit Issuance	D-2
D.2	Data Reporting Guidelines for the Rice Pesticide Program	D-10
D.3	General Water-Holding	D-13
D.4	Phenoxy/Dicamba Herbicides	D-14
D.5	Thiobencarb	D-17

Section D.1

Instructions to County Agricultural Commissioners on Rice Pesticide Permit Issuance

Introduction The Department of Pesticide Regulation (DPR), in cooperation with the Central Valley Regional Water Quality Control Board (CVRWQCB), developed recommended permit conditions to meet water quality management objectives for Malathion and Thiobencarb. These conditions reflect management practices required by current Board Resolution. DPR and CVRWQCB believe that use of these permit conditions will meet water quality management objectives for these rice pesticides.

Approved resolution The Central Valley Regional Water Quality Control Board (CVRWQCB) approved resolution is available for review at:
http://www.waterboards.ca.gov/centralvalley/adopted_orders/index.html

Rice Pesticide Water Monitoring and Annual Reporting

CRC responsibility The rice industry, via the California Rice Commission (CRC), will be responsible for leadership in water monitoring, annual reporting to the CVRWQCB, and coordinating the participation of all program stakeholders.

- The rice industry is ultimately responsible for meeting water quality objectives.
 - DPR, as a co-regulator with the water boards, will continue to use its authority to regulate the sales and use of pesticides to address water quality issues involving pesticides. DPR will continue to actively participate with CVRWQCB and the rice industry staff to address rice pesticide issues.
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Instructions to County Agricultural Commissioners on Rice Pesticide Permit Issuance, Continued

Seepage Mitigation Requirements

Seepage defined For purposes of mitigating seepage in rice production:

- Seepage is lateral movement of irrigation water through a rice field levee or border to an area outside the normally flooded production area. Seepage can occur through levees into adjacent dry fields or into adjacent drains and canals.

Seepage documentation DPR requests that county agricultural commissioners (CACs) continue monitoring for seepage when inspecting for water-holding compliance by:

- Checking for seepage, or collection of seepage, that occurs through the outer borders of a field or the bottom border located at the lowest part of the field.
- Using the water-holding inspection logs to document seepage observations. The Pesticide Use Monitoring Inspection Form (PR-ENF-104) may also be used to document seepage observations. Indicate “water-hold inspection” on the blank line under “application inspection.”
- Document in the “Remarks” section on either form: Seepage flow less than five gallons per minute, or seepage flow more than five gallons per minute.

Enforcement action Any visible seepage moving offsite during the water-holding period that drains into the waters of the State is considered an early release and is a water-holding violation. An enforcement action should be taken in accordance with 3 CCR section 6128.

Brochure Please continue to distribute the brochure, *Seepage Water Management, Voluntary Guidelines for Good Stewardship in Rice Production*, Publication 21568, to growers at the time of permit issuance.

Continued on next page

Instructions to County Agricultural Commissioners on Rice Pesticide Permit Issuance, Continued

Drift Minimization Requirements

Mitigation measures

- DPR will provide “focused” oversight inspection of thiobencarb aerial applications to monitor thiobencarb drift mitigation requirements.
 - DPR recommends all rice pesticide permits be conditioned with *General Drift Minimization* restrictions.
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Thiobencarb Drift Mitigation Requirements

Mandatory preseason thiobencarb stewardship training (applies to Sacramento Valley counties only)

- (*Mandatory Preseason Thiobencarb Stewardship Training* information has been revised and moved to Section D.5, *Thiobencarb*, page D-17.)
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Instructions to County Agricultural Commissioners on Rice Pesticide Permit Issuance, Continued

General Information

New Thiobencarb product – League[®] MVP

A new Thiobencarb product – League[®] MVP Herbicide, EPA Reg. No. 59639-189-AA, a granular formulation – is registered for use on rice for the 2014 rice pesticide use season. Its active ingredients are 10% Thiobencarb and 0.43% Imazosulfuron. Please note that the new product has the same water holding period as Bolero[®] UltraMax – 30 days – and the Thiobencarb recommended permit conditions apply to the new product.

Malathion water management recommendations

CVRWQCB has approved a water management practice for malathion applied to rice that will help meet water quality performance goals for malathion in surface water. Malathion is currently not a restricted material and not subject to permit conditions. However, it is important that growers comply with the following water management practice:

- **All water from fields treated with pesticides containing malathion should be retained on the site of application or contained within a tailwater recovery system, or other system, adequate to prevent discharge to waters of the State for at least four days following application.**
-

Storm Event Work Group

The Communication Plan developed by the Storm Event Work Group will be utilized in the event of a severe storm occurrence. The Storm Event Work Group will continue to meet as needed. Currently, the work group is comprised of staff from the Regional Water Board, DPR, University of California, a reclamation district representative, CACs, and the rice industry. The California Rice Commission will take the lead in facilitating this group.

Continued on next page

Recommended Permit Conditions for Rice Pesticides, Continued

**One-page
summary**

Table A¹ summarizes the recommended water-holding permit conditions for thiobencarb. This summary can be used as a quick reference. Please refer to the specific permit conditions and pesticide labeling for a complete explanation of the requirements.

Topic	See Table
Rice Pesticides Water Management Requirements Summary (Water-holding permit conditions for malathion and thiobencarb)	A

**Emergency
release forms**

Form A is used for an emergency release request. Form B is used for reporting the emergency release. These DPR-suggested forms may be reproduced under county letterhead.

Topic	See Form
Rice Pesticides Water Management Requirements, Emergency Release Request Form	Form A
Rice Pesticides Water Management Requirements, Emergency Release Report Form	Form B

Continued on next page

¹ Formerly Table B

Table A

Note: Amended – deleted Bolero® 15 G (no longer registered in California) and added League® MVP.

Rice Pesticides Water Management Requirements Summary

Water must be held for the indicated number of 24-hour periods on the treated field, or within the containment area specified below before release into State waters.		Thiobencarb		Thiobencarb Plus Imazosulfuron	
		Bolero® UltraMax	Abolish® 8 EC	League® MVP	Malathion
		Hold	Hold	Hold	Hold
N O R T H S A C V A L L E Y	Single treated fields.	30	19	30	4 (b)
	Release into tailwater recovery system or ponded onto fallow land or contained in other systems appropriate for preventing discharge.	19	19	19	
	System controlled by one permittee, then water may be discharged into the system in manner consistent with product labeling.	14	14	14	
	System includes drainage from more than one permittee, then water must be retained on site.	6	6	6	
	Water on fields within bounds of areas that discharge negligible amounts of drainage onto perennial streams. Commissioner must evaluate such sites and verify the hydrologic isolation of the fields.	6	6	6	
	CAC may authorize emergency release of tailwater.	19	19	19	
S O U T H S A C & S J V A L L E Y (a)	All water on treated fields must be retained on the treated fields.	19	19	19	4 (b)
	Release into tailwater recovery system or ponded onto fallow land or contained in other systems appropriate for preventing discharge.	19	19	19	
	System controlled by one permittee, then water may be discharged in manner consistent with product labeling.	14	14	14	
	System includes drainage from more than one permittee, then water must be retained on site.	6	6	6	
	Water on fields within bounds of areas that discharge negligible amounts of drainage onto perennial streams. Commissioner must evaluate such sites and verify the hydrologic isolation of the fields.	6	6	6	
	CAC may authorize emergency release of tailwater.	19	19	19	

(a) – South Sacramento & San Joaquin Valley defined as: South of the line defined by Roads E10 and 116 in Yolo County and the American River in Sacramento County.

(b) – Voluntary hold.

FORM A

RICE PESTICIDES WATER MANAGEMENT REQUIREMENTS, Emergency Release Request Form

Thiobencarb

Grower: _____ Permit No.: _____

Address: _____ Zip: _____

Field Location: _____ Site No.: _____

Chemical applied: _____

Chemical applied: _____

Rate of application: _____

Rate of application: _____

Date of application: _____

Date of application: _____

Average water depth
at time of application: _____

Average water depth
at time of application: _____

Starting date of emergency release: _____

Acres treated in field: _____ Laser leveled: Yes _____ No _____

Type of irrigation system: _____ Flow through _____ Recycle _____ Static _____ Other _____

Date flooding began: _____ No. of days it takes to fill field: _____

Describe problem that led to emergency release: _____

Steps that can be taken to prevent emergency releases from this field in future years: _____

Recommendation by (attached): _____

Applications by: _____

Grower's signature: _____ Date: _____

Approved by: _____

Agricultural Biologist

Section D.2

Data Reporting Guidelines for the Rice Pesticide Program

Introduction This document outlines the data reporting guidelines for the Rice Pesticide Program.

Pesticide Use Reporting procedures Follow your normal download and submittal practices (i.e., via e-mail) when electronically sending pesticide use report (PUR) data to DPR. Please send your rice PUR data to DPR's **Pest Management and Licensing Branch** in a timely manner so this data can be compiled and summarized for the annual report.

California Rice Commission report preparation The California Rice Commission (CRC) will submit a routine information request¹ to each rice-growing county for inspection data, and compliance and enforcement action data. The CRC will contact DPR to obtain the PUR data.

The CRC will use the data to prepare the annual report required by the Central Valley Regional Water Quality Control Board (CVRWQCB) by December 31 of each year.

Reporting inspection, compliance, and enforcement action data The California Rice Commission will request the following inspection, compliance, and enforcement action data. You may continue to use Form C, the *Annual Rice Reporting Information* form that follows.

For **thiobencarb** (Bolero[®] UltraMax, Abolish[®] 8EC, League[®] MVP), report the number of:

- Mix/load inspections
 - Application inspections
 - Water hold inspections
 - Release inquiries
 - Emergency releases
 - Water seepage inspections apply only to Sacramento Valley Rice Growing Counties
 - Non-compliance inspections
 - Agricultural civil penalties (ACPs)
-

Continued on next page

¹ The California Rice Commission began obtaining this information directly from the rice-growing counties starting in 2009.

Data Reporting Guidelines for the Rice Pesticide Program, Continued

Reporting seepage inspection data

When conducting thiobencarb seepage inspections, please characterize the amount of seepage observed during the inspection as: “no seepage,” “less than five gallons of seepage,” or “more than five gallons of seepage.” Use the *Annual Rice Reporting Information* form that follows; enter the number of sites with:

- No seepage
 - Less than five gallons of seepage
 - More than five gallons of seepage.
-

Mail, e-mail, or fax the data

Please mail, e-mail, or fax the inspection and compliance/enforcement action data requested above by **September 30** to:

Roberta Firoved
Industry Affairs Manager
California Rice Commission
1231 I Street, Suite 205
Sacramento, California 95814

Telephone: (916) 387-2264
e-mail: rfiroved@calrice.org
fax: (916) 387-2265

“Completed” water-holding enforcement actions to CVRWQCB

Additionally, at the request of the CVRWQCB, please send all “completed” water-holding enforcement actions within 30 days after enforcement action is completed to:

Rice Pesticide Program
Central Valley Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive #200
Rancho Cordova, California 95670-6114

Continued on next page

FORM C

ANNUAL RICE REPORTING INFORMATION

County: _____

Acres of Rice Planted: _____

INSPECTION TYPES																
CHEMICALS	* A C P	APPLICA- TIONS		MIX/ LOAD		RELEASE INQUIRIES		EMERGENCY RELEASES		WATER HOLD		WATER SEEPAGE **				
		#	N/C	#	N/C	#	N/C	#	N/C	#	N/C	#	N/C	# of Sites w/ No Seepage	# of Sites w/ Less Than 5 Gallons	# of Sites w/ More Than 5 Gallons
BOLERO® UltraMax																
ABOLISH® 8EC																
LEAGUE® MVP																
Totals																

Please send the above information to the **California Rice Commission** by e-mail to rfiroved@calrice.org; by fax at (916) 387-2265; or by mail to 1231 I Street, Suite 205, Sacramento, California 95814 by **September 30th** of each year.

* Administrative Civil Penalty

** Sacramento Valley Rice counties only

Section D.3

General Water-Holding

- I. The following seepage control requirements apply to all rice pesticides having mandatory water-holding requirements such as thiobencarb, etc. Non-compliance with seepage requirements is considered a water-holding violation.
 - A. Rice pesticides, such as thiobencarb, shall not be applied to rice fields exhibiting visible water seepage that moves offsite into drains that are considered state waters.
 - B. Borders surrounding each rice field shall be compacted before water is allowed to fill the field; the degree of compaction shall be sufficient to prevent water from seeping through the border. For example, compaction may be achieved by driving the tires or tracks of a tractor, or other heavy vehicle, on one side of the border.
 - C. This requirement applies to new or reworked existing borders for the current rice season.
 - D. A common border between two existing rice fields does not need to be compacted.
-

Section D.4

Suggested Permit Conditions for Phenoxy/Dicamba

Introduction

The following requirements apply to Dicamba; 2,4-dichlorophenoxyacetic acid (2,4-D); 2,4-dichlorophenoxybutyric acid (2,4-DB); 2,4-dichlorophenoxypropionic acid (2,4-DP); and 2-methyl-4-chlorophenoxyacetic acid (MCPA) herbicides when used on rice grown below 1,000 feet elevation in the following areas of the Sacramento Valley:

- All of Butte, Colusa, Glenn, Placer, Sutter, Yolo, and Yuba Counties;
 - The portion of Sacramento County situated north of Highway 80; and
 - The portion of Tehama County situated west of the Sacramento River.
-

General application conditions

General application conditions follow:

- A. A 24-hour Notice of Intent is required for all applications.
 - B. No applications shall be made when the temperature at four (4) feet above the ground exceeds 90 degrees Fahrenheit (90°F) or as required by the registered product use label, whichever is the most restrictive.
 - C. No herbicide in an ester form shall be applied, unless expressly authorized by a permit issued by the commissioner.
 - D. Unless expressly authorized by permit, no application shall be made on rice within two miles of any cultivated commercial cotton, grape, or pistachio planting.
 - E. All applicators shall comply with the following good agricultural practices before each application to reduce the possibility of drift with non-target sites:
 1. Proper boom pressure.
 2. Proper nozzle size.
 3. Relationship of boom pressure and nozzle size on droplet size and drift.
 4. Proper discharge height above the target crop/site.
 5. Effects of excessive boom length and unstable equipment on coverage and drift.
 6. Climatic effects such as air temperature, weather, and inversion conditions on drift.
-

Continued on next page

Suggested Permit Conditions for Phenoxy/Dicamba, Continued

Ground application conditions

- A. Ground equipment applications made between April 1 through October 15 shall be made in accordance with the following requirements:
1. No ground application shall be made when the wind velocity is greater than ten (10) miles per hour at the application site or as required by the registered label, whichever is the most restrictive. Wind measurements measured by an anemometer shall be made four (4) feet above the crop being treated.
 2. Each operating nozzle shall produce a droplet size, in accordance with the manufacturers' specifications, not less than 500 microns volume median diameter (Dv0.5) with ten (10) percent of the diameter by volume (Dv0.1) not less than 200 microns.
 3. Applications of a pesticide spray solution made to field crops by vehicle-mounted or towed ground equipment shall discharge only after entering the target site; discharge shall be shut off before exiting the target site.
-

Aerial application conditions

- A. Aircraft application equipment used to apply a pesticide spray solution to field crops shall be configured as follows:
1. Functional boom length, measured from outboard nozzle to outboard nozzle, shall not exceed 75% of the overall wing span or rotor length.
 2. Boom pressure shall not exceed 40 pounds per square inch.
 3. The flow of liquid from each nozzle shall be controlled by a positive shutoff system.
 4. Nozzle orifices shall be directed backward parallel to the horizontal axis of the aircraft in flight.
 5. Aircraft shall be equipped with:
 - a. Jet nozzles having an orifice of not less than one-sixteenth of an inch in diameter. Nozzles shall not be equipped with any device or mechanism which would cause a sheet, cone, fan, or similar type dispersion of the discharged material except helicopters operating at 60 miles per hour or less may add a number 46 (or equivalent) or larger whirlplate.
 - b. Helicopters operating at 60 miles per hour or less may, instead of #1 (above), be equipped with fan nozzles with a fan angle number not larger than 80 degrees and a flow rate not less than one gallon per minute at 40 pounds per square inch pressure (or equivalent).
-

Continued on next page

Suggested Permit Conditions for Phenoxy/Dicamba, Continued

**Aerial
application
conditions**
(continued)

- B. Aerial applications of a pesticide spray solution or granular pesticide made to field crops shall meet the following requirements:
1. Fixed-wing aircraft and helicopter applications are prohibited April 1 through October 15.
 2. Discharge shall start after entering the target site; discharge height shall not exceed 10 feet above the crop or target; discharge shall be shut off whenever necessary to raise the equipment over obstacles; and discharge shall be shut off before exiting the target site.
 - The 10 feet height restriction does not apply to applications of granular pesticides.
 3. No aerial applications shall be made when the wind velocity is less than two (2) miles per hour or greater than seven (7) miles per hour at the application site or as required by the registered label, whichever is the most restrictive. Wind measurements shall be made at four (4) feet above the crop being treated.
-

Section D.5

Thiobencarb

**Mandatory
preseason
thiobencarb
stewardship
training by the
California Rice
Commission**

- Mandatory preseason thiobencarb stewardship training applies only to thiobencarb restricted material permit holders located in the Sacramento Valley rice-growing counties.
 - Restricted material permits shall not be issued to growers who have not received California Rice Commission certification that they attended a preseason thiobencarb stewardship training session that year.
 - The county agricultural commissioner may certify a grower that did not attend a thiobencarb stewardship training session by having them view a video of the current preseason thiobencarb stewardship training session.
-

Drift Minimization

- I. The use of Bolero 10G formulation is prohibited in the Sacramento Valley rice growing counties of Butte, Colusa, Glenn, Placer, Sacramento, Sutter, Tehama, Yolo, and Yuba.
- II. No aerial applications shall be made or continued within ½ mile of the Sacramento or Feather Rivers in the Sacramento Valley rice growing counties of Butte, Colusa, Glenn, Placer, Sacramento, Sutter, Tehama, Yolo, and Yuba unless there is a continuous positive airflow away from the river.
- III. In the Sacramento Valley rice growing counties of Butte, Colusa, Glenn, Placer, Sacramento, Sutter, Tehama, Yolo, and Yuba, no aerial application shall be made or continued within ½ mile of the Sacramento or Feather Rivers when the wind speed exceeds seven miles per hour.
- IV. In Sacramento and Yolo Counties, no aerial applications shall be made or continued within ¼ mile of the Sacramento River unless they are made under the direct supervision of the county agricultural commissioner's representative.
- V. In Sacramento and Yolo Counties, the maximum acres treated by air each day within ¼ mile of the Sacramento River shall not exceed 33 percent of the average acres treated per day by air within this area in each county during 2002.

Continued on next page

Thiobencarb, Continued

Water Management

I. The following water holding requirements apply to rice fields treated with thiobencarb in the Sacramento Valley (north of the line defined by Roads E10 and 116 in Yolo County and the American River in Sacramento County), except those treated with Abolish® 8EC:

A. Except as listed below, all water on treated fields must be retained on the treated fields for at least 30 days following application. When drainage begins, discharge must not exceed two inches of water over a drain box weir for seven additional days. Unregulated discharges from these fields may then begin after 37 days.

1. When water is contained within a tailwater recovery system, ponded on fallow land, or contained in other systems appropriate for preventing discharge, the water must be retained in the system for 19 days, unless:

(a) The system is under the control of one permittee, then water may be discharged from the application site in a manner consistent with product labeling (14-day water hold).

(b) The system includes drainage from more than one permittee, then water must be retained on the site of application for six days before being discharged from the application site into the system.

(c) Water is on fields within the bounds of areas that discharge negligible amounts of rice field drainage into perennial streams until fields are drained for harvest. Water-hold may be reduced to six days if the commissioner evaluates such sites and verifies the hydrologic isolation of the fields.

II. Rice fields treated with thiobencarb in the Sacramento/San Joaquin Valley (south of the line defined by Roads E10 and 116 in Yolo County and the American River in Sacramento County), except those treated with Abolish® 8EC:

A. Except as listed below, all water on treated fields must be retained on the treated fields for at least 19 days following application. When drainage begins, water discharge must not exceed two inches of water over a drain box weir for an additional seven days. Unregulated discharges from these fields may begin after 26 days.

Continued on next page

Thiobencarb, Continued

1. When water is contained within a tailwater recovery system, ponded on fallow land, or contained in other systems appropriate for preventing discharge, the system may discharge 19 days following the last application of thiobencarb within the system unless:
 - (a) The system is under the control of one permittee, then water may be discharged from the application site in a manner consistent with product labeling (14-day water-hold period).
 - (b) The system includes drainage from more than one permittee, then water must be retained on the site of application for six days before discharged from the application site into the system.
 - (c) Water is on fields within the bounds of areas that discharge negligible amounts of rice field drainage into perennial streams until fields are drained for harvest. Water-hold may be reduced to six days, if the commissioner evaluates such sites and verifies the hydrologic isolation of the fields.

III. All areas, fields treated with Abolish® 8EC:

- A. Except as listed below, all water on treated fields must be retained on the treated fields for at least 19 days following application. When drainage begins, water discharge must be released at a volume not to exceed two inches of water over a drain box weir for an additional seven days. Unregulated discharges from these fields may begin after 26 days.
 1. For water contained within a tailwater recovery system, ponded on fallow land, or contained in other systems appropriate for preventing discharge, the system may discharge 19 days following the last application within the system unless:
 - (a) The system is under the control of one permittee, then water may be discharged from the application site in a manner consistent with product labeling (14-day water-hold period).
 - (b) The system includes drainage from more than one permittee, then water must be retained on the site of application for six days before discharged from the application site into the system.
 - (c) Water is on fields within the bounds of areas that discharge negligible amounts of rice field drainage into perennial streams until fields are drained for harvest, then water-hold may be reduced to six days if the commissioner evaluates such sites and verifies the hydrologic isolation of the fields.

Continued on next page

Thiobencarb, Continued

IV. Emergency release requirements (Salinity damage):

The county agricultural commissioner may authorize the emergency release of field water after a minimum 19-day water-hold period after the last thiobencarb application, following the review of a written application that demonstrates salinity levels are damaging to the crop.

- A. Applicants for such emergency releases must provide the following information:
1. All information indicated on the emergency release request (Form A), including a description of the severity and extent of salinity damage.
 2. Electrical conductivity (EC) measurements, expressed as deciSiemens per meter (dS/m) or microSiemens per centimeter ($\mu\text{S}/\text{cm}$), from field water in each paddy suspected of having salinity problems. To most effectively demonstrate salinity problems, measurements should be taken wherever salinity problems are evident.
 3. The instrument (make and model) used to determine EC measurements. The instrument must have a sensitivity range that accommodates the full range of EC values in intake and paddy water (usually a range of 0-5.0 dS/m or 0-5,000 $\mu\text{S}/\text{cm}$ should be sufficient) and should have a resolution of not less than five percent. The instrument must be calibrated according to the manufacturer's instructions. The applicant must specify the method of temperature compensation (i.e., automatic, conversion table).
 4. Who made the EC measurements.
 5. The source of irrigation water (e.g., district supply canal, drainage canal, well, etc.).
- B. An emergency release may be granted only if all of the following conditions are satisfied:
1. All required information is provided.
 2. Water management requirements for rice pesticides other than thiobencarb are satisfied.
 3. EC of paddy water exceeds 2.0 dS/m or 2,000 $\mu\text{S}/\text{cm}$.
 4. The county agricultural commissioner or his/her staff inspects the site.
- C. Water may be released from paddies where EC measurements exceed 2.0 dS/m or 2,000 $\mu\text{S}/\text{cm}$ and from paddies down gradient from such paddies within the same field. Water shall only be released in an amount necessary to mitigate the salinity problem.
- D. Those issued an emergency release must submit to the county agricultural commissioner, a report (Form B) indicating the time and duration of the emergency release and data that can be used to calculate the total amount of water released during the emergency release.
-

Appendix E

Ground Water Protection Approved Alternative Management Practices

Introduction	Pursuant to 3 CCR section 6487.4(h)(1), DPR approved the following alternative management practices.
Restriction	Section 6487.4 prohibits the use of restricted materials listed in 3 CCR section 6400(d) in a ground water protection area unless one of several specified management practices is designated on the permit and put in place by the permittee. In addition to those practices listed in the regulations, the following have been approved by DPR.
Alternative approved practices	<p>When using a restricted material listed in section 6400(d):</p> <ul style="list-style-type: none">• Band applications to citrus trees may be extended to the drip line of the tree, even if the band width exceeds the 33 percent of the distance between the tree rows currently allowed.• Soil in a citrus grove does not need to be disturbed prior to application from the drip line of the tree to the row of the same tree, even if that distance exceeds 33 percent of the distance between tree rows.• The pesticide does not need to be incorporated in citrus from the drip line of the tree row to the row of the same tree, even if that distance exceeds 33 percent of the distance between tree rows.• The pesticide may be applied to the tops and outer sides of canal banks and rights-of-way provided that runoff moves off the treated area as overland flow onto adjacent land, at least equal in area to the treated area, where it infiltrates into the soil with no chance of flow into specified structures.• The pesticide may be applied where irrigation and rainfall runoff from the treated site is stored on the treated site in an excavated retention area with a percolation rate of greater than 0.2 inches per hour if the runoff is completely recycled every 24 hours from the retention area onto the treated site or neighboring land under certain circumstances.

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Appendix F

Tribufos (DEF, Folex) Recommended Permit Conditions

Introduction Approved tribufos labeling states, “(Tribufos) may not be applied within seven days of harvest.” The Department of Pesticide Regulation considers this enforceable pre harvest interval language. Any harvesting taking place within seven days of the application is in violation of Food and Agricultural Code section 12973 (use in conflict with labeling).

Permit condition language No employee shall be directed or allowed to conduct any activities that may involve human contact with foliage, within the treated area, until seven days after an application of tribufos.

Former title of this section Recommended Permit Conditions for S,S,S-tributyl phosphorotrithioate (DEF, Tribufos)

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Appendix G

Commodity Fumigation

Introduction This section provides information on Commodity Fumigation.
Information on Soil Fumigation may be found in Appendix I.

In this section This section provides the following topics.

Section	Topic	See Page
G.1	Recommended Permit Conditions for Methyl Bromide and Sulfuryl Fluoride Commodity Fumigation	G-2
G.2	Recommended Permit Conditions for Tarped Potting Soil Fumigation	G-7

Section G.1

Recommended Permit Conditions for Methyl Bromide and Sulfuryl Fluoride Commodity Fumigation

Introduction

This document describes the recommended permit conditions for commodity fumigations at facilities. The permit conditions are designed to prevent the risk of acute exposures from the off-site movement of the fumigant to persons living near fumigation facilities. The following topics are included:

- Work site plan;
- Recommended permit conditions;
- Final permit conditions.

NOTE: Most permit conditions apply to both fumigants, however, be aware that some apply to only one fumigant or the other.

Permit issuance

Title 3, CCR section 6420 allows non-agricultural use permits to be issued to the facility operator, the pest control business, or both parties. DPR's position is that the option of who is required to obtain the permit rests with the CAC.

It is DPR's determination that when there is a fumigation of a commodity during storage or processing (industrial use) and the application is performed by a pest control business, both the facility operator and the pest control business have different duties with respect to the permit conditions. To be held responsible for their respective duties, both must be issued written permit conditions through the permitting process. Issue the primary permit to the facility operator.

If the facility does not have a certified applicator (qualified applicator certificate) on staff or chooses to hire a licensed pest control business to make the application, condition the permit to require all applications be conducted by a licensed agricultural pest control business. Require the pest control business to obtain a separate permit. As an alternative, the CAC may require that the business be specifically named in the facility permit and that a copy of the permit conditions be provided to that business.

Continued on next page

Recommended Permit Conditions for Methyl Bromide and Sulfuryl Fluoride Commodity Fumigation, Continued

Permit process The following steps are required to obtain the restricted materials permit for methyl bromide or sulfuryl fluoride commodity fumigations:

1. The facility that will conduct the fumigation prepares a work site plan. The work site plan documents the characteristics and procedures for a specific site.
2. Upon completion, the work site plan is forwarded to the county agricultural commissioner for review.
3. The CAC reviews the work site plan.
4. After the CAC reviews the work site plan, any modifications to the original work site plan are discussed with the applicator. Evaluation of individual work site plans may reveal one or more of the permit conditions as inappropriate for a specific site. In this case, a proposed alternative should be developed. DPR is available to assist the CAC in the evaluation of alternative mitigations.
5. Once the work site plan is approved, the CAC issues the restricted materials permit using the final work site plan, which details the equipment and procedural requirements that must be followed in order to use methyl bromide or sulfuryl fluoride, as conditions of the permit. The permit should be conditioned upon compliance with the approved final work site plan.

Intent of the permit conditions Permit conditions are meant to be guidelines for typical fumigations. Because of the wide variety of fumigation types, some of the permit conditions may be inappropriate for certain applications. In such cases, the CAC may issue site-specific permit conditions. The site-specific permit conditions will consist of the requirements given here and/or alternative conditions based on information in the individual work site plan. Methyl bromide and sulfuryl fluoride users are encouraged to suggest alternatives in the work site plan which will mitigate exposure. The CAC will evaluate requests for alternative conditions and consult with DPR to determine if the request will mitigate the exposure.

Continued on next page

Recommended Permit Conditions for Methyl Bromide and Sulfuryl Fluoride Commodity Fumigation, Continued

Major concepts The permit conditions are based on four concepts which methyl bromide and sulfuryl fluoride users should keep in mind: **containment, dilution, distance, and time.**

- First, high concentrations of the fumigants should be contained. This means fumigation equipment and the fumigation structure or enclosure should not leak.
- Second, when the fumigants are not contained, dilute it with fresh air.
- Third, keep as much distance as possible between the fumigants and people.
- Fourth, minimize the time people are exposed to the fumigants. The permit conditions use the interaction of these four concepts to minimize exposure. For example, when one is not achieved, the other three are used to compensate.

While mitigation measures based on these concepts can decrease the methyl bromide and sulfuryl fluoride exposure to the desired levels, the best way to decrease exposure is to use as little of the fumigant as possible. Particularly, when better containment is provided, it may be possible to decrease the amount of the fumigants and still achieve efficacy. Users will find that as less methyl bromide and sulfuryl fluoride is used, the permit conditions become less obstructive and alternative conditions are easier to implement.

The permit conditions also require various approved test procedures to be used.

Continued on next page

Recommended Permit Conditions for Methyl Bromide and Sulfuryl Fluoride Commodity Fumigation, Continued

Definitions The following definitions are categorized.

General terms

A: Enclosure	A single fumigated space. <i>Examples: a single chamber, single silo, single sea/land container, or a single group of bins under one tarpaulin.</i>
B: Enclosed Area	A gas-confining area surrounded by non-porous walls and a roof.
C: Control Room	A small enclosed room adjoining some fumigation enclosures (e.g., primarily chambers) used exclusively for introducing fumigant into an enclosure and/or monitoring its concentration.
D: Fumiscope	A monitoring instrument which reads the concentration of fumigant in ounces per 1000 cubic feet inside an enclosure.
E: Loss Ratio	The proportion of fumigant per hour which leaks from the enclosure during the treatment period. This ratio is determined by a DPR-approved retention test.
F: Mechanical Ventilation	The use of fans or any mechanical device to ventilate a fumigation enclosure, or an enclosed area where fumigated commodities are stored.
G: Mitigation Measures	Modified work practices or engineering controls to comply with the stated permit conditions or alternative permit conditions.
H: Non-Residential Facility	Facilities where commodities are stored or processed. They do not include any structures where people live.
I: Passive Ventilation	Non-mechanical ventilation (e.g., opening doors and removing tarpaulin cover) of a fumigation enclosure.
J: Secondary Enclosed Area	An enclosed area surrounding a fumigation enclosure. This is usually a structure (e.g., warehouse, production facility, etc.) that houses the fumigation enclosure. This does not include mesh screen or other porous barriers.
K: Work Site	A location where one or more enclosures are fumigated. <i>Example: several chambers or sea/land containers at one address.</i>

Continued on next page

Recommended Permit Conditions for Methyl Bromide and Sulfuryl Fluoride Commodity Fumigation, Continued

Retention categories, Aeration categories

L: Pressure Tested	Either a vacuum chamber or an enclosure which has been pressure tested following the procedures stated in the U.S. Department of Agriculture Plant Protection and Quarantine Treatment Manual.
M: Retention Tested	An enclosure that has been measured for loss of fumigant over time according to a DPR-approved procedure.
N: Untested	An enclosure that has not been pressure or retention tested.
O: Standard Height Exhaust Stack	An exhaust stack that is at least 10 feet above the enclosure's highest point, <u>and</u> at least 10 feet above any major obstruction within 200 feet of the stack, <u>and</u> at least as tall as the appropriate value in Table 1. <i>Examples of major obstructions: houses, mature orchards, silos</i>
P: Exit Velocity	The air speed through the exhaust stack during aeration. The exit velocity is determined by dividing the rated fan capacity (cubic feet per minute) by the stack cross-sectional area (square feet).
Q: Minimum Exhaust Stack	An exhaust stack that does not meet the conditions for a standard height exhaust stack, but is at least 15 feet above the ground and has an exit velocity of at least 600 feet per minute.
R: No Stack	An enclosure whose stack does not meet either the standard height or minimum qualifications, or which does not use a stack for aeration.

Buffer zones

S: Treatment Zone	A buffer zone that is maintained around an enclosure during the fumigation treatment period (exposure or holding period). Only persons supervising and performing fumigation activities are permitted in the treatment zone. All other people, including residents and workers, must be excluded from this zone.
T: Aeration Zone	A buffer zone that is maintained around an enclosure during the first portion of the aeration period (four hours or less, depending on the emission concentration). Only persons supervising and performing fumigation activities are permitted in the aeration zone. All other people, including residents and workers, must be excluded from this zone.

Section G.2

Recommended Permit Conditions for Tarped Potting Soil Fumigation

I. DEFINITIONS

- A. **Application** includes treatment and aeration; it is complete when the tarped potting soil has been aerated.
- B. **Application rate**, in pounds per cubic yard, is equal to the amount of methyl bromide in the formulated product.
- C. **Application site** means the location where the fumigations take place. A property operator may have more than one location where potting soil fumigations take place. If these locations are not contiguous, then there would be two **application sites**. The application site designation may also be used in the restricted materials permit and for pesticide use reporting purposes.
- D. **Buffer zone** is the area that must be maintained between the treated potting soil and those places where people conduct certain activities or practices. These activities and practices may not occur in the buffer zone for prescribed periods of time. For potting soil fumigations there are three types of buffer zones to be considered:
1. **Resident Buffer Zone** is the area surrounding the treated potting soil, during fumigation and aeration, outside of which people may “dwell.” The Resident Buffer Zone is in effect until aeration is complete. See the definition: **dwell**.
 2. **Worker Buffer Zone** is the area surrounding the treated potting soil, during fumigation and aeration, outside of which people may “work or occupy.” The Worker Buffer Zone is in effect until aeration is complete, except for the first four hours of aeration (see **Aeration Buffer Zone**). See the definition: **work or occupy**.
 3. **Aeration Buffer Zone** is the area surrounding the treated potting soil that begins when the tarps are cut or removed and lasts for the first four hours of aeration. This buffer zone is the same size as the Resident Buffer Zone and applies to **all** activities.
- E. **Dwell** means that a person is able to or will occupy a structure for any or all parts of a 24-hour period. This includes, but is not limited to: homes, hospitals, convalescent homes, boarding schools, hotels, and apartment complexes.
- F. **Frequency of applications** refers to the interval of time elapsed from the beginning of the application of methyl bromide to one potting soil pile to the beginning of the application of methyl bromide to another potting soil pile.

RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL FUMIGATION

I. DEFINITIONS (Continued)

- G. **Gas confining** means a structure that has a non-porous roof and walls and all doors, side panels, and vents remain closed.
- H. **Pesticide Handler** includes employees involved in fumigation, aeration activities, tarp repair, and tarp removal **prior** to the completion of aeration.
- I. **Potting soil** is any combination of soil and/or soil-less media that is used for growing plants.
- J. **Work or occupy** means that a person is able to or will be at a place for eight hours or less. This includes, but is not limited to: fields, offices, warehouses, stores, malls, factories, greenhouses, packing sheds, workshops, and recreational parks.

II. WORKER SAFETY REQUIREMENTS

A. Restricted Entry and Warning Sign Posting Requirements

1. The restricted entry interval begins with the introduction of the fumigant and ends 48 hours after the tarp is removed **and** measurements show 5 ppm or less methyl bromide in the air at the surface of the treated potting soil pile. The duration of the restricted entry interval depends upon whether the tarp is removed or cut prior to removal.
2. As a condition of the permit, warning signs shall be posted on/near the treated pile for the duration of the restricted entry interval.

RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL FUMIGATION

II. WORKER SAFETY REQUIREMENTS (Continued)

B. Pesticide Handler and Field Worker Requirements

1. The employer must maintain use records for **all** employees involved in application, aeration, tarp repair, and tarp removal activities. The record shall identify the person, work activity(ies), date(s), duration of handling, U.S. Environmental Protection Agency Registration Number, and brand name of the methyl bromide product handled.
2. The employer must maintain records of the air monitoring used to determine completeness of aeration. These records must include sampling method, date, time, sample location(s), and the level, in parts per million (ppm).
3. The employer must maintain these records at a central location for two years and make them available to the county agricultural commissioner upon request for review.
4. Employers shall ensure that all employees who are pesticide handlers are trained and protected. **Pesticide handlers** include all persons whose work activities involve application, tarp repair, and tarp removal.

C. Tarpaulin Repair

1. The tarpaulin is considered “application equipment” covered by 3 CCR section 6742(a) and is required to be kept in good repair by the **applicator** for the duration of the fumigation. For the purpose of this section, fumigation ends when the tarps are removed or cut for aeration. **The person or business performing methyl bromide fumigations is responsible for making any necessary repairs.**
2. Tarpaulin repair must be evaluated on a job-by-job basis. The decision should be based on hazard to the public or workers, size of the damaged area, timing of damage, and ease of repair.
3. The methyl bromide label requires **all persons wear a Self-Contained Breathing Apparatus** if entering an area where the concentration of methyl bromide is unknown or exceeds 5 ppm. This includes making repairs to the tarp that covers a potting soil pile under fumigation.

RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL FUMIGATION

II. WORKER SAFETY REQUIREMENTS (Continued)

D. Workers in Adjacent Sites

1. The property operator and/or pest control operator must be aware of adjacent sites where worker activity is likely until aeration is complete. They must ensure that the adjacent property operators are advised, prior to the fumigation, on how to comply with the **Worker Buffer Zone** and the **Aeration Buffer Zone**.
2. The property operator and/or pest control operator may give notice to adjoining property operators orally or in writing.
3. If entry occurs as the result of a failure to be aware of worker activity and subsequent failure to advise adjacent property operators to keep workers out, the operator of the property fumigated and the person performing pest control are in violation of the methyl bromide permit conditions.

III. APPLICATION REQUIREMENTS

- A. All potting soil fumigations shall be conducted outdoors or in an enclosure that is not gas-confining.
- A. A maximum of 400 cubic yards of potting soil, in one or more tarped piles, will be allowed to be fumigated and aerated at one location. All treated potting soil must be completely aerated before another potting soil fumigation may begin at the same location.
- C. Maximum pile height is two feet tall. Potting soil may be fumigated in containers or raised structures as long as the depth of the potting soil does not exceed two feet.
- D. For multiple potting soil fumigation:
 1. Piles can be considered “isolated” when they are separated by at least 1,300 feet.
 2. Piles can also be consider isolated when they are separated by at least 48 hours from the introduction **and** tarpaulin cutting of one pile to the introduction and tarpaulin cutting of another pile. For example, multiple piles can be considered isolated:

RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL FUMIGATION

III. APPLICATION REQUIREMENTS (Continued)

- i. When introduction takes place at 48-hour intervals (e.g., introduction of Pile 1 on October 1 and introduction of Pile 2 on October 3).
 - ii. When tarpaulin cutting takes place at 48-hour intervals (e.g., tarpaulin cutting of Pile 1 on October 1 and tarpaulin cutting of Pile 2 on October 3).
 - iii. When introduction and tarpaulin cutting occur alternately at 48-hour intervals (e.g., tarpaulin cutting of Pile 1 on October 1 and introduction of Pile 2 on October 3).
3. For isolated piles, calculate buffer zones independently for each pile.
- E. For non-isolated piles, calculate buffer zones by aggregating the volume of the piles. This is the same procedure for calculating buffer zones for isolated and non-isolated field fumigations.
- F. A maximum of 0.6 pounds of methyl bromide (active ingredient) per cubic yard is allowed.
- G. The methyl bromide must be injected through perforated tubing that is anchored in place within the tarped potting soil piles. Follow the pesticide registrant's recommendation for the type of application tubing to be used.
- H. The tarp shall be sealed to the ground with sand or water snakes.
- I. All fittings, connections, and valves between the supply tank and the tarpaulin must be checked for methyl bromide leaks prior to fumigation. If cylinders are replaced during the fumigation process, the connections and valves must be checked for leaks prior to continuing the job.
- J. Only the tarpaulins listed on the approved manufacturers list are to be used. The tarp used during the fumigation must meet or exceed the following standards for a "high barrier" tarp: a permeability factor of less than eight milliliters methyl bromide per hour per square meter per 1,000 ppm of methyl bromide under the tarp at 30 degrees Celsius. See the list of high barrier tarp suppliers. Polyethylene tarp of six-mil thickness or greater meets these criteria.
- K. No other types of methyl bromide applications may be conducted at the same application site for 48 hours before, or 24 hours following, a tarped potting soil fumigation.

RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL FUMIGATION

IV. BUFFER ZONE DETERMINATION

- A. A buffer zone is the area surrounding a fumigated potting soil pile outside of which certain activities or practices are allowed. The buffer zones are in effect until the potting soil is completely aerated. The size of the buffer zone will be determined by the proposed size of the potting soil pile, in cubic yards, and the application rate. The buffer zone distance may have to be modified for each pile due to the proximity to occupied structures, distance to adjacent workers, and proximity to other potting soil fumigations.
- B. The buffer zone is partitioned into the Resident Buffer Zone, the Worker Buffer Zone, and the Aeration Buffer Zone. The size of the Resident Buffer Zone is based on the assumption that a person may “dwell” at a place for **24 hours**. The size of the Worker Buffer Zone is based on the assumption that people work or recreate at a place for **eight hours or less**. The Aeration Buffer Zone becomes effective at the time the tarp is removed or cut and lasts for four hours. It is the same size as the Resident Buffer Zone and is required due to the high levels of methyl bromide released when the tarp is removed or cut.
- C. Transit through the Worker Buffer Zone by the permittee's employees is limited to infrequent and unavoidable trips. Routine or repeated transit through this buffer zone is prohibited.
- D. Transit through (except on a public road), working in, or dwelling in the Aeration Buffer Zone is prohibited for the entire four hours. No one is allowed in this area until aeration is complete unless they are trained pesticide handlers facilitating aeration.
- E. The buffer zones begin at the edges of the treated piles and extend in all directions regardless of buildings or property boundaries.
- F. Procedures:
 - 1. Determine the application rate. Use the highest application rate if more than one pile will be fumigated. If the application rate is not identical to the values listed in Table 1, then round up to the next highest value.
 - 2. Determine the volume. If there will be more than one pile, use the total volume of all piles fumigated at the same time as at the same application site. If the volume is not identical to the values listed in Table 1, then round up to the next highest value.
 - 3. Determine the Resident Buffer Zone by applying the highest application rate and total volume to Table 1.

RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL FUMIGATION

IV. BUFFER ZONE DETERMINATION (Continued)

4. Determine the Worker Buffer Zone by dividing the application rate by three. Apply the adjusted application rate and total volume to Table 1. If the adjusted application rate is not identical to the values listed in Table 1, then round up to the next highest value.
5. The Aeration Buffer Zone is the same size as the Resident Buffer Zone and must be vacated by **all people** for the first four hours of aeration, starting when the tarp is first cut or removed.

G. Resident Buffer Zone Duration

1. To determine if the proposed Resident Buffer Zone includes places where people are living or staying, measure the distance between the edge of the tarped pile and the **physical structure**, not the property line associated with that structure.
2. People are not allowed to “dwell” within the Resident Buffer Zone. Residences within the buffer zone **must** be vacated while the buffer zone is in effect. This time period starts when the fumigation begins and ends when aeration is complete, at least 48 hours after tarp removal.
3. If the resident(s) are unable to vacate the building(s), then the property operator must decrease either the cubic yards to be treated or the rate of methyl bromide to be used to reduce the size of the buffer zone.
4. This requirement applies to all persons, including the property operator.

H. Worker Buffer Zone Duration

1. People will not be allowed to work in or occupy the Worker Buffer Zone. This time period starts when the fumigation begins and ends when aeration is complete, at least 48 hours after tarp removal. The beginning point of measurement shall be the tarped edge of the fumigated pile.
2. If there are occupied commercial buildings or workers within the proposed Worker Buffer Zone and the work sites cannot be vacated, then the application must either be rescheduled to coincide with the worker's day-off or the cubic yards to be treated and/or application rate must be decreased to reduce the size of the buffer zone.

RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL FUMIGATION

IV. BUFFER ZONE DETERMINATION (Continued)

I. Aeration Buffer Zone Size and Duration

1. The Aeration Buffer Zone is the same size as the Resident Buffer Zone.
2. The Aeration Buffer Zone is in effect for the first four hours of aeration, which begins when the tarp is removed or cut. No one is allowed to work in, reside in, or transit this area for **any length of time**. This is required due to the large amounts of methyl bromide that can be released when the tarp is first disturbed.

RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL FUMIGATION

V. NOTICE OF INTENT MODIFICATION

- A. The county agricultural commissioner must receive a Notice of Intent at least 24 hours prior to commencement of a methyl bromide fumigation of tarped potting soil piles. The Notice of Intent must indicate the day and hour the application is to commence.
- B. Unless a waiver is granted by the county agricultural commissioner, fumigation of a tarped potting soil pile must not commence sooner than the starting time on the Notice of Intent. Nor must the fumigation commence later than 12 hours after the intended starting time submitted on the Notice of Intent. If the potting soil fumigation does not commence within this time frame, a new Notice of Intent must be submitted, but no 24-hour waiting period is required unless notified by the county agricultural commissioner.
- C. For multiple potting soil piles to be fumigated sequentially, the county agricultural commissioner may allow one Notice of Intent with a “schedule” to be submitted in lieu of one Notice of Intent for each potting soil pile to be fumigated. The schedule must include a map and must specify the date and time each potting soil pile is intended to be fumigated.
- D. The 24-hour Notice of Intent waiting period may be waived if the county agricultural commissioner determines:
 - 1. Effective pest control cannot be attained otherwise, or
 - 2. Approaching climatic conditions require the application to take place sooner, or
 - 3. Twenty-four hours are not necessary to adequately evaluate the intended application.
- E. The reasons for granting each waiver must be documented and a record maintained by the county agricultural commissioner.
- F. The operator of the property to be treated and the person performing pest control (if they are different) must be aware of adjacent sites where there is a reasonable possibility of **work activity** occurring while the Worker Buffer Zone and Aeration Buffer Zone are in effect, and must ensure that operators of those adjacent properties are advised to keep **workers** out of those areas during that period of time.

RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL FUMIGATION

VI. TARPAULIN REMOVAL

- A. Aeration shall be commenced during daylight hours, not at night.
- B. A Self-Contained Breathing Apparatus shall be used to commence aeration, which includes removing or cutting the tarp, unless this activity can be performed from outside of the aeration zone.
- C. The tarp may be removed no sooner than three days (72 hours) after the potting soil pile was fumigated.
- D. If the tarps are cut, rather than removed completely, they must be allowed to aerate for a minimum of 24 hours following cutting. Workers may then be allowed to remove the cut tarps without using a Self-Contained Breathing Apparatus.
- E. After the tarps have been removed, regardless of method, the soil pile must be allowed to aerate for an additional two days (48 hours) before workers may disturb the pile. At that time, if spot measurement shows less than 5 ppm, the soil can be handled by the workers. If the measurement is above 5 ppm, aeration shall continue until the level of methyl bromide is below 5 ppm.

The measurement(s) should be taken as close as possible to the surface of the treated potting soil pile.

VII. LIST OF MANUFACTURERS OF HIGH BARRIER TARPAULINS

The current list of approved tarpaulins is available at DPR's web site at:
<http://www.cdpr.ca.gov/docs/emon/methbrom/tarps.pdf>.

**RECOMMENDED PERMIT CONDITIONS FOR TARPED POTTING SOIL
FUMIGATION**

TABLE 1. Buffer Zones (feet) for Potting Soil Fumigations

Volume		Application Rate*					
cubic yards	cubic feet	0.1 lbs/yd ³	0.2 lbs/yd ³	0.3 lbs/yd ³	0.4 lbs/yd ³	0.5 lbs/yd ³	0.6 lbs/yd ³
		0.37 lbs/100 ft ³ 3.7 lbs/1000 ft ³	0.74 lbs/100 ft ³ 7.4 lbs/1000 ft ³	1.1 lbs/100 ft ³ 11 lbs/1000 ft ³	1.5 lbs/100 ft ³ 15 lbs/1000 ft ³	1.9 lbs/100 ft ³ 19 lbs/1000 ft ³	2.2 lbs/100 ft ³ 22 lbs/1000 ft ³
20	540	30	30	30	30	30	30
30	810	30	30	30	30	30	40
40	1080	30	30	30	30	40	60
60	1620	30	30	30	45	70	95
80	2160	30	30	35	65	95	120
100	2700	30	30	45	85	115	140
150	4050	30	30	75	120	155	190
200	5400	30	40	100	150	190	230
250	6750	30	50	120	175	225	265
300	8100	30	65	140	200	250	300
350	9450	35	80	155	220	280	330
400	10800	40	100	175	245	300	355

* Application Rate Units:

lbs/yd³ = pounds per cubic yard

lbs/100 ft³ = pounds per 100 cubic feet

lbs/1000 ft³ = pounds per 1000 cubic feet

Commodity Fumigation Facility Work Site Plan

This Work Site Plan has five sections:

Section A records general information about the work site.

Section B records compliance with general permit conditions.

Section C is used to determine the size of the buffer zones.

Section D records compliance with other specific conditions.

Section E records information for alternate conditions.

The Work Site Plan must be completed and submitted to the CAC. Restricted Materials Permits must be obtained by both the facility operator and pest control business, if applicable.

A Restricted Materials Permit cannot be issued unless all questions in the appropriate sections are answered correctly. Incorrect information on the Work Site Plan will result in denial of the permit.

Fumigation Site:

Address: _____ City: _____ Zip: _____

Contact Person: _____ Phone: _____
(Facility Operator, Grower, QAC, QAL, etc.)

Pest Control Business: _____ Permit Number: _____

Address: _____ City: _____ Zip: _____

Contact Person: _____ Phone: _____
(QAL with the appropriate category)

I VERIFY THE FOLLOWING INFORMATION IS ACCURATE AND TRUE TO THE BEST OF MY KNOWLEDGE.

Signature: _____ Date: _____
(Facility Operator)

Title: _____

Consult with the County Agricultural Commissioner for suggestions on alternative conditions.

<p>B.1: Maximum Application Rate</p>	<p><i>(Condition 1).</i> Will your application rate be eight pounds per 1000 cubic feet or less?</p> <p>If question B.1 is answered NO, you must complete Section E.</p>	<p>YES</p>	<p>NO</p>	
<p>B.2: Total Fumigant</p>	<p><i>(Condition 2).</i> Will you be using 1000 pounds or less of sulfuryl fluoride or methyl bromide at the work site during a 24-hour period?</p> <p>If question B.2 is answered NO, you must complete Section E.</p>	<p>YES</p>	<p>NO</p>	
<p>B.3: Other Types of Applications</p>	<p>This permit condition does not apply to sulfuryl fluoride applications.</p>	<p>N/A</p>	<p>N/A</p>	
<p>B.4: Enclosed Areas</p>	<p><i>(Condition 4).</i> Is the fumigation enclosure outside of other buildings (i.e., not within a secondary enclosed area)?</p>	<p>YES</p>	<p>NO</p>	
<p>B.5: Common Walls</p>	<p><i>(Condition 4).</i> Is the fumigation enclosure physically separated from all other structures (i.e., the fumigation enclosure does not share a common wall with another building)?</p>	<p>YES</p>	<p>NO</p>	
<p>B.6: Outside Introduction</p>	<p><i>(Condition 5).</i> Is the fumigant introduced from outside the enclosure?</p>	<p>YES</p>	<p>NO</p>	
<p>B.7: Gas-tight Fumigant Lines</p>	<p><i>(Condition 6).</i> Are fumigant lines and connections checked for leaks during each fumigation?</p>	<p>YES</p>	<p>NO</p>	

If concentrations within the enclosure are monitored with a Fumiscope or other instrument, are the following precautions taken?

B.8: Test Equipment Seals	<i>(Condition 7)</i> . Is the enclosure sealed where instrument sampling lines pass through enclosure walls?	YES	NO	does not apply
B.9: Test Equipment Exhaust	<i>(Condition 8)</i> . Is the exhaust from the monitoring instrument vented out of the control room or back into the enclosure?	YES	NO	does not apply

If fumigant is introduced from within an enclosed control room, are the following precautions taken?

B.10: Fumigant Line Purge	<i>(Condition 9)</i> . Is nitrogen gas or compressed air used to purge fumigant lines prior to changing cylinders?	YES	NO	does not apply
B.11: Control Room Ventilation	<i>(Condition 10)</i> . Is the control room mechanically ventilated when people are present?	YES	NO	does not apply
B.12: Control Room Storage	<i>(Condition 11)</i> . Are fumigant cylinders stored outside the control room?	YES	NO	does not apply
B.13: Aeration Initiation	<i>(Condition 12)</i> . Is a Self Contained Breathing Apparatus worn when initiating aeration?	YES	NO	
B.14: Minimum Aeration Time	<i>(Condition 14)</i> . If the enclosure is aerated with mechanical ventilation, is the aeration period at least four hours?	YES	NO	does not apply
B.15: Minimum Aeration Time	<i>(Condition 14)</i> . If the enclosure is aerated passively, is the aeration period at least 12 hours?	YES	NO	does not apply
B.16: Testing Aeration Completeness	<i>(Condition 15)</i> . Is the air concentration checked according to approved procedures before moving the commodity from the enclosure?	YES	NO	does not apply

If the treated commodity is stored in an enclosed area, are the following precautions taken?

B.17: Storage Area Testing	<i>(Condition 16)</i> . Is the air concentration within the enclosed area checked according to DPR approved procedures before people enter?	YES	NO	does not apply
B.18: Storage Area Work Schedule	<i>(Condition 16)</i> . Do workers spend less than one hour in a 24-hour period inside the enclosed storage area?	YES	NO	does not apply
B.19: Document Requirements	<i>(Condition 18)</i> . Are all test results kept for 2 years?	YES	NO	does not apply

Alternate Conditions - Describe alternatives if any of the questions in Section B were answered NO.

The information in this section is used by the County Agricultural Commissioner to determine the size of the buffer zones for each enclosure at the work site. Complete this section for each enclosure, unless the answers to all of the questions for all enclosures are the same.

Retention Category	C.1. Is the enclosure a vacuum chamber?	YES	NO	
Determination	C.2. Does the enclosure pass the USDA pressure test?	YES	NO	
	C.3. Has the enclosure been retention tested according to DPR-approved procedures?	YES	NO	
Aeration Category Determination	C.4. Does the enclosure use an exhaust stack for aeration? <i>If C.4 is answered NO, skip C.5 – C.11 and go to question C.12.</i>	YES	NO	

	C.5. What is the exhaust stack's height above ground level? Use lowest stack if more than 1.	_____feet		
	C.6. Is the top of the exhaust stack at least 10 feet above the enclosure's highest point?	YES	NO	
	C.7. Is the top of the exhaust stack at least 10 feet above all major obstructions (building, silo, orchard) within 200 feet of the stack?	YES	NO	
	C.8. What is the rated fan capacity or air flow rate of the exhaust fan for this enclosure (combine all fans if more than one)?	_____cubic feet per minute		
	C.9. What is the stack cross-sectional area for this enclosure (combine all stacks)? Area of circle = $3.14 \times \text{radius}^2$	_____square feet		
	C.10. Divide the value from question C.8 by the value from question C.9. This is the exit velocity.	_____feet per minute		
	C.11. What is the largest amount of fumigant that will be used for the entire work site in a 24-hour period?	_____pounds		

Fumigation Information	C.12. What is the highest application rate that will be used for this enclosure?	_____ pounds per 1000 cubic feet	
	C.13. What is the maximum number of fumigations in a 24-hour period for this enclosure?	_____	
	C.14. What is the fumigated volume for this enclosure?	_____ cubic feet	
	C.15. What is the maximum amount of fumigant used in a 24-hour period for this enclosure?	_____ pounds	
	C.16. What is the duration of the longest treatment period?	_____ hours	
	C.17. If this enclosure has been retention tested according to a DPR approved test, what is the loss ratio (proportion of fumigant leaked from the enclosure per hour)?	_____	does not apply
Other Enclosures	C.18. Give the name, identification or designation for this enclosure:	_____	
	C.19. List any other enclosures that have the same answers to all of the questions in Section C.	_____	
	C.20. List any other enclosures that may be fumigated or aerated within the same 24-hour period and how many times they may be used.	_____	

Complete this section for each enclosure, unless all of the answers are the same.

D.1: Vertical Stack Exhaust	<i>(Condition 21)</i> . If one or more stacks are used to aerate, are they vented vertically to the outside air?	YES	NO	does not apply
D.2: Unobstructed Exhaust	<i>(Condition 21)</i> . If one or more stacks are used to aerate, are the tops of the stacks free of overhead obstructions during aeration?	YES	NO	does not apply
D.3: Daylight Aeration	<i>(Conditions 13 and 22)</i> . Do you always initiate aeration during daylight hours?	YES	NO	

Alternate Conditions - Describe alternatives if any of the questions in Section D were answered NO. Attach additional pages if necessary.

Complete this section only if alternate conditions need to be evaluated by the Department of Pesticide Regulation. Consult with the County Agricultural Commissioner before filling out this section. This section must be completed for each enclosure for which alternate conditions are being requested.

E.1. Enclosure Identification:

E.2. Description of Enclosure:
(chamber, tarped bins)

E.3. Enclosure Material (plastic tarp, wood):

E.4. Enclosure Dimensions:

E.5. Description of Secondary Enclosed Space (if any):

E.6. Secondary Enclosed Space Dimensions (if any):

E.7. Commodity/Site Fumigated:

E.8. Months Fumigations Conducted (e.g., Jan-Dec):

E.9. Months of Peak Season (e.g., Jan-Dec):

E.10. Number of Fumigations Per Week During Peak Season:

E.11. Aeration Duration (hours or days):

E.12. Treated Commodity Storage Area Description:

E.13. Treated Commodity Storage Area Dimensions:

E.14. Description of Work Activities in Storage Area (if any):

E.15. Identify permit condition(s) for which alternate conditions are being requested:

E.16. Describe suggested alternate conditions. If no specific alternate conditions can be suggested, identify which of the following general mitigation measures are possible:

- Containment (better containment of fumigant within the enclosure)
- Dilution (dilute the released fumigant with fresh air)
- Distance (increase the distance between the fumigant and people)
- Time (decrease the time people are exposed)

RECOMMENDED PERMIT CONDITIONS

**Methyl Bromide
Commodity Fumigation**

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RECOMMENDED PERMIT CONDITIONS**Methyl Bromide
Commodity Fumigation****GENERAL CONDITIONS**Methyl Bromide Limits
Special Site Requirements**1: Maximum
Application Rate**

A maximum application rate of 8 pounds per 1000 cubic feet or the rate specified by the label may be used, whichever is less.

**2: Total Methyl
Bromide**

The total amount of methyl bromide per work site must not exceed 1000 pounds in a 24-hour period.

**3: Other Types of
Applications**

No other types of methyl bromide applications (e.g., field, greenhouse, potting soil, structural) can occur at the work site for the preceding 48 hours or the following 24 hours of a commodity application. Other commodity fumigations can be conducted.

**4: Enclosed Area
and Common
Walls**

The following types of fumigations are prohibited unless mitigation options are identified in the Work Site Plan:

- those inside an enclosed area with people present
- enclosures which share a common wall with another enclosed area with people present

Examples: A tarpaulin fumigation inside a warehouse is prohibited. Using a chamber which shares a common wall with an office is prohibited.

**5: Outside
Introduction**

Application from outside the enclosure through a closed system is required. Releasing methyl bromide from inside the enclosure is prohibited unless mitigation options are identified in the Work Site Plan.

**6: Gas-tight
Fumigant Lines**

All fumigant lines must be gas-tight. Fumigant lines, valves, fittings, etc. which are routinely adjusted or changed must be checked for leaks after each adjustment.

Examples: When changing methyl bromide cylinders, the connection between the introduction line and the cylinder must be checked for leaks. The cylinder valve must be checked for leaks after opening.

**7: Test Equipment
Seals**

The enclosure must be sealed where instrument sampling lines pass through enclosure walls.

Example: Fumiscope leads must be placed and the hole at the chamber or enclosure wall sealed prior to the fumigation.

**8: Test Equipment
Exhaust**

Exhaust from sampling equipment must be vented away from people and to outside air or back into the enclosure.

**9: Fumigant Line
Purge**

When introducing methyl bromide from an enclosed control room, applicators must use nitrogen gas or compressed air to purge fumigant lines prior to changing cylinders.

**10: Control Room
Ventilation**

Enclosed control rooms must be mechanically ventilated during fumigation if workers are present.

**11: Control Room
Storage**

Methyl bromide cylinders must not be stored inside enclosed control rooms.

RECOMMENDED PERMIT CONDITIONS

Methyl Bromide
Commodity Fumigation

GENERAL CONDITIONS
Aeration Requirements

NOTE: The following conditions pertain to aeration of the fumigation enclosure, not aeration of areas where commodities are stored, except when they are the same.

12: Aeration Initiation

Persons who initiate aeration by manually breaking a seal must wear a self-contained breathing apparatus (SCBA). Exception: enclosures for which aeration is initiated remotely, such as chambers.

*Examples: breaking seals on tarpaulin fumigations,
opening sea/land container doors*

13: Aeration During Daylight

Aeration must be initiated during daylight hours. Exception: Enclosures which aerate using an exhaust stack meeting the standard height requirements may exhaust at any time.

14: Minimum Aeration Times

Enclosures must be aerated for the following minimum duration:

- Four hours if mechanically ventilated using fans, or
- 12 hours if passively ventilated

Note: The duration of the aeration period should not be confused with the time the aeration zone is in place. The aeration zone is in place for only the first portion of the aeration: four hours at most.

15: Testing Aeration Completeness

The concentration of methyl bromide in the air spaces between the stacked commodity must be less than 5 ppm before the commodity can be moved from the enclosure. Testing of this air space must be done according to approved procedures.

RECOMMENDED PERMIT CONDITIONS**Methyl Bromide
Commodity Fumigation****GENERAL CONDITIONS**Storage Requirements
Documentation Requirements**16: Enclosed
Storage Areas**

Methyl bromide concentrations in enclosed areas (e.g., buildings, warehouses, silos, etc.) where fumigated commodities are stored must be less than 5 ppm before persons may enter. Testing of the air concentration must be done according to approved procedures. No individual may be inside the enclosed area for more than one hour in a 24-hour period.

NIOSH-certified half- or full-facepiece air purifying respirator with cartridges (such as the 3M Model 60928 Organic Vapor/Acid Gas/P100 which is specifically recommended by the manufacturer for use against methyl bromide, subject to manufacturer's restrictions) will be allowed and will provide protection in atmospheres containing less than 5 parts per million of methyl bromide. These respirators can be used in place of the work hour restrictions.

Note: This condition pertains to areas where commodities are stored, not the fumigation enclosure, except when they are the same.

17: Work Site Plan

The enclosure operator and/or pest control business must complete or revise a Work Site Plan before receiving a permit. A completed Work Site Plan must be submitted to the CAC for evaluation before a Restricted Materials Permit will be issued.

**18: Test Results
Documentation**

The enclosure operator must keep records of all test results for two years and make them available to the CAC and workers (pursuant to Labor Code section 6408 and Cal-OSHA regulations Title 8, section 3204) upon request.

RECOMMENDED PERMIT CONDITIONS

Methyl Bromide
Commodity Fumigation

SPECIFIC CONDITIONS Overview
--

Fumigation Enclosure Types

There are specific conditions for each of six different types of fumigation enclosures. The enclosures are classified by the combination of two factors: the amount of methyl bromide the enclosure retains and the method used to aerate. There are two retention categories: pressure tested and retention tested/untested; and three aeration methods: standard height stack, minimum stack, and no stack. These two retention categories and three aeration categories give the six possible combinations of fumigation enclosures listed below:

A1 - Pressure Tested/Standard Height Stack (e.g., quarantine or vacuum chamber)

A2 - Pressure Tested/Minimum Stack (e.g., quarantine or vacuum chamber)

A3 - Pressure Tested/No Stack (e.g., quarantine chamber without a stack)

B1 - Retention Tested or Untested/Standard Height Stack (e.g., typical chamber)

B2 - Retention Tested or Untested/Minimum Stack (e.g., "Butler" with short stack)

B3 - Retention Tested or Untested/No Stack (e.g., tarp fumigation)

Buffer Zones

The amount of time a person spends in areas around commodity fumigations must be limited in order to minimize exposure. Exposure is limited by restricting a person's access to or time spent in areas near enclosures being fumigated or aerated. The size of the buffer zones depends on which of the six types of enclosures is being used. For certain types of enclosures, the amount of methyl bromide used and retained in the enclosure also influences the size of the buffer zone. There are two types of buffer zones: treatment zone and aeration zone. There can be different sizes of treatment zones because of differences in exposure duration. For example, nearby workers would have a smaller treatment zone if they worked for 12 hours, compared to nearby residents who would have a treatment zone based on a 24-hour exposure. A summary of the treatment zones and aeration zones for the various types of fumigations appears in Chart 1.

RECOMMENDED PERMIT CONDITIONS**Methyl Bromide
Commodity Fumigation****SPECIFIC CONDITIONS**A1-Pressure Tested/
Standard Height Stack**Enclosure
Description**

A pressure tested/standard height enclosure is a vacuum chamber or has passed the USDA pressure test. The exhaust stack is at least 10 feet above the enclosure's highest point, at least 10 feet above any major obstruction within 200 feet of the stack and at least as tall as the appropriate value listed in Table 1.

Examples: a quarantine chamber with a tall stack; a vacuum chamber with a tall stack.

19: Treatment Zone

A treatment zone of 10 feet must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

20: Aeration Zone

An aeration zone of 10 feet must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 5 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

**22: Aeration
During Daylight**

Does not apply. Aeration may occur at any time.

RECOMMENDED PERMIT CONDITIONS**Methyl Bromide
Commodity Fumigation****SPECIFIC CONDITIONS**A2-Pressure Tested/
Minimum Stack**Enclosure
Description**

A pressure tested/minimum stack enclosure is a vacuum chamber or has passed the USDA pressure test. The exhaust stack is at least 15 feet above ground and the exhaust exit velocity is at least 600 feet per minute.

Examples: a quarantine chamber with a short stack; a vacuum chamber with a short stack.

19: Treatment Zone

A treatment zone of 10 feet must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

20: Aeration Zone

An aeration zone as specified in Table 3, page C-71, must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 5 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

**22: Aeration
During Daylight**

Aeration must be initiated during daylight hours (see permit condition 13).

RECOMMENDED PERMIT CONDITIONS**Methyl Bromide
Commodity Fumigation****SPECIFIC CONDITIONS**A3-Pressure Tested/
No Stack**Enclosure
Description**

A pressure tested/no stack enclosure is a vacuum chamber or has passed the USDA pressure test, and either has no stack or the exhaust stack is less than 15 feet above ground or the exhaust exit velocity is less than 600 feet per minute.

Example: a quarantine chamber with no stack.

19: Treatment Zone

A treatment zone of 10 feet must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

20: Aeration Zone

An aeration zone as specified in Table 4, page C-72, must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 5 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

Does not apply.

**22: Aeration
During Daylight**

Aeration must be initiated during daylight hours (see permit condition 13).

RECOMMENDED PERMIT CONDITIONS

**Methyl Bromide
Commodity Fumigation**

SPECIFIC CONDITIONS

B1-Retention Tested or Untested/
Standard Height Stack

**Enclosure
Description**

A retention tested or untested/standard height stack enclosure may retain a large or small proportion of the methyl bromide and the exhaust stack is at least 10 feet above the enclosure's highest point, at least 10 feet above any building within 200 feet of the stack and at least as tall as the appropriate value listed in Table 1.

Note: The size of the treatment zone may be minimized by measuring how well the enclosure retains methyl bromide and determining its loss ratio. This is done by performing a DPR-approved test procedure.

Examples: a typical chamber with a tall stack; a "Butler" tank with a tall stack; a building with a tall stack.

19: Treatment Zone

A treatment zone as specified in Table 2, page C-60, must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

Different size zones may be calculated based on the duration of exposure and/or duration of the treatment period. For example, a treatment zone may be calculated for nearby workers based on a 12-hour work shift and a separate treatment zone may be calculated for nearby residents based on 24-hour occupancy.

20: Aeration Zone

An aeration zone of 10 feet must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 5 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

**22: Aeration
During Daylight**

Does not apply. Aeration may occur at any time.

RECOMMENDED PERMIT CONDITIONS**Methyl Bromide
Commodity Fumigation****SPECIFIC CONDITIONS**B2-Retention Tested or Untested/
Minimum Stack**Enclosure
Description**

A retention tested or untested/minimum stack enclosure may retain a large or small proportion of the methyl bromide. The exhaust stack is at least 15 feet above ground and the exhaust exit velocity is at least 600 feet per minute.

Note: The size of the treatment zone may be minimized by measuring how well the enclosure retains methyl bromide and determining its loss ratio. This is done by performing a DPR-approved test procedure.

Examples: a chamber with a short stack; a building exhausted through the roof.

19: Treatment Zone

A treatment zone as specified in Table 2, page C-70, must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

Different size zones may be calculated based on the duration of exposure and/or duration of the treatment period. For example, a treatment zone may be calculated for nearby workers based on a 12- hour work shift and a separate treatment zone may be calculated for nearby residents based on 24-hour occupancy.

20: Aeration Zone

An aeration zone as specified in Table 3, page C-71, must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 5 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

**22: Aeration
During Daylight**

Aeration must be initiated during daylight hours (see permit condition 13).

RECOMMENDED PERMIT CONDITIONS

Methyl Bromide
Commodity Fumigation

SPECIFIC CONDITIONS

B3-Retention Tested or Untested/
No Stack

**Enclosure
Description**

A retention tested or untested/no stack enclosure may retain a large or small proportion of the methyl bromide and either has no stack or the exhaust stack is less than 15 feet above ground or the exhaust exit velocity is less than 600 feet per minute.

Note: The size of the buffer zones may be minimized by measuring how well the enclosure retains methyl bromide and determining its loss ratio. This is done by performing a DPR-approved test procedure.

Examples: a typical sea/land container; a building exhausted through open doors and windows; a typical tarpaulin fumigation.

19: Treatment Zone

A treatment zone as specified in Table 2, page C-70, must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

Different size zones may be calculated based on the duration of exposure and/or duration of the treatment period. For example, a treatment zone may be calculated for nearby workers based on a 12-hour work shift, and a separate treatment zone may be calculated for nearby residents based on 24-hour occupancy.

20: Aeration Zone

An aeration zone as specified in Table 4, page C-72, must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 5 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

Does not apply.

**22: Aeration
During Daylight**

Aeration must be initiated during daylight hours (see permit condition 13).

RECOMMENDED PERMIT CONDITIONS

Methyl Bromide Commodity Fumigation

CHART 1 Summary of Buffer Zone Sizes
--

Retention Category	Aeration Method	Class	Treatment Zone Size	Aeration Zone Size	Aerate Daylight Hours Only
	Standard Height Stack <i>(Table 1 requirements)*</i>	A1	10 feet	10 feet	NO
Pressure Tested <i>(USDA pressure test)</i>	Minimum Stack <i>(stack 15 ft above ground & exit velocity >600 ft/min)</i>	A2	10 feet	Table 3	YES
	No Stack	A3	10 feet	Table 4	YES
	Standard Height Stack <i>(Table 1 requirements)*</i>	B1	Table 2	10 feet	NO
Retention Tested or Untested <i>(DPR-approved test or no test)</i>	Minimum Stack <i>(stack 15 ft above ground & exit velocity >600 ft/min)</i>	B2	Table 2	Table 3	YES
	No Stack	B3	Table 2	Table 4	YES

* The stack must be at least 10 feet above the enclosure's highest point and at least 10 feet above any major obstruction within 200 feet of the stack and at least as tall as the appropriate value listed in Table 1.

RECOMMENDED PERMIT CONDITIONS

Methyl Bromide Commodity Fumigation

TABLE 1

Standard Height Exhaust Stack

This table is used to determine the "standard height" (feet) of a stack. A "standard height" exhaust stack is one which is:

1. at least 10 feet above the enclosure's highest point, and
2. at least 10 feet above any major obstruction within 200 feet of the stack, and
3. at least as tall (above ground level) as the appropriate value in the table below

Total Amount of Methyl Bromide Applied (pounds) at the Work Site in a 24-hour Period **ROUND UP**

	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
600	21	23	26	28	30	32	34	37	39	41	43	45	48	50	52	54	57	59	61	63
700	19	21	23	25	28	30	32	34	36	39	41	43	45	47	50	52	54	56	58	61
800	16	18	21	23	25	27	30	32	34	36	38	41	43	45	47	49	52	54	56	58
900	15	16	18	20	23	25	27	29	31	34	36	38	40	43	45	47	49	51	54	56
1000	15	15	16	18	20	22	25	27	29	31	33	36	38	40	42	45	47	49	51	53
Exit Velocity (feet per minute)*																				
1100	15	15	15	16	18	20	22	24	27	29	31	33	35	38	40	42	44	46	49	51
1200	15	15	15	15	15	18	20	22	24	26	29	31	33	35	37	40	42	44	46	48
1300	15	15	15	15	15	15	17	19	22	24	26	28	31	33	35	37	39	42	44	46
1400	15	15	15	15	15	15	15	17	19	21	24	26	28	30	32	35	37	39	41	44
1500	15	15	15	15	15	15	15	15	17	19	21	23	26	28	30	32	34	37	39	41
ROUND DOWN																				
1600	15	15	15	15	15	15	15	15	15	17	19	21	23	25	28	30	32	34	36	39
1700	15	15	15	15	15	15	15	15	15	15	16	19	21	23	25	27	30	32	34	36
1800	15	15	15	15	15	15	15	15	15	15	15	16	18	20	23	25	27	29	32	34
1900	15	15	15	15	15	15	15	15	15	15	15	15	16	18	20	22	25	27	29	31
2000	15	15	15	15	15	15	15	15	15	15	15	15	15	16	18	20	22	24	27	29
2100	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	18	20	22	24	26
2200	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17	20	22	24
2300	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17	19	21
2400	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17	19
2500	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17

Rated Fan Capacity (cubic feet per minute)

*Exit Velocity =

Stack Cross-Sectional Area (square feet)

area of circle = 3.14 × radius²

RECOMMENDED PERMIT CONDITIONS
Methyl Bromide
Commodity Fumigation

TABLE 2
Treatment Zone Sizes for
Retention Tested and Untested Enclosures

This table is used to determine the treatment zone size (feet) surrounding enclosures which are retention tested or untested. Consult with the County Agricultural Commissioner to determine the sizes for multiple fumigations in a 24-hour period.

		Concentration Lost (pounds per 1000 cubic feet)* ROUND UP														
		0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
	1000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	2000	30	30	30	30	30	30	30	30	30	35	40	45	50	55	60
	3000	30	30	30	30	30	30	35	40	50	55	60	65	70	75	80
	4000	30	30	30	30	30	40	50	55	65	70	80	85	90	95	100
	6000	30	30	30	35	50	60	70	80	90	95	105	110	120	125	130
	8000	30	30	30	50	65	80	90	100	110	120	125	135	140	150	155
	10000	30	30	45	65	85	100	115	125	135	145	160	165	175	185	195
	15000	30	30	60	80	100	120	130	145	160	170	180	190	200	210	220
	20000	30	40	70	95	115	135	150	170	180	195	205	220	230	240	250
	25000	30	45	80	105	130	150	170	185	200	215	230	240	255	265	275
	30000	30	55	90	120	145	165	185	205	220	235	250	265	280	290	305
	35000	30	60	100	130	160	180	200	225	240	255	275	290	300	315	330
Volume Fumigated in a 24-hour Period (cubic feet)	40000	30	65	110	145	175	200	220	240	260	280	295	310	325	340	355
	45000	30	75	120	155	185	210	235	260	280	295	315	335	350	365	380
	50000	35	80	130	165	200	230	250	275	300	320	340	355	370	390	405
	60000	40	95	145	185	225	255	285	310	335	355	380	400	420	440	455
	70000	45	105	165	210	250	285	315	345	370	395	420	440	460	485	505
ROUND UP	80000	50	115	180	225	270	305	340	375	400	425	455	480	500	525	545
	90000	55	125	190	240	290	330	365	400	430	455	485	510	535	560	585
	100000	60	135	205	260	310	355	390	430	460	490	525	550	575	605	625
	110000	65	145	220	280	335	380	420	460	490	525	560	585	615	645	670
	120000	70	155	235	295	350	400	440	485	520	555	590	620	650	680	705
130000	75	165	245	310	370	420	465	510	545	580	620	650	680	715	740	
140000	80	175	260	325	390	440	485	535	570	610	650	680	715	745	775	
150000	85	180	270	340	405	460	505	555	595	635	675	710	745	780	810	
170000	90	195	295	370	435	495	545	600	640	685	730	765	800	840	870	
190000	95	210	315	390	465	530	580	640	685	730	775	815	850	895	930	
210000	100	225	330	415	490	560	615	675	725	770	820	860	900	945	980	
230000	105	235	350	435	515	585	645	710	760	810	860	905	945	990	1030	
250000	110	250	365	455	540	615	675	740	795	845	900	945	990	1035	1075	

* The Concentration Lost is calculated from the application rate, exposure duration and loss ratio (proportion of methyl bromide leaked from the enclosure), according to the formula below. The exposure duration for workers is 12 hours or the treatment duration, whichever is less. The exposure duration for residents is the duration of treatment (24 hours maximum). The loss ratio is determined from a DPR-approved test; for untested enclosures use **0.030**.

$$\text{Concentration Lost} = [\text{Application Rate (pounds per 1000 cubic feet)}] \times [\text{Exposure Duration (hours)}] \times [\text{Loss Ratio}]$$

RECOMMENDED PERMIT CONDITIONS

Methyl Bromide Commodity Fumigation

TABLE 3 Aeration Zone Sizes for Minimum Stacks
--

This table is used to determine the aeration zone size (feet) required **during the aeration** of enclosures with exhaust stacks having the following characteristics:

1. The top of the exhaust stack is at least 15 feet above ground level, and
2. The exit velocity is at least 600 feet per minute

$$\text{Exit Velocity} = \frac{\text{Rated Fan Capacity (cubic feet per minute)}}{\text{Stack Cross-Sectional Area (square feet)}}$$

Total Retained in a 24-hour Period (pounds)*	Aeration Zone (feet)
50	10
51	220
ROUND UP 100	220
150	360
200	490
250	610
300	720
350	820
400	920
450	1000
500	1090
550	1170
600	1250
650	1320
700	1390
750	1460
800	1530
850	1600
900	1670
950	1730
1000	1790

* The Total Retained is calculated from the amount of methyl bromide, treatment duration and loss ratio (proportion of methyl bromide leaked from the enclosure), according to the formulas below. The loss ratio is determined from a DPR-approved test.

$$\text{Proportion Retained}^{**} = 1 - [\text{Treatment Duration (hours)} \times \text{Loss Ratio}]$$

For untested enclosures, use **0.90 for the Proportion Retained

$$\text{Total Retained} = [\text{Amount of Methyl Bromide Applied in a 24-hour Period (pounds)}] \times [\text{Proportion Retained}]$$

RECOMMENDED PERMIT CONDITIONS

Methyl Bromide Commodity Fumigation

TABLE 4
Aeration Zone Sites for No Stacks

This table is used to determine the aeration zone size (feet) of enclosures that have no stack. Consult with the county agricultural commissioner to determine the aeration zone size when aerating multiple enclosures in a 24-hour period.

		Concentration Retained (pounds per 1000 cubic feet)* ROUND UP														
		0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0
	1000	30	30	30	30	30	30	40	50	60	70	75	85	90	95	105
	2000	30	30	30	40	60	75	90	100	115	125	135	145	155	160	170
	3000	30	30	45	70	90	110	125	140	155	165	180	190	200	210	220
	4000	30	30	65	95	115	135	155	170	185	200	215	225	240	250	260
	6000	30	55	100	130	160	180	205	225	240	260	275	290	305	320	335
	8000	35	80	125	165	195	220	245	265	290	305	325	345	360	375	390
	10000	50	105	155	195	225	255	285	310	330	350	375	390	410	430	445
	15000	65	140	200	250	290	330	360	395	420	450	475	500	525	545	565
	20000	80	175	240	300	345	390	425	460	495	525	560	585	615	640	665
	25000	95	200	275	340	390	440	480	520	560	595	630	660	695	725	750
	30000	110	225	305	375	430	485	530	575	615	655	695	730	765	795	830
	35000	125	245	335	410	470	525	575	625	670	710	750	790	830	865	900
Volume Aerated in a 24-hour Period (cubic feet)	40000	135	265	360	440	505	565	620	670	720	765	810	850	890	930	965
	45000	145	285	385	470	540	600	660	715	765	815	860	905	945	990	1030
	50000	160	305	410	495	570	635	700	755	810	860	910	955	1000	1045	1090
	60000	180	340	455	550	630	705	770	835	895	950	1005	1060	1110	1155	1205
ROUND UP	70000	200	370	495	600	685	765	840	910	975	1035	1095	1150	1205	1260	1315
	80000	220	400	535	645	740	830	905	980	1050	1120	1180	1245	1305	1360	1420
	90000	235	430	575	690	795	885	970	1050	1125	1195	1265	1330	1395	1460	1520
	100000	255	460	615	735	845	945	1035	1120	1200	1275	1350	1420	1485	1555	1620
	110000	270	490	650	780	895	1000	1095	1185	1270	1350	1425	1500	1575	1645	1710
	120000	285	515	685	820	945	1050	1155	1245	1335	1420	1505	1580	1660	1730	1805
	130000	300	545	720	865	990	1105	1210	1310	1400	1490	1575	1660	1740	1820	1895
	140000	315	570	750	905	1035	1155	1265	1370	1465	1560	1650	1735	1820	1900	1980
	150000	330	595	785	945	1080	1205	1320	1425	1530	1625	1720	1810	1895	1980	2065
	170000	360	640	845	1015	1160	1295	1420	1535	1640	1745	1845	1940	2035	2125	2215
	190000	385	685	905	1080	1240	1380	1510	1630	1745	1855	1960	2065	2165	2260	2355
	210000	410	725	955	1140	1305	1450	1590	1715	1835	1950	2060	2165	2270	2370	2470
	230000	430	760	995	1190	1360	1515	1655	1785	1910	2030	2140	2250	2355	2460	2560
	250000	450	785	1030	1230	1405	1560	1705	1840	1965	2085	2200	2315	2420	2525	2625

* The Concentration Retained is calculated from the rate, treatment duration and loss ratio (proportion of methyl bromide leaked from the enclosure), according to the formulas below. The loss ratio is determined from a DPR-approved test.

$$\text{Proportion Retained}^{**} = 1 - [\text{Treatment Duration (hours)} \times \text{Loss Ratio}]$$

For untested enclosures, use **0.90 for the Proportion Retained

$$\text{Concentration Retained} = [\text{Application Rate (pounds per 1000 cubic feet)}] \times [\text{Proportion Retained}]$$

FINAL PERMIT CONDITIONS

**Methyl Bromide
Commodity Fumigation**

GENERAL INFORMATION

Fumigation Site: _____ **Permit Number:** _____

Address: _____ **City:** _____ **Zip:** _____

Contact Person: _____ **Phone:** _____
(Facility Operator, Grower, QAC, QAL, etc.)

Pest Control Business: _____ **Permit Number:** _____

Address: _____ **City:** _____ **Zip:** _____

Contact Person: _____ **Phone:** _____
(QAL with the appropriate category)

I VERIFY THAT THE ATTACHED PERMIT CONDITIONS WILL BE FOLLOWED

Permit Applicant: _____ **Date:** _____
(Facility Operator)

FINAL PERMIT CONDITIONS

Methyl Bromide
Commodity Fumigation

GENERAL CONDITIONS

Methyl Bromide Limits
Special Site Requirements

1: Maximum Application Rate

Work Site Plan B.1

A maximum application rate of 8 pounds per 1000 cubic feet or the rate specified by the label may be used, whichever is less.

Complies

Does Not Apply

Alternative: _____

See page C-61 for possible additional restrictions to comply with the buffer zones.

2: Total Methyl Bromide

Work Site Plan B.2

The total amount of methyl bromide per work site must not exceed 1000 pounds in a 24-hour period.

Complies

Does Not Apply

Alternative: _____

See page C-61 for possible additional restrictions to comply with the buffer zones.

3: Other Types of Applications

Work Site Plan B.3

No other types of methyl bromide applications (e.g., field, greenhouse, potting soil, structural) can occur at the work site for the preceding 48 hours or the following 24 hours of a commodity application.

Complies

Does Not Apply

Alternative: _____

4: Enclosed Area and Common Walls

Work Site Plan B.4 & 5

The following types of fumigations are prohibited:

- those inside an enclosed area with people present
- enclosures which share a common wall with another enclosed area with people present

Complies

Does Not Apply

Alternative: _____

FINAL PERMIT CONDITIONS

**Methyl Bromide
Commodity Fumigation**

GENERAL CONDITIONS

**Fumigation Equipment and
Introduction**

**5: Outside
Introduction**

Application from outside the enclosure through a closed system is required. Releasing methyl bromide from inside the enclosure is prohibited.

Work Site Plan B.6

- Complies
- Does Not Apply
- Alternative: _____

**6: Gas-tight
Fumigant Lines**

All fumigant lines must be gas-tight. Fumigant lines, valves, fittings, etc. which are routinely adjusted or changed must be checked for leaks after each adjustment.

Work Site Plan B.7

- Complies
- Does Not Apply
- Alternative: _____

**7: Test Equipment
Seals**

The enclosure must be sealed where instrument sampling lines pass through enclosure walls.

Work Site Plan B.8

- Complies
- Does Not Apply
- Alternative: _____

**8: Test Equipment
Exhaust**

Exhaust from sampling equipment must be vented away from people and to outside air or back into the enclosure.

Work Site Plan B.9

- Complies
- Does Not Apply
- Alternative: _____

FINAL PERMIT CONDITIONS

**Methyl Bromide
Commodity Fumigation**

GENERAL CONDITIONS

Fumigation Equipment and
Introduction

**9: Fumigant Line
Purge**

When introducing methyl bromide from an enclosed control room, applicators must use nitrogen gas or compressed air to purge fumigant lines prior to changing cylinders.

Work Site Plan B.10

- Complies
- Does Not Apply
- Alternative: _____

**10: Control Room
Ventilation**

Enclosed control rooms must be mechanically ventilated during fumigation if workers are present.

Work Site Plan B.11

- Complies
- Does Not Apply
- Alternative: _____

**11: Control Room
Storage**

Methyl bromide cylinders must not be stored inside enclosed control rooms.

Work Site Plan B.12

- Complies
- Does Not Apply
- Alternative: _____

FINAL PERMIT CONDITIONS

**Methyl Bromide
Commodity Fumigation**

GENERAL CONDITIONS

Aeration Requirements

**12: Aeration
Initiation**

Work Site Plan B.13

Persons who initiate aeration by manually breaking a seal must wear a self-contained breathing apparatus (SCBA). Exception: enclosures for which aeration is initiated remotely, such as chambers.

- Complies
- Does Not Apply
- Alternative: _____

**13: Aeration
During Daylight**

Work Site Plan D.3

Aeration must be initiated during daylight hours. Exception: Enclosures which aerate using an exhaust stack meeting the standard height requirements may exhaust at any time.

- Complies
- Does Not Apply
- Alternative: _____

**14: Minimum
Aeration Times**

Work Site Plan
B.14 & B.15

Enclosures must be aerated for the following minimum duration:
a. 4 hours if mechanically ventilated using fans, or
b. 12 hours if passively ventilated

- Complies
- Does Not Apply
- Alternative: _____

**15: Testing
Aeration
Completeness**

Work Site Plan B.16

The concentration of methyl bromide in the air spaces between the stacked commodity must be less than 5 ppm before the commodity can be moved from the enclosure. Testing of this air space must be done according to approved procedures.

- Complies
- Does Not Apply
- Alternative: _____

FINAL PERMIT CONDITIONS

**Methyl Bromide
Commodity Fumigation**

GENERAL CONDITIONS

Storage Requirements
Documentation Requirements

**16: Enclosed
Storage Areas**

Work Site Plan
B.17 & B.18

Methyl bromide concentrations in enclosed areas (i.e., buildings, warehouses, silos, etc.) where fumigated commodities are stored must be less than 5 ppm before persons may enter. Testing of the air concentration must be done according to approved procedures. No individual may be inside the enclosed area for more than one hour in a 24-hour period.

- Complies
- Does Not Apply
- Alternative: _____

17: Work Site Plan

The enclosure operator and/or pest control business must complete or revise a Work Site Plan before receiving a permit.

- Complies
- Does Not Apply
- Alternative: _____

**18: Test Results
Documentation**

Work Site Plan B.19

The enclosure operator must keep records of all test results for 2 years and make them available to the County Agricultural Commissioner and workers upon request.

- Complies
- Does Not Apply
- Alternative: _____

FINAL PERMIT CONDITIONS

Methyl Bromide
Commodity Fumigation

SPECIFIC CONDITIONS

This part needs to be completed for each enclosure.

Enclosure Identification/Description: _____

(check one)

- Work Site Plan C.1 - 11
- A1 - Pressure Tested/Standard Height Stack
 - A2 - Pressure Tested/Minimum Stack
 - A3 - Pressure Tested/No Stack
 - B1 - Retention Tested or Untested/Standard Height Stack
 - B2 - Retention Tested or Untested/Minimum Stack
 - B3 - Retention Tested or Untested/No Stack

Ancillary Buffer Zone Requirements:

Maximum
Application Rate: _____

Maximum
Fumigated Volume: _____

Treatment
Duration: _____

Other Enclosures
Which May Be
Used Within 24 hrs: _____

19: Treatment Zone

Work Site Plan C.12 - 20

A treatment zone of _____ feet must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. A separate treatment zone of _____ feet for workers may be used.

20: Aeration Zone

Work Site Plan C.12 - 20

An aeration zone of _____ feet must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 5 ppm.

21: Vertical Stack Exhaust

Work Site Plan D.1, D.2

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

- Complies
- Does Not Apply
- Alternative: _____

RECOMMENDED PERMIT CONDITIONS

**Sulfuryl Fluoride
Commodity Fumigation**

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RECOMMENDED PERMIT CONDITIONS

Sulfuryl Fluoride

Commodity Fumigation

**PERMIT CONDITIONS
DECISION TABLE**

**SULFURYL FLUORIDE PERMIT CONDITIONS --
DECISION TABLE**

If the fumigation type is:	And the total amount used will be:	Your permit conditions start on:
Non-Residential Processing & Storage Facilities	< 4500 lbs	Page C-82
Non-Residential Processing & Storage Facilities	> 4500 lbs	The CAC will refer your information to DPR. DPR will prepare a custom site plan for your fumigation.
Commodity	Any amount	Page C-30

RECOMMENDED PERMIT CONDITIONS

Sulfuryl Fluoride

NON-RESIDENTIAL
FUMIGATIONS <4500 LBS

Fumigation

Sulfuryl Fluoride Permit Conditions for Non-Residential (Enclosed Areas), Less than or equal to 4500 lbs

- 1) **General Requirement for Use of ProFume®:** Restricted material permits for the use of ProFume® shall not be issued to a facility operator and/or pest control operator who has not received a Dow AgroSciences certification showing they have attended a ProFume® stewardship training meeting.
- 2) **Restricted Material Permit Conditions for Sulfuryl Fluoride Use in Nonresidential Facilities (Enclosed areas)**
 - a) For fumigations where **less than or equal to 4500 lbs** of sulfuryl fluoride will be applied within a 24 hour period, the following permit conditions apply:
 - i) **Buffer zone requirements:**
 - (1) **Duration:** A buffer zone must be maintained during fumigation and through the completion of aeration.
 - (2) **Distance:** Use Table 1 to determine buffer zone distance based on the target fumigation concentration that will be maintained (oz SF/1000 ft³).
 - (3) **Occupation:** The buffer zone extends from the edge of the fumigated building. There may not be any occupied structures within the buffer zone. Only persons supervising and performing fumigation activities are permitted in the buffer zone. Exception: Transit along public thoroughfares is allowed.
 - ii) **Aeration Requirements:**
 - (1) Minimum fumigant release height above ground level: 50 feet.
 - (2) Aeration must be initiated during daylight hours:
 - (a) Not later than one hour prior to sunset, and
 - (b) Not earlier than one hour following sunrise.

Table 1 – Use table to determine the buffer zone distance from edge of the fumigation facility to the nearest occupied structure.

<i>Targeted Fumigation Conc. (oz/1000ft³)</i>	<i>Buffer Zone Distance (ft)</i>
16	30
32	60
48	100
64	140
80	180
96	220
112	260
128	300

RECOMMENDED PERMIT CONDITIONS**Sulfuryl Fluoride
Commodity Fumigation****GENERAL CONDITIONS**Sulfuryl Fluoride Limits
Special Site Requirements**1: Maximum
Application Rate**

A maximum application rate of 8 pounds per 1000 cubic feet or the rate specified by the label may be used, whichever is less.

**2: Total Sulfuryl
Fluoride**

The total amount of sulfuryl fluoride per work site must not exceed 1000 pounds in a 24-hour period.

**3: Other Types of
Applications**

This permit condition does not apply to sulfuryl fluoride applications.

**4: Enclosed Area
and Common
Walls**

The following types of fumigations are prohibited unless mitigation options are identified in the Work Site Plan:

- those inside an enclosed area with people present
- enclosures which share a common wall with another enclosed area with people present

Examples: A tarpaulin fumigation inside a warehouse is prohibited. Using a chamber which shares a common wall with an office is prohibited.

RECOMMENDED PERMIT CONDITIONS**Sulfuryl Fluoride
Commodity Fumigation****GENERAL CONDITIONS****Fumigation Equipment and
Introduction****5: Outside
Introduction**

Application from outside the enclosure through a closed system is required. Releasing fumigant from inside the enclosure is prohibited unless mitigation options are identified in the Work Site Plan.

**6: Gas-tight
Fumigant Lines**

All fumigant lines must be gas-tight. Fumigant lines, valves, fittings, etc. which are routinely adjusted or changed must be checked for leaks after each adjustment.

Examples: When changing sulfuryl fluoride cylinders, the connection between the introduction line and the cylinder must be checked for leaks. The cylinder valve must be checked for leaks after opening.

**7: Test Equipment
Seals**

The enclosure must be sealed where instrument sampling lines pass through enclosure walls.

Example: Fumiscope leads must be placed and the hole at the chamber or enclosure wall sealed prior to the fumigation.

**8: Test Equipment
Exhaust**

Exhaust from sampling equipment must be vented away from people and to outside air or back into the enclosure.

**9: Fumigant Line
Purge**

When introducing fumigant from an enclosed control room, applicators must use nitrogen gas or compressed air to purge fumigant lines prior to changing cylinders.

**10: Control Room
Ventilation**

Enclosed control rooms must be mechanically ventilated during fumigation if workers are present.

**11: Control Room
Storage**

Sulfuryl fluoride cylinders must not be stored inside enclosed control rooms.

RECOMMENDED PERMIT CONDITIONS

Sulfuryl Fluoride
Commodity Fumigation

GENERAL CONDITIONS
Aeration Requirements

NOTE: The following conditions pertain to aeration of the fumigation enclosure, not aeration of areas where commodities are stored, except when they are the same.

12: Aeration Initiation

Persons who initiate aeration by manually breaking a seal must wear a self-contained breathing apparatus (SCBA). Exception: enclosures for which aeration is initiated remotely, such as chambers.

Examples requiring SCBA: breaking seals on tarpaulin fumigations, opening sea/land container doors

13: Aeration During Daylight

Aeration must be initiated during daylight hours¹. Exception: Enclosures which aerate using an exhaust stack meeting the standard height requirements may exhaust at any time.

14: Minimum Aeration Times

Enclosures must be aerated for the following minimum duration:

- Four hours if mechanically ventilated using fans, or
- 12 hours if passively ventilated

Note: The duration of the aeration period should not be confused with the time the aeration zone is in place. The aeration zone is in place for only the first portion of the aeration: four hours at most.

15: Testing Aeration Completeness

The concentration of sulfuryl fluoride in the air spaces between the stacked commodity must be less than 1 ppm before the commodity can be moved from the enclosure. Testing of this air space must be done according to approved procedures.

¹ Daylight hours = Not later than one hour prior to sunset and not earlier than one hour following sunrise.

RECOMMENDED PERMIT CONDITIONS**Sulfuryl Fluoride
Commodity Fumigation****GENERAL CONDITIONS**Storage Requirements
Documentation Requirements**16: Enclosed
Storage Areas**

Sulfuryl fluoride concentrations in enclosed areas (i.e., buildings, warehouses, silos, etc.) where fumigated commodities are stored must be less than 1 ppm before persons may enter. Testing of the air concentration must be done according to approved procedures. No individual may be inside the enclosed area for more than one hour in a 24-hour period.

Note: This condition pertains to areas where commodities are stored, not the fumigation enclosure, except when they are the same.

17: Work Site Plan

The enclosure operator and/or pest control business must complete or revise a Work Site Plan before receiving a permit. A completed Work Site Plan must be submitted to the CAC for evaluation before a Restricted Materials Permit will be issued.

**18: Test Results
Documentation**

The enclosure operator must keep records of all test results for two years and make them available to the CAC and workers (pursuant to Labor Code section 6408 and Cal-OSHA regulations Title 8, section 3204) upon request.

RECOMMENDED PERMIT CONDITIONS

Sulfuryl Fluoride
Commodity Fumigation

SPECIFIC CONDITIONS
Overview

Fumigation Enclosure Types

There are specific conditions for each of six different types of fumigation enclosures. The enclosures are classified by the combination of two factors: the amount of fumigant the enclosure retains and the method used to aerate. There are two retention categories: pressure tested and retention tested/untested; and three aeration methods: standard height stack, minimum stack, and no stack. These two retention categories and three aeration categories give the six possible combinations of fumigation enclosures listed below:

A1 - Pressure Tested/Standard Height Stack (e.g., quarantine or vacuum chamber)

A2 - Pressure Tested/Minimum Stack (e.g., quarantine or vacuum chamber)

A3 - Pressure Tested/No Stack (e.g., quarantine chamber without a stack)

B1 - Retention Tested or Untested/Standard Height Stack (e.g., typical chamber)

B2 - Retention Tested or Untested/Minimum Stack (e.g., "Butler" with short stack)

B3 - Retention Tested or Untested/No Stack (e.g., tarp fumigation)

Buffer Zones

The amount of time a person spends in areas around commodity fumigations must be limited in order to minimize exposure. Exposure is limited by restricting a person's access to or time spent in areas near enclosures being fumigated or aerated. The size of the buffer zones depends on which of the six types of enclosures is being used. For certain types of enclosures, the amount of sulfuryl fluoride used and retained in the enclosure also influences the size of the buffer zone. There are two types of buffer zones: treatment zone and aeration zone. There can be different sizes of treatment zones because of differences in exposure duration. For example, nearby workers would have a smaller treatment zone if they worked for 12 hours, compared to nearby residents who would have a treatment zone based on a 24-hour exposure. A summary of the treatment zones and aeration zones for the various types of fumigations appears in Chart 1.

RECOMMENDED PERMIT CONDITIONS**Sulfuryl Fluoride
Commodity Fumigation****SPECIFIC CONDITIONS**A1-Pressure Tested/
Standard Height Stack**Enclosure
Description**

A pressure tested/standard height enclosure is a vacuum chamber or has passed the USDA pressure test. The exhaust stack is at least 10 feet above the enclosure's highest point, at least 10 feet above any major obstruction within 200 feet of the stack and at least as tall as the appropriate value listed in Table 1.

Examples: a quarantine chamber with a tall stack; a vacuum chamber with a tall stack.

19: Treatment Zone

A treatment zone of 10 feet must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

20: Aeration Zone

An aeration zone of 10 feet must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 1 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

**22: Aeration
During Daylight**

Does not apply. Aeration may occur at any time.

RECOMMENDED PERMIT CONDITIONS**Sulfuryl Fluoride
Commodity Fumigation****SPECIFIC CONDITIONS**A2-Pressure Tested/
Minimum Stack**Enclosure
Description**

A pressure tested/minimum stack enclosure is a vacuum chamber or has passed the USDA pressure test. The exhaust stack is at least 15 feet above ground and the exhaust exit velocity is at least 600 feet per minute.

Examples: a quarantine chamber with a short stack; a vacuum chamber with a short stack.

19: Treatment Zone

A treatment zone of 10 feet must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

20: Aeration Zone

An aeration zone as specified in Table 3, page C-97, must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration of sulfuryl fluoride is less than 1 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

**22: Aeration
During Daylight**

Aeration must be initiated during daylight hours (see permit condition 13).

RECOMMENDED PERMIT CONDITIONS**Sulfuryl Fluoride
Commodity Fumigation****SPECIFIC CONDITIONS**A3-Pressure Tested/
No Stack**Enclosure
Description**

A pressure tested/no stack enclosure is a vacuum chamber or has passed the USDA pressure test, and either has no stack or the exhaust stack is less than 15 feet above ground or the exhaust exit velocity is less than 600 feet per minute.

Example: a quarantine chamber with no stack.

19: Treatment Zone

A treatment zone of 10 feet must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

20: Aeration Zone

An aeration zone as specified in Table 4, page C-98, must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration of sulfuryl fluoride is less than 1 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

Does not apply.

**22: Aeration
During Daylight**

Aeration must be initiated during daylight hours (see permit condition 13).

RECOMMENDED PERMIT CONDITIONSSulfuryl Fluoride
Commodity Fumigation**SPECIFIC CONDITIONS**B1-Retention Tested or Untested/
Standard Height Stack**Enclosure
Description**

A retention tested or untested/standard height stack enclosure may retain a large or small proportion of the Sulfuryl Fluoride and the exhaust stack is at least 10 feet above the enclosure's highest point, at least 10 feet above any building within 200 feet of the stack and at least as tall as the appropriate value listed in Table 1.

Note: The size of the treatment zone may be minimized by measuring how well the enclosure fumigant and determining its loss ratio. This is done by performing a DPR-approved test procedure.

Examples: a typical chamber with a tall stack, a "Butler" tank with a tall stack, a building with a tall stack.

19: Treatment Zone

A treatment zone as specified in Table 2, page C-96, must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

Different size zones may be calculated based on the duration of exposure and/or duration of the treatment period. For example, a treatment zone may be calculated for nearby workers based on a 12-hour work shift, and a separate treatment zone may be calculated for nearby residents based on 24-hour occupancy.

20: Aeration Zone

An aeration zone of 10 feet must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 1 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

**22: Aeration
During Daylight**

Does not apply. Aeration may occur at any time.

RECOMMENDED PERMIT CONDITIONS**Sulfuryl Fluoride
Commodity Fumigation****SPECIFIC CONDITIONS**B2-Retention Tested or Untested/
Minimum Stack**Enclosure
Description**

A retention tested or untested/minimum stack enclosure may retain a large or small proportion of the fumigant. The exhaust stack is at least 15 feet above ground and the exhaust exit velocity is at least 600 feet per minute.

Note: The size of the treatment zone may be minimized by measuring how well the enclosure retains fumigant and determining its loss ratio. This is done by performing a DPR-approved test procedure.

Examples: a chamber with a short stack, a building exhausted through the roof.

19: Treatment Zone

A treatment zone as specified in Table 2, page C-96, must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

Different size zones may be calculated based on the duration of exposure and/or duration of the treatment period. For example, a treatment zone may be calculated for nearby workers based on a 12-hour work shift, and a separate treatment zone may be calculated for nearby residents based on 24-hour occupancy.

20: Aeration Zone

An aeration zone as specified in Table 3, page C-97, must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration of sulfuryl fluoride is less than 1 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

**22: Aeration
During Daylight**

Aeration must be initiated during daylight hours (see permit condition 13).

RECOMMENDED PERMIT CONDITIONSSulfuryl Fluoride
Commodity Fumigation**SPECIFIC CONDITIONS**B3-Retention Tested or Untested/
No Stack**Enclosure
Description**

A retention tested or untested/no stack enclosure may retain a large or small proportion of the fumigant and either has no stack or the exhaust stack is less than 15 feet above ground or the exhaust exit velocity is less than 600 feet per minute.

Note: The size of the buffer zones may be minimized by measuring how well the enclosure retains fumigant and determining its loss ratio. This is done by performing a DPR-approved test procedure.

Examples: a typical sea/land container, a building exhausted through open doors and windows, a typical tarpaulin fumigation.

19: Treatment Zone

A treatment zone as specified in Table 2, page C-96, must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. Exception: Limited transit is allowed if unavoidable.

Different size zones may be calculated based on the duration of exposure and/or duration of the treatment period. For example, a treatment zone may be calculated for nearby workers based on a 12-hour work shift, and a separate treatment zone may be calculated for nearby residents based on 24-hour occupancy.

20: Aeration Zone

An aeration zone as specified in Table 4, page C-98, must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. Exception: Transit along public thoroughfares is allowed. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration of sulfuryl fluoride is less than 1 ppm. The aeration period itself may be of longer duration. Testing must be done according to approved procedures.

**21: Vertical Stack
Exhaust**

Does not apply.

**22: Aeration
During Daylight**

Aeration must be initiated during daylight hours (see permit condition 13).

RECOMMENDED PERMIT CONDITIONS

**Sulfuryl Fluoride
Commodity Fumigation**

CHART 1 Summary of Buffer Zone Sizes
--

Retention Category	Aeration Method	Class	Treatment Zone Size	Aeration Zone Size	Aerate Daylight Hours Only
	Standard Height Stack <i>(Table 1 requirements)*</i>	A1	10 feet	10 feet	NO
Pressure Tested <i>(USDA pressure test)</i>	Minimum Stack <i>(stack 15 ft above ground & exit velocity >600 ft/min)</i>	A2	10 feet	Table 3	YES
	No Stack	A3	10 feet	Table 4	YES
	Standard Height Stack <i>(Table 1 requirements)*</i>	B1	Table 2	10 feet	NO
Retention Tested or Untested <i>(DPR-approved test or no test)</i>	Minimum Stack <i>(stack 15 ft above ground & exit velocity >600 ft/min)</i>	B2	Table 2	Table 3	YES
	No Stack	B3	Table 2	Table 4	YES

* The stack must be at least 10 feet above the enclosure's highest point and at least 10 feet above any major obstruction within 200 feet of the stack and at least as tall as the appropriate value listed in Table 1.

RECOMMENDED PERMIT CONDITIONS

Sulfuryl Fluoride Commodity Fumigation

TABLE 1 Standard Height Exhaust Stack

This table is used to determine the "standard height" (feet) of a stack. A "standard height" exhaust stack is one which is:

1. at least 10 feet above the enclosure's highest point, and
2. at least 10 feet above any major obstruction within 200 feet of the stack, and
3. at least as tall (above ground level) as the appropriate value in the table below

Total Amount of Sulfuryl Fluoride Applied (pounds) at the Work Site in a 24-hour Period - **ROUND UP**

	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
600	21	23	26	28	30	32	34	37	39	41	43	45	48	50	52	54	57	59	61	63
700	19	21	23	25	28	30	32	34	36	39	41	43	45	47	50	52	54	56	58	61
800	16	18	21	23	25	27	30	32	34	36	38	41	43	45	47	49	52	54	56	58
900	15	16	18	20	23	25	27	29	31	34	36	38	40	43	45	47	49	51	54	56
1000	15	15	16	18	20	22	25	27	29	31	33	36	38	40	42	45	47	49	51	53
Exit Velocity (feet per minute)*																				
1100	15	15	15	16	18	20	22	24	27	29	31	33	35	38	40	42	44	46	49	51
1200	15	15	15	15	15	18	20	22	24	26	29	31	33	35	37	40	42	44	46	48
1300	15	15	15	15	15	15	17	19	22	24	26	28	31	33	35	37	39	42	44	46
1400	15	15	15	15	15	15	15	17	19	21	24	26	28	30	32	35	37	39	41	44
1500	15	15	15	15	15	15	15	15	17	19	21	23	26	28	30	32	34	37	39	41
ROUND DOWN																				
1600	15	15	15	15	15	15	15	15	15	17	19	21	23	25	28	30	32	34	36	39
1700	15	15	15	15	15	15	15	15	15	15	16	19	21	23	25	27	30	32	34	36
1800	15	15	15	15	15	15	15	15	15	15	15	16	18	20	23	25	27	29	32	34
1900	15	15	15	15	15	15	15	15	15	15	15	15	16	18	20	22	25	27	29	31
2000	15	15	15	15	15	15	15	15	15	15	15	15	15	16	18	20	22	24	27	29
2100	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	18	20	22	24	26
2200	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17	20	22	24
2300	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17	19	21
2400	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17	19
2500	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17

Rated Fan Capacity (cubic feet per minute)

*Exit Velocity =

Stack Cross-Sectional Area (square feet)

area of circle = 3.14 × radius²

RECOMMENDED PERMIT CONDITIONS
Sulfuryl Fluoride
Commodity Fumigation

TABLE 2
 Treatment Zone Sizes for
 Retention Tested and Untested Enclosures

This table is used to determine the treatment zone size (feet) surrounding enclosures which are retention tested or untested. Consult with the CAC to determine the sizes for multiple fumigations in a 24-hour period.

		Concentration Lost (pounds per 1000 cubic feet)* ROUND UP														
		0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
	1000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	2000	30	30	30	30	30	30	30	30	30	35	40	45	50	55	60
	3000	30	30	30	30	30	30	35	40	50	55	60	65	70	75	80
	4000	30	30	30	30	30	40	50	55	65	70	80	85	90	95	100
	6000	30	30	30	35	50	60	70	80	90	95	105	110	120	125	130
	8000	30	30	30	50	65	80	90	100	110	120	125	135	140	150	155
	10000	30	30	45	65	85	100	115	125	135	145	160	165	175	185	195
	15000	30	30	60	80	100	120	130	145	160	170	180	190	200	210	220
	20000	30	40	70	95	115	135	150	170	180	195	205	220	230	240	250
	25000	30	45	80	105	130	150	170	185	200	215	230	240	255	265	275
	30000	30	55	90	120	145	165	185	205	220	235	250	265	280	290	305
	35000	30	60	100	130	160	180	200	225	240	255	275	290	300	315	330
Volume Fumigated in a 24-hour Period (cubic feet)	40000	30	65	110	145	175	200	220	240	260	280	295	310	325	340	355
	45000	30	75	120	155	185	210	235	260	280	295	315	335	350	365	380
	50000	35	80	130	165	200	230	250	275	300	320	340	355	370	390	405
	60000	40	95	145	185	225	255	285	310	335	355	380	400	420	440	455
	70000	45	105	165	210	250	285	315	345	370	395	420	440	460	485	505
ROUND UP	80000	50	115	180	225	270	305	340	375	400	425	455	480	500	525	545
	90000	55	125	190	240	290	330	365	400	430	455	485	510	535	560	585
	100000	60	135	205	260	310	355	390	430	460	490	525	550	575	605	625
	110000	65	145	220	280	335	380	420	460	490	525	560	585	615	645	670
	120000	70	155	235	295	350	400	440	485	520	555	590	620	650	680	705
130000	75	165	245	310	370	420	465	510	545	580	620	650	680	715	740	
140000	80	175	260	325	390	440	485	535	570	610	650	680	715	745	775	
150000	85	180	270	340	405	460	505	555	595	635	675	710	745	780	810	
170000	90	195	295	370	435	495	545	600	640	685	730	765	800	840	870	
190000	95	210	315	390	465	530	580	640	685	730	775	815	850	895	930	
210000	100	225	330	415	490	560	615	675	725	770	820	860	900	945	980	
230000	105	235	350	435	515	585	645	710	760	810	860	905	945	990	1030	
250000	110	250	365	455	540	615	675	740	795	845	900	945	990	1035	1075	

* The Concentration Lost is calculated from the application rate, exposure duration, and loss ratio (proportion of fumigant leaked from the enclosure), according to the formula below. The exposure duration for workers is 12 hours or the treatment duration, whichever is less. The exposure duration for residents is the duration of treatment (24 hours maximum). The loss ratio is determined from a DPR approved test; for untested enclosures use **0.030**.

$$\text{Concentration Lost} = [\text{Application Rate (pounds per 1000 cubic feet)}] \times [\text{Exposure Duration (hours)}] \times [\text{Loss Ratio}]$$

RECOMMENDED PERMIT CONDITIONS

Sulfuryl Fluoride
Commodity Fumigation

TABLE 3
Aeration Zone Sizes for Minimum Stacks

This table is used to determine the aeration zone size (feet) required **during the aeration** of enclosures with exhaust stacks having the following characteristics:

1. The top of the exhaust stack is at least 15 feet above ground level, and
2. The exit velocity is at least 600 feet per minute

$$\text{Exit Velocity} = \frac{\text{Rated Fan Capacity (cubic feet per minute)}}{\text{Stack Cross-Sectional Area (square feet)}}$$

Total Retained in a 24-hour Period (pounds)*	Aeration Zone (feet)
50	220
51	220
ROUND UP 100	220
150	360
200	490
250	610
300	720
350	820
400	920
450	1000
500	1090
550	1170
600	1250
650	1320
700	1390
750	1460
800	1530
850	1600
900	1670
950	1730
1000	1790

* The Total Retained is calculated from the amount of fumigant, treatment duration and loss ratio (proportion of fumigant leaked from the enclosure), according to the formulas below. The loss ratio is determined from a DPR-approved test.

$$\text{Proportion Retained}^{**} = 1 - [\text{Treatment Duration (hours)} \times \text{Loss Ratio}]$$

For untested enclosures, use **0.90 for the Proportion Retained

$$\text{Total Retained} = [\text{Amount of fumigant Applied in a 24 hour Period (pounds)}] \times [\text{Proportion Retained}]$$

RECOMMENDED PERMIT CONDITIONS

Sulfuryl Fluoride Commodity Fumigation

TABLE 4 Aeration Zone Sizes for No Stacks

This table is used to determine the aeration zone size (feet) of enclosures that have no stack. Consult with the CAC to determine the aeration zone size when aerating multiple enclosures in a 24-hour period.

		Concentration Retained (pounds per 1000 cubic feet)* ROUND UP														
		0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0
	1000	30	30	30	30	30	30	40	50	60	70	75	85	90	95	105
	2000	30	30	30	40	60	75	90	100	115	125	135	145	155	160	170
	3000	30	30	45	70	90	110	125	140	155	165	180	190	200	210	220
	4000	30	30	65	95	115	135	155	170	185	200	215	225	240	250	260
	6000	30	55	100	130	160	180	205	225	240	260	275	290	305	320	335
	8000	35	80	125	165	195	220	245	265	290	305	325	345	360	375	390
	10000	50	105	155	195	225	255	285	310	330	350	375	390	410	430	445
	15000	65	140	200	250	290	330	360	395	420	450	475	500	525	545	565
	20000	80	175	240	300	345	390	425	460	495	525	560	585	615	640	665
	25000	95	200	275	340	390	440	480	520	560	595	630	660	695	725	750
	30000	110	225	305	375	430	485	530	575	615	655	695	730	765	795	830
Volume Aerated in a 24-hour Period (cubic feet)	35000	125	245	335	410	470	525	575	625	670	710	750	790	830	865	900
	40000	135	265	360	440	505	565	620	670	720	765	810	850	890	930	965
	45000	145	285	385	470	540	600	660	715	765	815	860	905	945	990	1030
	50000	160	305	410	495	570	635	700	755	810	860	910	955	1000	1045	1090
	60000	180	340	455	550	630	705	770	835	895	950	1005	1060	1110	1155	1205
	70000	200	370	495	600	685	765	840	910	975	1035	1095	1150	1205	1260	1315
ROUND UP	80000	220	400	535	645	740	830	905	980	1050	1120	1180	1245	1305	1360	1420
	90000	235	430	575	690	795	885	970	1050	1125	1195	1265	1330	1395	1460	1520
	100000	255	460	615	735	845	945	1035	1120	1200	1275	1350	1420	1485	1555	1620
	110000	270	490	650	780	895	1000	1095	1185	1270	1350	1425	1500	1575	1645	1710
	120000	285	515	685	820	945	1050	1155	1245	1335	1420	1505	1580	1660	1730	1805
	130000	300	545	720	865	990	1105	1210	1310	1400	1490	1575	1660	1740	1820	1895
	140000	315	570	750	905	1035	1155	1265	1370	1465	1560	1650	1735	1820	1900	1980
	150000	330	595	785	945	1080	1205	1320	1425	1530	1625	1720	1810	1895	1980	2065
	170000	360	640	845	1015	1160	1295	1420	1535	1640	1745	1845	1940	2035	2125	2215
	190000	385	685	905	1080	1240	1380	1510	1630	1745	1855	1960	2065	2165	2260	2355
210000	410	725	955	1140	1305	1450	1590	1715	1835	1950	2060	2165	2270	2370	2470	
230000	430	760	995	1190	1360	1515	1655	1785	1910	2030	2140	2250	2355	2460	2560	
250000	450	785	1030	1230	1405	1560	1705	1840	1965	2085	2200	2315	2420	2525	2625	

* The Concentration Retained is calculated from the rate, treatment duration, and loss ratio (proportion of fumigant leaked from the enclosure), according to the formulas below. The loss ratio is determined from a DPR-approved test.

$$\text{Proportion Retained}^{**} = 1 - [\text{Treatment Duration (hours)} \times \text{Loss Ratio}]$$

For untested enclosures, use **0.90 for the Proportion Retained

$$\text{Concentration Retained} = [\text{Application Rate (pounds per 1000 cubic feet)}] \times [\text{Proportion Retained}]$$

FINAL PERMIT CONDITIONS

**Sulfuryl Fluoride
Commodity Fumigation**

GENERAL INFORMATION

Fumigation Site: _____ **Permit Number:** _____

Address: _____ **City:** _____ **Zip:** _____

Contact Person: _____ **Phone:** _____
(Facility Operator, Grower, QAC, QAL, etc.)

Pest Control Business: _____ **Permit Number:** _____

Address: _____ **City:** _____ **Zip:** _____

Contact Person: _____ **Phone:** _____
(QAL with the appropriate category)

I VERIFY THAT THE ATTACHED PERMIT CONDITIONS WILL BE FOLLOWED

Permit Applicant: _____ **Date:** _____
(Facility Operator)

FINAL PERMIT CONDITIONS

Sulfuryl Fluoride
Commodity Fumigation

GENERAL INFORMATION

1: Maximum Application Rate

A maximum application rate of 8 pounds per 1000 cubic feet or the rate specified by the label may be used, whichever is less.

Work Site Plan B.1

Complies

Does Not Apply

Alternative: _____

See page C-87 for possible additional restrictions to comply with the buffer zones.

2: Total Sulfuryl Fluoride

The total amount of sulfuryl fluoride per work site must not exceed 1000 pounds in a 24-hour period.

Work Site Plan B.2

Complies

Does Not Apply

Alternative: _____

See page C-87 for possible additional restrictions to comply with the buffer zones.

3: Other Types of Applications

This permit condition does not apply to sulfuryl fluoride fumigations.

Work Site Plan B.3

4: Enclosed Area and Common Walls

The following types of fumigations are prohibited:

- those inside an enclosed area with people present
- enclosures which share a common wall with another enclosed area with people present

Work Site Plan B.4 & 5

Complies

Does Not Apply

Alternative: _____

FINAL PERMIT CONDITIONS

Sulfuryl Fluoride
Commodity Fumigation

GENERAL INFORMATION

5: Outside Introduction

Application from outside the enclosure through a closed system is required. Releasing sulfuryl fluoride from inside the enclosure is prohibited.

Work Site Plan B.6

- Complies
- Does Not Apply
- Alternative: _____

6: Gas-tight Fumigant Lines

All fumigant lines must be gas-tight. Fumigant lines, valves, fittings, etc. which are routinely adjusted or changed must be checked for leaks after each adjustment.

Work Site Plan B.7

- Complies
- Does Not Apply
- Alternative: _____

7: Test Equipment Seals

The enclosure must be sealed where instrument sampling lines pass through enclosure walls.

Work Site Plan B.8

- Complies
- Does Not Apply
- Alternative: _____

8: Test Equipment Exhaust

Exhaust from sampling equipment must be vented away from people and to outside air or back into the enclosure.

Work Site Plan B.9

- Complies
- Does Not Apply
- Alternative: _____

FINAL PERMIT CONDITIONS

**Sulfuryl Fluoride
Commodity Fumigation**

GENERAL INFORMATION

9: Fumigant Line Purge

When introducing sulfuryl fluoride from an enclosed control room, applicators must use nitrogen gas or compressed air to purge fumigant lines prior to changing cylinders.

Work Site Plan B.10

- Complies
- Does Not Apply
- Alternative: _____

10: Control Room Ventilation

Enclosed control rooms must be mechanically ventilated during fumigation if workers are present.

Work Site Plan B.11

- Complies
- Does Not Apply
- Alternative: _____

11: Control Room Storage

Sulfuryl fluoride cylinders must not be stored inside enclosed control rooms.

Work Site Plan B.12

- Complies
- Does Not Apply
- Alternative: _____

FINAL PERMIT CONDITIONS

Sulfuryl Fluoride
Commodity Fumigation

GENERAL INFORMATION

12: Aeration Initiation

Work Site Plan B.13

Persons who initiate aeration by manually breaking a seal must wear a self-contained breathing apparatus (SCBA).
Exception: Enclosures for which aeration is initiated remotely, such as chambers.

- Complies
- Does Not Apply
- Alternative: _____

13: Aeration During Daylight

Work Site Plan D.3

Aeration must be initiated during daylight hours.
Exception: Enclosures which aerate using an exhaust stack meeting the standard height requirements may exhaust at any time.

- Complies
- Does Not Apply
- Alternative: _____

14: Minimum Aeration Times

Work Site Plan
B.14 & B.15

Enclosures must be aerated for the following minimum duration:
a. 4 hours if mechanically ventilated using fans, or
b. 12 hours if passively ventilated

- Complies
- Does Not Apply
- Alternative: _____

15: Testing Aeration Completeness

Work Site Plan B.16

The concentration of sulfuryl fluoride in the air spaces between the stacked commodity must be less than 1 ppm before the commodity can be moved from the enclosure. Testing of this air space must be done according to approved procedures.

- Complies
- Does Not Apply
- Alternative: _____

FINAL PERMIT CONDITIONS

Sulfuryl Fluoride
Commodity Fumigation

GENERAL INFORMATION

16: Enclosed Storage Areas

Work Site Plan
B.17 & B.18

Sulfuryl fluoride concentrations in enclosed areas (i.e., buildings, warehouses, silos, etc.) where fumigated commodities are stored must be less than 1 ppm before persons may enter. Testing of the air concentration must be done according to approved procedures. No individual may be inside the enclosed area for more than one hour in a 24-hour period.

- Complies
- Does Not Apply
- Alternative: _____

17: Work Site Plan

The enclosure operator and/or pest control business must complete or revise a Work Site Plan before receiving a permit.

- Complies
- Does Not Apply
- Alternative: _____

18: Test Results Documentation

Work Site Plan B.19

The enclosure operator must keep records of all test results for 2 years and make them available to the County Agricultural Commissioner and workers upon request.

- Complies
- Does Not Apply
- Alternative: _____

FINAL PERMIT CONDITIONS

Sulfuryl Fluoride
Commodity Fumigation

GENERAL INFORMATION

This part needs to be completed for each enclosure.

Enclosure Identification/Description: _____

(check one)

- Work Site Plan C.1 - 11
- A1 - Pressure Tested/Standard Height Stack
 - A2 - Pressure Tested/Minimum Stack
 - A3 - Pressure Tested/No Stack
 - B1 - Retention Tested or Untested/Standard Height Stack
 - B2 - Retention Tested or Untested/Minimum Stack
 - B3 - Retention Tested or Untested/No Stack

Ancillary Buffer Zone Requirements:

Maximum
Application Rate: _____

Maximum
Fumigated Volume: _____

Treatment
Duration: _____

Other Enclosures
Which May Be
Used Within 24 hrs: _____

19: Treatment Zone

Work Site Plan C.12 - 20

A treatment zone of _____ feet must be established around the enclosure during the fumigation treatment period. Only persons supervising and performing fumigation activities are permitted in the treatment zone during the treatment period. A separate treatment zone of _____ feet for workers may be used.

20: Aeration Zone

Work Site Plan C.12 - 20

An aeration zone of _____ feet must be maintained around an enclosure during the first portion of the aeration period. Only persons supervising and performing fumigation activities are permitted in the aeration zone. The aeration zone must remain in place for the first four hours of aeration or until the exhaust concentration is less than 1 ppm.

21: Vertical Stack Exhaust

Work Site Plan D.1, D.2

The stack must be vented vertically to the outside air. When exhausting, the top of the stack must be free of overhead obstructions.

- Complies
- Does Not Apply
- Alternative: _____

Appendix H

Aluminum and Magnesium Phosphide for Burrowing Rodent Control Recommended Permit Conditions

Background

In April 2010, the U.S. Environmental Protection Agency (U.S. EPA) requested that aluminum and magnesium phosphide products for burrowing rodent control be labeled with additional restrictions to protect human health. This included prohibiting use around residential areas and increasing the distance from 15 feet to 100 feet from the application to a building that is, or may be occupied by, humans and/or animals, especially residences. Subsequently, in March 2012, U.S. EPA allowed registrants to amend label and labeling (Applicator's Manual), reinstating outdoor use around residential and other properties, but prohibited use within 100 feet of any building where humans and/or domestic animals do or may reside.

Recommended permit conditions

Because there still may be aluminum and magnesium phosphide products with older labeling lacking the U.S. EPA restrictions in the channels of trade, the following permit restrictions are recommended to ensure that the more restrictive use requirements are applied to all aluminum or magnesium phosphide products for burrowing rodent control.

1. Aluminum and magnesium phosphide must only be used out-of-doors for control of burrowing pests on agricultural areas, orchards, non-crop areas, pastures, rangeland, golf courses, athletic fields, airports, cemeteries, rights-of-ways, earthen dams, parks and recreational areas, other non-residential institutional or industrial sites and on residential or other commercial properties.
2. Use of aluminum and magnesium phosphide is prohibited within 100 feet of any building where humans and/or domestic animals do or may reside on single and/or multi-family residential properties and nursing homes, schools (except athletic fields [application is allowed less than 100 feet to an occupied structure]), daycare facilities, hospitals and other commercial buildings that are regularly occupied.

Continued on next page

Aluminum and Magnesium Phosphide for Burrowing Rodent Control Recommended Permit Conditions, Continued

Recommended permit conditions
(continued)

3. Prior to use of aluminum and magnesium phosphide products in athletic fields or parks, the applicator shall post a sign at entrances to the site containing the signal word DANGER/ PELIGRO, skull and crossbones, the words: DO NOT ENTER/NO ENTRE, FIELD NOT FOR USE, the name and EPA registration number of the fumigant.
 4. When aluminum and magnesium phosphide products are used out-of-doors on a site other than an athletic field or park, the applicator shall post a sign at the application site containing the signal word DANGER/PELIGRO, skull and crossbones, the words: DO NOT ENTER/NO ENTRE, the name and EPA registration number of the fumigant.
 5. The posting signs required in 3 and 4 above must state a 24-hour emergency response number and the contact number of the certified applicator responsible for the application. Signs may be no smaller than 9 inches by 11 inches and must stand at least 18 inches high from the ground. Signs must be made of substantial material that can be expected to withstand adverse weather conditions and all information must be legible. Signs should remain posted for a minimum of 2 days after the final treatment and may be removed by the certified applicator or contracting party.
 6. DO NOT TREAT ANY BURROWS THAT OPEN UNDER OR INTO OCCUPIED BUILDINGS. In addition, check for any other source through which the gas may enter into occupied buildings as a result of application to burrows. If there is any way gas can move through pipes, conduits, etc. from burrows, do not treat these burrows.
 7. Prior to treating a rodent burrow, the certified applicator must provide the property operator or owner with a copy of the Fumigation Management Plan (FMP). An FMP is a written description of the steps designed to plan for a safe, legal, and effective fumigation. The certified applicator and owner of the property to be fumigated must describe the area to be treated and include all safety requirements.
-

Appendix I

Methyl Bromide Recommended Permit Conditions for Soil Fumigation within a Greenhouse

Introduction Applicable requirements for field soil applications are found in 3 CCR sections 6447 through 6447.3. In addition, DPR recommends certain additional permit conditions.

Most restrictive requirements must be followed The most restrictive requirement, whether it is the label, regulations, or permit conditions, must be followed unless DPR has provided specific guidance about exceptions. In addition, the CAC may place more restrictive conditions based on local conditions.

In this Appendix This Appendix contains the following topics.

Section	Topic	See Page
I	Definitions	I-2
II	Worker Safety Requirements	I-3
III	Application Requirements	I-6
IV	Buffer Zone Determination	I-7
V	Buffer Zone Duration	I-9
VI	Notice of Intent Modification	I-10
VII	Greenhouse Reentry Requirements	I-11
VIII	Tarpaulin Removal and Soil Aeration Procedures	I-12
IX	List of Manufacturers of High Barrier Approved Tarpaulins	I-12
-	Appendix I	I-14

Methyl Bromide Recommended Permit Conditions for Soil Fumigation within a Greenhouse

I. DEFINITIONS

- A. **Application** includes treatment and aeration; it is complete when each application block has been aerated.
- B. **Application block** is the actual area within a greenhouse that will be fumigated in any 24-hour period. The application block cannot exceed 50,000 square feet. The maximum square footage may be reduced due to the distance to an occupied structure, previously fumigation application blocks, future greenhouse fumigations, and adjacent workers.
- C. **Application rate**, in pounds/acre, is equal to the amount of methyl bromide (active ingredient) in the formulated product.
- D. **Application site** is the treatment area within a greenhouse which may be comprised of more than one application block.
- E. **Buffer zone** is the area that must be maintained between the application block and those places where people conduct certain activities or practices. Buffer zones are in effect until the tarp has been removed **and** aeration is complete. For greenhouse soil fumigations, the two types of zones to be considered are:
 - 1. **Resident Buffer Zone** is the area surrounding an application block outside of which people may “dwell.” See the definition: **dwell**.
 - 2. **Worker Buffer Zone** is the area surrounding an application block outside of which people may “work or occupy.” See the definition: **work or occupy**.
- F. The **buffer zone duration** for an application block begins at the start of fumigation and ends 48 hours after the tarpaulin has been removed, when aeration is considered complete. The length of this period depends upon the timing and method of tarp removal.
- G. **Dwell** means that a person is able to or will occupy a structure for any or all parts of a 24-hour period. This includes, but is not limited to: homes, hospitals, convalescent homes, boarding schools, day schools, parks, hotels, apartment complexes, and other sensitive areas.

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

I. DEFINITIONS (Continued)

- H. **Frequency of applications** refers to the interval of time elapsed from the beginning of the application of methyl bromide at one application block to the beginning of the application of methyl bromide at another application block.
- I. An **isolated block** is one that is 1,300 feet or more from another greenhouse soil fumigation **or** at least 48 hours has elapsed, or will elapse, before another greenhouse soil fumigation is conducted.
- K. A **non-isolated block** is one that is less than 1,300 feet from another greenhouse soil fumigation **and** less than 48 hours have elapsed, or will elapse, before another greenhouse soil fumigation is conducted.
- L. **Pesticide Handler** includes employees involved in fumigation, aeration activities, tarp repair, and tarp removal **prior** to the completion of aeration.
- M. **Work or occupy** means that a person is able to or will be at a place for **eight hours or less**. This includes, but is not limited to: fields, offices, warehouses, stores, malls, factories, greenhouses, packing sheds, and workshops

II. WORKER SAFETY REQUIREMENTS

A. Restricted Entry and Warning Sign Posting Requirements

1. As a condition of the permit, warning signs shall be posted around the application block for the duration of the restricted entry interval. Refer to 3 CCR section 6776(b) for the requirements.
2. The restricted entry interval for an application block begins at the start of fumigation and ends when aeration is complete.

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

A. Restricted Entry and Warning Sign Posting Requirements (Continued)

3. Aeration is considered complete 48 hours after the tarp has been removed and when the requirements listed in Section VIII, Tarpaulin and Soil Aeration Procedures have been met.

For example, if the tarp is removed from the application block after three days (the minimum required fumigation time) and the soil is aerated for two days (minimum aeration time), then the restricted entry interval lasts for five days from the start of fumigation.

4. Fieldworkers shall not be allowed to enter an application block to perform cultural activities until the restricted entry interval has elapsed and warning signs have been removed.
5. Title 3 of the California Code of Regulations section 6782(c), covering fumigation of enclosed spaces, requires that warning signs be posted on or near all greenhouse entrances until fumigation and ventilation are complete and the premises are safe for reentering. Refer to section 6782(c) for the warning sign requirements.

B. Pesticide Handler and Field Worker Requirements

1. The employer must maintain use records for **all** employees involved in application, tarp repair, and tarp removal activities. The record shall identify the person, work activity(ies), date(s), duration of handling, U.S. Environmental Protection Agency Registration Number, and brand name of the methyl bromide product handled.
2. The employer must maintain these use records at a central location for two years and make them available to the county agricultural commissioner upon request for review.

C. Tarpaulin Repair

1. The decision to conduct tarp repair must be made by a certified applicator (the permittee, the permittee's authorized representative, or the pest control operator) on a job-by-job basis. The decision should be based on, but not limited to, hazard to the public, residents, or workers; size of the damaged area(s); timing of damage; and feasibility of repair.

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

C. Tarpaulin Repair (Continued)

2. Title 3, California Code of Regulations section 6780 requires the use of approved respiratory protective equipment if the concentration of methyl bromide cannot be controlled and an employee's exposure would exceed 5 ppm. Areas to be repaired must be tested by the certified applicator, using an appropriate testing device, and shown to have less than 5 ppm of methyl bromide in the projected work areas before unprotected employees are allowed to enter to conduct tarp repair. The certified applicator must wear approved respiratory protective equipment when conducting these tests.

D. Workers in Adjacent Sites

1. The property operator and/or pest control operator must be aware of adjacent sites where activity is likely while the Worker Buffer Zone is in effect, following the start of the application. They must ensure that the adjacent property operators are advised, **prior to the fumigation**, to keep their workers outside of the Worker Buffer Zone during that period of time.
2. The property operator and/or pest control operator may give notice to adjoining property operators verbally or in writing.
3. If entry occurs as the result of a failure to be aware of worker activity and subsequent failure to advise adjacent property operators to keep workers out, the operator of the property fumigated and the person performing pest control are in violation of the methyl bromide permit conditions.

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

III. APPLICATION REQUIREMENTS

- A. **Soil injections using tractor-drawn chisels or similar devices are prohibited within a greenhouse.**
- B. All soil application of methyl bromide within a greenhouse shall comply with the raised-tarp fumigation methods specified on the registered pesticide label. **All delivery tubes shall be anchored in place under the tarp and shall not be moved during the application of methyl bromide.** Follow the manufacturer's recommendations for application tubing.
- C. The fumigant must be introduced from outside of the greenhouse. If entry into the greenhouse enclosure is required to perform a function necessary for the application, a Self-Contained Breathing Apparatus must be worn.
- D. All fittings, connections, and valves must be checked for methyl bromide leaks prior to fumigation. If cylinders are replaced during the fumigation process, the connections and valves must be checked for leaks prior to continuing the job.
- E. Only the tarpaulins listed on the approved manufacturers list are to be used. (See Section IX, List of Manufacturers of High Barrier Approved Tarpaulins.) They have been determined to meet or exceed the following standards for a "high barrier" tarpaulin: a permeability factor of less than eight millimeters methyl bromide per hour, per square meter, per 1,000 ppm of methyl bromide under the tarpaulin at 30 degrees Celsius. Polyethylene tarp of six-mil thickness or greater meets these criteria.
- F. A **maximum of 450 pounds** of methyl bromide (active ingredient) per acre is allowed.
- G. A **maximum aggregate of 50,000 square feet** will be allowed in a 48-hour period.
- H. All greenhouse fumigations must be isolated from all other types of methyl bromide fumigations.

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

IV. BUFFER ZONE DETERMINATION

- A. A buffer zone is the area surrounding an application block **outside** of which certain activities or practices are allowed. The buffer zone is in effect until the tarp has been removed and aeration is complete (See Section VIII, Tarp Removal). The size of the buffer zone will be determined by the proposed size of the application block and the application rate. The buffer zone surrounding an application block may have to be modified due to the proximity to occupied structures, distance to adjacent workers, and nearness to completed or proposed greenhouse fumigations.
- B. The buffer zone is partitioned into the Resident Buffer Zone and the Worker Buffer Zone. The size of the Resident Buffer Zone is based on the assumption that a person may “dwell” at a place for any or all parts of a **24 hour-period**. The size of the Worker Buffer Zone is based on the assumption that people work or recreate at a place for **eight hours or less**.
- C. Transit through the Worker Buffer Zone by the permittee's employees is limited to infrequent and unavoidable trips. Routine or repeated transit through this buffer zone is prohibited.
- D. The buffer zones begin at the edges of the treated piles and extend in all directions regardless of buildings or property boundaries.
- E. Procedures: Isolated Blocks
 - 1. To determine the **Resident Buffer Zone** surrounding an isolated block, use the application rate and the area of the application block and apply these values to Table 1.
 - 2. To determine the **Worker Buffer Zone** surrounding an isolated block, first divide the application rate by **three**. Then, using the adjusted application rate and the area of the application block, apply these values to Table 1.

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

IV. BUFFER ZONE DETERMINATION (Continued)

F. Procedures: Non-Isolated Blocks

1. Determine the highest application rate for all application blocks within 1,300 feet.
2. Compute the sum of the areas, in square feet, of the block to be evaluated and the next largest block within 1,300 feet.
3. To determine the **Resident Buffer Zone**, use the highest application rate and the sum of the application block areas and apply these values to Table 1.
4. To determine the **Worker Buffer Zone**, divide the highest application rate by **three**. Use the adjusted application rate and the sum of the application block areas and apply these values to Table 1.
5. If there are **only** two non-isolated application blocks, then the buffer zones determined above will be the **same** for each block.

If there are **more** than two non-isolated blocks, then each pair of blocks, the one under evaluation and the next largest, will have to be considered individually. This may result in each block having different buffer zones even though they are not isolated from the others.

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

V. BUFFER ZONE DURATION

- A. The Resident and Worker Buffer Zones that surround an application block are in effect from the start of the fumigation until aeration is complete. Aeration is considered complete **after** the tarp has been removed **and** 48 hours have elapsed since tarp removal was completed. See Section VIII, Tarp Removal.

For example: the tarp was removed three days (minimum time allowed) after the fumigation was completed and the block was allowed to aerate for the required 48 hours following tarp removal. The buffer zone would be in effect for five days from the start of fumigation in an application block.

- B. Determine the proposed Resident Buffer Zone by measuring the distance between the edge of the application block and the **edge of the property line**, not the physical structure associated with the property. This includes places where people are occupying.

People are not allowed to “dwell” within the Resident Buffer Zone. Residences within the buffer zone **must** be vacated while the buffer zone is in effect. If the resident(s) cannot or will not vacate the building(s), then the property operator must decrease the acreage to be treated or the rate of methyl bromide to be used so that the building lies outside of the buffer zone.

- C. If there is an occupied commercial building or workers within the proposed Worker Buffer Zone and the workers were unable to vacate the premises, then the application must either be rescheduled to coincide with the worker’s day off or the acreage/rate must be decreased to reduce the buffer zone.
- D. If there is a recreational area within the Worker Buffer Zone where people are expected to spend large amounts of time, the application must be rescheduled or amended to accommodate this activity. If the people are just walking, bicycling, or driving through the area without stopping, the application does not need to be changed.
- E. This requirement applies to all persons, including the property operator.
- F. If the application is stopped due to weather or breakdowns, then the buffer zone duration starts over at the beginning of the next day’s application.

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

VI. NOTICE OF INTENT MODIFICATION

- A. The county agricultural commissioner must receive a Notice of Intent at least 24 hours prior to commencement of fumigation of any application block with methyl bromide for a greenhouse soil fumigation. The Notice of Intent must indicate the day and the hour the application is intended to commence.
- B. Unless a waiver is granted by the county agricultural commissioner, fumigation of any application block must not commence sooner than the starting time indicated on the Notice of Intent. Nor, must the fumigation commence later than 12 hours after the intended starting time submitted with the Notice of Intent. If fumigation of an application block does not commence within this time frame, a new Notice of Intent must be submitted, but no 24-hour waiting period is required unless notified by the county agricultural commissioner.
- C. For multiple application blocks to be fumigated sequentially, the county agricultural commissioner may allow a Notice of Intent with a “schedule” to be submitted in lieu of a Notice of Intent for each application block to be fumigated. The schedule must include a map and must specify the date and time each application block is intended to be fumigated.
- D. The 24-hour Notice of Intent waiting period may be waived if the county agricultural commissioner determines that effective pest control cannot be attained otherwise, or, 24 hours are not necessary to adequately evaluate the intended application.
- E. The reasons for granting each waiver must be documented and a record maintained by the county agricultural commissioner.
- F. The operator of the property to be treated and the person performing pest control, if different, must be aware of adjacent sites where there is a reasonable possibility of **work activity** occurring while the **Worker Buffer Zone is in effect**, and must ensure that operators of those adjacent properties are advised to keep fieldworkers out of those areas during that period of time.

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

VII. GREENHOUSE REENTRY REQUIREMENTS

- A. If the greenhouse is **not enclosed**, the air monitoring requirements listed in this section may be waived. This determination should be based on the size and number of openings in the greenhouse, length of time the greenhouse will remain open, local wind conditions, the proximity to obstructions, the application rate, and the size of the fumigation. Other parameters may apply according to the specific situation. If only doors and vents are opened (regardless of ventilation), the greenhouse should be considered **enclosed**.
- B. Entry by any person, other than a trained and protected pesticide handler into an **enclosed** greenhouse, is **prohibited** from the start of application until 48 hours after application AND the air concentration has been measured and found to be less than 5 ppm in the working area(s).
- C. Entry by any person, other than a trained and protected pesticide handler, is **prohibited** for 24 hours following the start of aeration (tarp cutting, tarp removal, breaking seals). **Note:** 3 CCR section 6782(d) **prohibits** the release of a fumigant into an enclosed, occupied work area.
- D. Entry into an enclosed greenhouse by unprotected workers, when not prohibited above, will be allowed only after air monitoring is conducted according to the protocol listed in Appendix 1. Work time restrictions will be based on the air monitoring test results. Air monitoring and entry restrictions will continue until aeration is complete.
- E. The permittee shall prohibit all work activities within the Worker Buffer Zone surrounding a fumigated application block. The Worker Buffer Zone is in effect until soil aeration is complete. This prohibition shall be in effect for all greenhouse types, whether enclosed or open.
- F. If the Worker Buffer Zone extends into adjacent greenhouses, workers may occupy those areas within the adjacent greenhouse that are outside of the Worker Buffer Zone without additional air monitoring or restriction.
- G. A Self-Contained Breathing Apparatus shall be worn when entry into an enclosed greenhouse is required during the time periods listed in VII-B and VII-C. A Self-Contained Breathing Apparatus shall be worn when entry into a Worker Buffer Zone and/or the application block is required before aeration is complete regardless of greenhouse type (enclosed or open).

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

VII. GREENHOUSE REENTRY REQUIREMENTS (Continued)

- H. If the greenhouse is enclosed, the measured airborne levels of methyl bromide must be less than 1 ppm **and** soil aeration must be complete before unrestricted entry into all areas of the greenhouse is permitted.

If the greenhouse is not enclosed, then soil aeration must be complete before unrestricted entry is permitted.

VIII. TARPAULIN REMOVAL AND SOIL AERATION PROCEDURES

- A. The tarpaulin must remain on the application block for at least three days (72 hours) following the application.
- B. A Self-Contained Breathing Apparatus **shall** be used while the tarpaulin is being removed (without aeration), slit, or while breaking soil-to-tarp or tarp-to-tarp seals.
- C. If the tarp is slit or the seals broken, rather than being completely removed, the treated area shall be aerated for a minimum of one day (24 hours) after finishing this activity.

The tarpaulin may be removed, without using a Self-Contained Breathing Apparatus, only after the aeration period is complete and air monitoring has been done according to the requirements listed in Appendix I. The same limitations listed in Appendix I apply to persons engaged in tarp removal.

- D. The soil must remain undisturbed for a minimum of two days (48 hours) after the tarpaulin has been completely removed. When this time period has elapsed and air levels have been tested and shown to be less than 1 ppm methyl bromide (as required in Section VII-H), then the restricted entry interval and buffer zone periods are over.

IX. LIST OF MANUFACTURERS OF HIGH BARRIER APPROVED TARPAULINS

The current list of approved tarpaulins is available at DPR's web site at:
<http://www.cdpr.ca.gov/docs/emon/methbrom/tarps.pdf>

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

TABLE 1. Buffer Zone Distances (In Feet) for Greenhouse Applications of Methyl Bromide

There are two steps in determining the appropriate size of the Resident and Worker Buffer Zones for an application block. First, determine if the block is isolated or not; refer to the definitions in Section I.

To determine the size of the Resident Buffer Zone, select the appropriate number of square feet in the left-hand column. Then, select the application rate (pounds/acre) from the top row. The Resident Buffer Zone is the value where the square foot row and the rate column intersect. To determine the Worker Buffer Zone, divide the application rate by three and follow the instructions for the Resident Buffer Zone.

Area Treated (Round up)		Application Rate: Pounds Per Acre (Round up to next highest value)											
Square feet	Acres	175	200	225	250	275	300	325	350	375	400	425	450
5,000	0.11	20	20	20	20	20	20	20	20	20	25	25	30
10,000	0.23	20	20	20	25	25	30	35	40	45	50	55	60
15,000	0.34	20	20	25	30	40	50	55	65	70	80	90	95
20,000	0.46	20	20	30	40	50	60	75	85	95	105	115	125
25,000	0.57	20	25	40	50	60	75	85	100	115	125	140	155
30,000	0.69	20	30	45	60	70	85	105	115	135	150	165	180
35,000	0.80	20	30	50	65	80	95	115	135	150	165	180	200
40,000	0.92	20	35	55	70	90	105	125	145	165	180	200	220
45,000	1.03	20	40	60	75	95	115	140	160	180	200	220	240
50,000	1.15	25	40	60	85	105	125	150	175	190	215	235	260

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

APPENDIX I

A. Testing Procedure

1. If more than two hours have elapsed since the last test, then a Self-Contained Breathing Apparatus must be worn or testing must be performed remotely.
2. Air monitoring must be performed within the work area where concentrations are assumed to be the highest. The test location(s) will depend on the proximity of people to the application block and the ventilation patterns within the enclosed greenhouse. If the work location is not known or changes over time, several locations need to be tested.
3. The first test must be performed shortly before each work shift and before any people are allowed to enter the greenhouse.
4. The air monitoring results will determine the length of time people will be allowed within the enclosed greenhouse. Work time is the cumulative amount of time a person spends within the greenhouse. It does not include time spent outside of the greenhouse.

Use the following work and testing schedule **for each work shift**. If the work shift will be longer than two hours, then subsequent tests are required. If they show higher concentrations than the initial test, then the work schedule must be adjusted to the new concentration. For example: the first test shows 1 ppm methyl bromide in the work area. People may occupy that area for up to four hours, providing a second test is performed after two hours. If the second test shows that the level of methyl bromide has risen to **3 ppm**, then the people must be removed from the work area because according to the chart, they are allowed two hours of exposure at that level of methyl bromide.

Suggested Table for Time Restrictions: Colorimetric Tube Monitoring

Maximum PPM Allowed Per Test Required	Work Time Restriction (Per 24 hours)	Colorimetric Tube	Tests Required
5 ppm	1 hour	5 ppm or less	initial test
3 ppm	2 hours	3 ppm or less	initial test
1 ppm	4 hours	1 ppm or less	initial test, repeat at 2 hours
ND*	8 hours	0.5 ppm or less	initial test, repeat every 2 hours

*ND – no detectable amount

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

APPENDIX I (Continued)

Suggested Table for Time Restrictions: Real-time Monitoring

Restriction (Per 24 hours)	Real-time Monitoring Results	Restriction (Per 24 hours)	Real-time Monitoring Results
1 hour	2.6 to 5 ppm	6 hours	0.72 to 0.83
2 hours	1.67 to 2.50	7 hours	0.64 to 0.71
3 hours	1.27 to 1.66	8 hours	ND to 0.63 ppm
4 hours	1.10 to 1.26	Unlimited	<0.5 ppm (ND*)
5 hours	0.84 to 1.09		

*ND – no detectable amount

5. Testing and work time restrictions continue until the end of soil aeration and air monitoring within the greenhouse shows that airborne levels of methyl bromide are less than 1 ppm. Testing may be discontinued, prior to completion of aeration, if no further work will take place within the greenhouse.

6. Employers must maintain records of the air monitoring results. The record must include, at least, the date/time of fumigation and air monitoring; person performing the test(s); greenhouse site identification; location of the fumigation within the greenhouse; location(s) of the air monitoring test(s); colorimetric tube model number and detection limit; and the colorimetric tube reading(s). The information may be recorded on the following form. These records must be made available to employees upon request.

	Test 1	Test 2	Test 3
Greenhouse Site Identification			
Fumigation Location			
Application Block Size			
Rate of Methyl Bromide			
Date/Time Start of Fumigation			
Date/Time Start of Aeration			
Person Performing Test(s)			
Date/Time of Test(s)			
Test Location(s)			
Test Results (ppm)			
Colorimetric Tube Model No.			
Colorimetric Tube Detection Limit			
Comments			

METHYL BROMIDE RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

APPENDIX I (Continued)

B. Air Monitoring Equipment

There are different methods available for air monitoring. These include colorimetric detector tubes (e.g., National Draeger, Sensidyne, Matheson-Kitagawa, MSA) and real-time remote sensing monitors (e.g., PureAire Monitoring Systems). **NOTE: These air monitoring methods apply to enclosed areas, including greenhouse soil fumigation and commodity fumigation.**

Colorimetric detector tubes (approximately ¼" X 6") produce a color change when methyl bromide is present. The length of this color change indicates the methyl bromide concentration. A specific pump must be used with these tubes; both must be purchased from the same manufacturer. The (upper and lower) detection limits of these tubes vary with manufacturer and model.

Select the tube model which best fits your needs; contact the test equipment manufacturer. The choice of detector tube is in part determined by the duration of exposure. If short-term access (less than one hour) is necessary, a detector tube that measures to 5 ppm would be adequate. To determine entry for longer times or to document that control methods are adequate, a detector tube that measures to a lower detection limit would be appropriate.

A real-time remote sensing monitor could be used as a continuous monitor for methyl bromide concentrations in fumigation chamber control rooms, commodity storage facilities, commodity chilling rooms, and other processing and storage areas where methyl bromide-treated commodities may be present. Areas monitored by this type system, or its equivalent, should not require colorimetric tube sampling.

A real-time monitoring system, equipped with remote sensors or sensor intake ports capable of a minimum detection value of 500 ppb methyl bromide and having a detection lag-time of two minutes or less, may be used to monitor areas where methyl bromide air concentrations may immediately exceed DPR guideline values (630 ppb) or where the buildup of methyl bromide from the off-gassing commodity may also cause concentration greater than 630 ppb. Such a system must include a warning function to indicate where air concentrations have exceeded 630 ppb and an alarm for when concentrations exceed 5 ppm. The system must also include a digital display and be capable of data-logging. Before installation of this type of system, it is strongly recommended that DPR's Worker Health and Safety (WHS) Branch be consulted for proper placement of remote sensors/ports. All manufacturer's requirements and recommendations must be followed. Facilities that install these units as a replacement for colorimetric tube testing should be required to contact WHS staff to confirm the unit's monitoring results.

Appendix J

1,3-Dichloropropene Pesticides (Field Fumigant) Recommended Permit Conditions

Overview

Background Formerly Subsection C.7.1 – *1,3-Dichloropropene Pesticides (Fumigant) Recommended Permit Conditions*.

Introduction These recommended permit conditions apply to the use of pesticides containing the active ingredient (a.i.) *1,3-Dichloropropene* (1,3-D) when applied by either mechanical soil injection or drip application systems. They should be used in addition to the provisions in the *California Food and Agricultural Code (FAC), Title 3, California Code of Regulations (3 CCR)*, and product labeling.

When requirements differ **When requirements differ, the most stringent requirements should be followed.** County agricultural commissioners can use more restrictive conditions based on the local use conditions.

Combination with chloropicrin 1,3-D products containing chloropicrin are also subject to the recommended permit conditions in Appendix K, *Chloropicrin and Chloropicrin with 1,3-Dichloropropene (Field Fumigant) Recommended Permit Conditions*.

In this document This document contains the following topics:

Section	Topic	See Page
J.1	Use Limitations	J-2
J.2	Conditions for All Application Methods	J-4
J.3	Calculating Adjusted Total Pounds	J-6
J.4	Drip Application Systems	J-11

Continued on next page

Section J.1

Use Limitations

Greenhouses and other enclosed areas

Currently, all but two of the 1,3-D products actively registered with DPR have labeling that expressly prohibit its use in greenhouses and other enclosed areas. The other two products have labeling instructions that are inconsistent with use in greenhouses or in enclosed areas, and therefore, preclude their use in such areas. Because of this, DPR has determined that the use of 1,3-D in these locations would be in conflict with their labeling and is prohibited.

How a recommendation to use 1,3-D is approved

Each recommendation to use 1,3-D must be approved using the following process:

1. A registrant-authorized pest control adviser (PCA) electronically submits a recommendation for 1,3-D use to the registrant's agent for approval.
 2. The registrant's agent electronically checks the recommendation for compliance with the product labeling and DPR-recommended permit conditions, including compliance with the maximum allowable amount of 1,3-D (332 pounds of a.i. per acre).
 3. The registrant's agent validates the calculation of total adjusted pounds of 1,3-D requested, taking into consideration all application factors described by the permit.
 4. The registrant's agent checks the total amount requested against the available pounds within the township allotment. If the amount requested is available, the recommendation is approved and the permittee may file a Notice of Intent (NOI) with the CAC. If there is not enough 1,3-D available, a note is displayed, identifying available Adjusted Total Pounds (ATP) of 1,3-D and allowing the PCA to submit a modified request for available 1,3-D.
 5. When use in any township exceeds the authorized cap for that township, both DPR and the CAC will receive an informal notification from the registrant or registrant's agent.
 6. For any township that reaches 150% of the current cap (currently 135,375 ATP), the registrant will compare the registrant's agent's records to county records as a quality assurance check.
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Continued on next page

Use Limitations, Continued

Township caps The management of chronic exposure through a township limit (cap) is a condition of registration. The 1,3-D registrants (or the registrant's agent) will be responsible for tracking, reporting, and ensuring township caps are observed.

An annual township (36 square-mile area) cap is necessary to minimize the levels of the amount of 1,3-D in the atmosphere and mitigate the potential for chronic exposure. This township cap is based on the adjusted total pounds (ATP) of 1,3-D used, which is calculated using the percentage of a.i. in different 1,3-D products.

DPR is utilizing the guidelines of the *California Management Plan: 1,3-Dichloropropene* which is posted on DPR's external website at <http://www.cdpr.ca.gov/docs/emon/methbrom/telone/mgmtplan.pdf>. **For most townships, the current cap is 90,250 ATP per calendar year.**

When county or state borders divide the township, the ATP of 1,3-D allowed per calendar year shall be approximately proportional to the area in each political subdivision.

Exceeding the township cap If the need for 1,3-D in a township exceeds the cap, the Director, upon request by the registrant, may authorize supplemental allowances over the cap provided no significant increase in risk is created by the additional use.

The *California Management Plan: 1,3-Dichloropropene* authorizes supplemental allowances up to 180,500 ATP per calendar year, but only to the extent that use since 1995 in that township was under the annual cap. The unused allotment since 1995 will be, in effect, a "bank" that can be drawn upon.

Once the bank of unused allotment has been expended, use in a township must return to the authorized annual cap, unless the Director allows for exceptions.

Section J.2

Conditions for All Application Methods

Notice of Intent (NOI)

- The permittee shall provide a valid recommendation to the CAC that has been approved by the registrant before the CAC may accept the NOI and allow the application.
- In addition to the information required in 3 CCR section 6434, the following information shall be provided on the NOI:
 1. Application depth and type
 2. The total gallons (TG) of the pesticide formulation
 3. The pounds per gallon (lbs./gal) of 1,3-D formulation
 4. The percent by weight of a.i., expressed as a decimal (.XX)
 5. The total pounds (TP) of 1,3-D a.i. applied
 6. The application factor (AF) appropriate for the proposed application from Table 1: Determining the Application Factor
 7. The adjusted total pounds (ATP) for the proposed application

Procedures for calculating TP and ATP are shown in “Calculating the ATP” later in these recommended permit conditions.

Restrictions for occupied structures

Application of a product containing 1,3-D is prohibited within 100 feet of any occupied structure, measured from the perimeter of the application block to any occupied residences, occupied onsite employee housing, schools, convalescent homes, hospitals, or other similar sites identified by the CAC. If a structure is within 100 feet of the application block, no person shall be present at this structure at any time during the application and during the seven consecutive day period after the application is complete. This restriction applies even on soils that have not experienced a 1,3-D treatment in the previous two years.

Continued on next page

Conditions for All Application Methods, Continued

Entry into the application block

Entry into the application block (including early entry that would otherwise be permitted by the Worker Protection Standard) by any person, other than a government official mandated to regulate pesticide use or a properly trained and equipped handler who is performing a handling task permitted by the product labeling, is prohibited from the start of the application until:

- For tarped applications, either tarps have been removed or tarps have been perforated and at least 48 hours have elapsed since tarp perforation; or
 - For untarped applications, seven (7) days after the application is complete.
-

Tarp perforation and/or removal

Note: Fumigant products that contain only 1,3-D as their active ingredient were not included in U.S. EPA's 2011-2012 label revisions. Therefore, labeling for 1,3-D only products does not include buffer zones or buffer zone credits. Nonetheless, to help specify certain low-permeability tarps, the following is recommended:

Tarps that do not meet the requirements for any percentage reduction in buffer zone distance mentioned on 1,3-D/chloropicrin labels, such as standard polyethylene tarps, may be perforated and/or removed according to fumigant labeling directions.

In contrast, tarps that meet the requirements for any percentage reduction in buffer zone distance mentioned on 1,3-D/chloropicrin labels must not be perforated until a minimum of nine (9) days (216 hours) have elapsed after the application is complete, and must not be removed until a minimum of one (1) day (24 hours) after perforation, unless a weather condition exists that necessitates early tarp perforation or removal as specified by the fumigant label.

Section J.3

Calculating Adjusted Total Pounds

Definition of Adjusted Total Pounds

Adjusted Total Pounds (ATP) is the total quantity of 1,3-D active ingredient that is applied during a particular application, adjusted by an Application Factor (AF). The AF adjusts for the relative amount of 1,3-D that is potentially present in the air near the treated field. For more information, see “Determining the Application Factor”.

Purpose for calculating Adjusted Total Pounds

The purpose for calculating the ATP is to verify that a recommendation for 1,3-D use is in compliance with the maximum allowable application rate. The maximum allowable application rate is 332 pounds of 1,3-D active ingredient per acre. If a pest control adviser submits a recommendation for 1,3-D use that exceeds this maximum allowable rate per acre, the registrant’s agent will not approve the recommendation.

Determining the Application Factor (AF)

The Application Factor (AF) is a numerical value determined by DPR scientists that indicates the relative amount of 1,3-D that is potentially present in the air near treated fields. The higher the AF value, the greater the proportion of the applied 1,3-D that may escape into the air. AF values are based on the geographic location, month, and method of the specific application. The AF values are used in the formula to calculate the ATP used during the application. Use Table 1 below to determine the AF.

Terms used in Table 1:

- Locations consist of:
 - Within SJV – San Joaquin Valley ozone nonattainment area, as defined in Title 40, Code of Federal Regulations, Section 81.305. The nonattainment area is an eight-county region that consists of the western valley portion of Kern County, and all of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties.
 - Outside SJV – Outside the San Joaquin Valley ozone nonattainment area.
 - Tarp types consist of:
 - 60% credit – Tarp assigned a 60% buffer zone credit for products that contain both chloropicrin and 1,3-D as active ingredients, as specified by labeling for those products.
 - Non-60% credit – Either the tarp is not assigned a 60% buffer zone reduction for chloropicrin/1,3-D products as specified by product labeling, or the application is untarped.
-

Continued on next page

Calculating Adjusted Total Pounds, Continued

Determining the Application Factor (AF)
(continued)

- Fumigation methods consist of:
 - Shallow – shank injection less than 18 inches deep
 - Deep – shank injection 18 inches or deeper
 - Strip – shank injection alternating with untreated area
 - Drip – chemigation using drip irrigation system

Table 1. Determining the Application Factor (AF)

Location	Tarp Type	Months	Fumigation Method	Application Factor ¹
Within SJV	non-60% credit	Dec or Jan	Shallow	Prohibited
			Deep	1.9
			Drip	1.16
		Feb-Nov	Shallow	1.9
			Deep	1.0
			Drip	1.16
	60% credit	Dec or Jan	Shallow	0.6
			Deep	0.6
			Strip	1.2
		Feb-Nov	Drip	1.16
			Shallow	0.3
			Deep	0.3
Outside SJV	non-60% credit	Dec or Jan	Strip	0.6
			Drip	1.16
			Shallow	2.3
		Feb-Nov	Deep	1.2
			Drip	1.16
			Shallow	1.9
	60% credit	Dec or Jan	Deep	1.0
			Drip	1.16
			Shallow	0.6
		Feb-Nov	Deep	0.6
			Strip	1.2
			Drip	1.16
60% credit	Dec or Jan	Shallow	0.3	
		Deep	0.3	
		Strip	0.6	
	Feb-Nov	Drip	1.16	
		Shallow	0.3	
		Deep	0.3	

Continued on next page

¹ Drip irrigation applications on soil surface or buried drip application shall use an application factor (AF) of 1.16, regardless of depth.

Calculating Adjusted Total Pounds, Continued

Application rates – maximum gallons per acre (M gal/A)

To determine the maximum number of gallons per acre of pesticide formulation (M gal/A):

Maximum application rate in gal/A = maximum lbs./A divided by lbs./gal

The maximum lbs./A has been set at 332. Therefore:

Divide maximum lbs./A (332) by lbs./gal

Because percentages of a.i. differ in various 1,3-D products, the procedures below describe a method to ensure that neither the maximum rate nor the township limit is exceeded. Additionally, this procedure takes into account percentages of 1,3-D a.i. within different formulated products, allowing more gallons per acre (gal/A) when the product has a lower percentage of 1,3-D or fewer gal/A if the product has a higher percentage of 1,3-D. Use the following steps (which are summarized in Table 2):

1. The gal/A of pesticide formulation shall be based on the number of pounds per acre (lbs./A) of 1,3-D a.i.
 - a) The maximum allowable amount of 1,3-D shall be 332 lbs. of a.i./A
 - b) See pesticide labeling for detailed rate recommendations and rate calculation instructions.

2. Use the following information to calculate the maximum gal/A allowed for each application:
 - a) The pounds per gallon (lbs./gal) for the pesticide formulation
 - b) The percentage by weight of 1,3-D (XX%) in the pesticide formulation, expressed as a decimal (.XX)
 - c) The pounds of 1,3-D per gallon (1,3-D/gal) for the pesticide formulation
 - d) The maximum lbs./A for the application (332)

Maximum application rates cannot exceed labeling maximum rates.

Continued on next page

Calculating Adjusted Total Pounds, Continued

Maximum application rates

Use Table 2 below as a shortcut to find the maximum application rate, with or without a tarpaulin. For example, pesticide product labeling states that Pic-Clor 60, Telone™ II, Telone™ C-17, Telone™ C-35, and Tri-Form 35 shall be applied by mechanical soil injection only.

Table 2. How to determine the maximum application rate with or without a tarpaulin, with examples from some representative 1,3-D products

Calculations	Pic-Clor 60	Telone™ II	Telone™ C-17	Telone™ C-35*	Tri-Form 35
(1) Weight/gallon ¹	12.1 lbs.	10.15 lbs.	10.6 lbs.	11.2 lbs.	11.2 lbs.
(2) % 1,3-D/gallon ²	39%	97.5%	81.2%	61.1%	63.4%
(3) Amt. 1,3-D/gallon ³ (3) = (1) x (2) ÷ 100	4.72 lbs.	9.9 lbs.	8.61 lbs.	6.84 lbs.	7.1 lbs.
Maximum application rate					
(4) Max. lbs. a.i./Acre ⁴	332 lbs. a.i./A				
(5) Max. gal/Acre ⁵ (5) = (4) ÷ (3)	70.34 gal/A	33.54 gal/A	38.57 gal/A	48.54 gal/A	46.76 gal/A

* **NOTE:** See the **Telone™ C-35** product's label for the active ingredient percentages. There are presently two variations of Telone™ C-35 in the channels of trade -- 61.1% a.i. and 63.4% a.i. For Telone C-35 with 63.4% a.i., the maximum application rate calculated via the Table 2 procedure is 46.76 gal/A.

¹ Information for steps (1) and (2) can be found on the product label.

² Information for steps (1) and (2) can be found on the product label.

³ Information for step (3) may or may not be on the product label, but can be calculated from steps (1) and (2).

⁴ Maximum lbs. a.i./Acre in step (4) has been predetermined by the Department of Pesticide Regulation.

⁵ Maximum gal/A in step (5) must be calculated by the applicator.

Calculating Adjusted Total Pounds, Continued

Calculating the Adjusted Total Pounds (ATP)

The Adjusted Total Pounds (ATP) for each application shall be calculated based on the following:

1. The total gallons (TG) of the pesticide formulation
2. The lbs./gal for the pesticide formulation
3. The percent by weight (XX%) of 1,3-D in the pesticide formulation, expressed as a decimal (.XX)*
4. The total pounds (TP) of 1,3-D**
5. The application factor (AF) as determined from Table 1.

The ATP for each application shall be calculated using the following formula:

$$\text{TG x lbs./gal x (.XX) x AF = ATP}$$

*To convert the 1,3-D percentage by weight (XX%) to a decimal, divide XX% by 100 = .XX

**To find the TP, multiply, TG x lbs./gal x (.XX) = TP

- To find the ATP, multiply, TP x AF = ATP
-

Section J.4

Drip Application Systems

Timing for drip irrigation applications

Generally, applications are allowed statewide during the entire year, however, drip applications are prohibited in the San Joaquin Valley ozone nonattainment area during December and January.

Calculating the ATP for drip irrigation applications

To calculate adjusted total pounds (ATP), follow the procedure already described. All drip applications shall use an application factor (AF) of 1.16, whether on soil surface or buried, regardless of depth.

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Appendix K

Chloropicrin and Chloropicrin with 1,3-Dichloropropene (Field Fumigant) Recommended Permit Conditions

Background Formerly Subsection C.7.4 – *Chloropicrin and Chloropicrin with 1,3-Dichloropropene (Field Fumigant) Recommended Permit Conditions.*

Introduction These recommended permit conditions were developed to mitigate hazards of offsite movement of chloropicrin alone or chloropicrin with 1,3-Dichloropropene (1,3-D). They should be used in addition to the provisions in the California Food and Agricultural Code (FAC), Title 3, California Code of Regulations (3 CCR), and the product labeling.

The recommended permit conditions are based on the limited data that DPR has available. It does not cover all environmental conditions, climates, soil types, etc.

Scope These recommended permit conditions apply to all of the following:

- Products that contain only chloropicrin
- Products that contain both chloropicrin and 1,3-D (such as Telone C-17)
- Simultaneous application of a chloropicrin-only product together with a product that contains only 1,3-D (such as Telone II)

Any application that includes 1,3-D is also subject to the recommended permit conditions in Appendix J, *1,3-Dichloropropene Pesticides (Field Fumigant) Recommended Permit Conditions.*

When requirements differ When requirements differ, the most stringent requirement should be followed, unless DPR has provided specific guidance about exceptions. County agricultural commissioners can establish more restrictive conditions based on the local use conditions.

Application block size limit Application block size is limited to 40 acres at one location within a 24-hour period.

Continued on next page

Chloropicrin and Chloropicrin with 1,3-Dichloropropene (Field Fumigant) Recommended Permit Conditions, Continued

Buffer zone credits

If allowed by the label, buffer zone reduction credits are allowed for tarp usage and for post-application water treatments only. In contrast, label buffer zone reduction credits are not allowed for Symmetry application system, potassium thiosulfate, soil organic matter or clay content, or soil temperature.

Buffer zone credit for post-application water treatments

Buffer zone reduction credits stated on the product label for post-application water treatments are allowed only for:

- Untarped applications.
- Applications that are tarped only in beds or strips, and that have untarped ground in between the beds or strips.

In contrast, label buffer zone reduction credits for water treatments are not allowed for tarped broadcast applications.

To qualify for a credit, a post-application water treatment must apply, on the day of application, a minimum of 0.25 – 0.50 inches of water to the application block, starting no earlier than 1 hour prior to sunset and completing by midnight.

Continued on next page

Chloropicrin and Chloropicrin with 1,3-Dichloropropene (Field Fumigant) Recommended Permit Conditions, Continued

**Minimum
buffer zone
distance**

Minimum buffer zone distances regardless of credits:

Tarps that qualify for a reduction credit of 60%	Tarps that do <u>not</u> qualify for a reduction credit of 60% or untarped applications	
	Application block less than or equal to 6 acres	Greater than 6 acres, up to 40 acres
25 feet	60 feet	100 feet

Tarpaulins that qualify for a buffer zone reduction credit of 60% are listed by fumigant active ingredient on the U.S. EPA website at <http://www2.epa.gov/soil-fumigants/tarps>.

These minimum buffer zones do not apply to applications to:

- Golf courses.
- Replant of individual vine or tree-sites (tree holes) less than one contiguous acre.
- Raised-tarpaulin nursery fumigations of less than one acre.
- Potting soil.
- Greenhouses and other similar structures.

For such applications, follow labeling restrictions and, if the product contains 1,3-D, follow the recommended permit conditions in Appendix H.

Continued on next page

Chloropicrin and Chloropicrin with 1,3-Dichloropropene (Field Fumigant) Recommended Permit Conditions, Continued

Overlapping buffer zones

If buffer zones for two or more applications overlap within 36 hours from the time the earlier application is complete until the start of the later application, certain restrictions apply based on the type of tarpaulin used (if any), as shown in the following table:

Restrictions when buffer zones overlap within the first 36 hours:

If ...	Then ...
All application blocks use tarps that qualify for a reduction credit of 60%	<ul style="list-style-type: none"> • <u>Combined</u> acreage of application blocks shall not exceed 40 acres • Buffer zone distance for each block based on <u>individual</u> block acreage, then on label buffer zone look-up tables
At least one application block uses tarps that do <u>not</u> qualify for a reduction credit of 60% or is untarped	<ul style="list-style-type: none"> • <u>Combined</u> acreage of application blocks shall not exceed 40 acres • Buffer zone distance based on <u>combined</u> acreage of application blocks, then on label buffer zone look-up tables

Elapsed time is measured from the time the earlier application is complete until the start of the later application.

Tarpaulins that qualify for a buffer zone reduction credit of 60% are listed by fumigant active ingredient on the U.S. EPA website at <http://www2.epa.gov/soil-fumigants/tarps>.

Tarp perforation and/or removal

Tarps that qualify for any percentage reduction in buffer zone distance must not be perforated until a minimum of 9 days (216 hours) have elapsed after the application is complete, and must not be removed until a minimum of 1 day (24 hours) after perforation, unless a weather condition exists which necessitates early tarp perforation or removal as specified by the label.

Appendix L

Metam Sodium, Metam Potassium, and Dazomet Field Soil Fumigation Recommended Permit Conditions

Overview

Background Formerly Subsection C.7.2 – *Metam Sodium, Metam Potassium, and Dazomet Field Soil Fumigation Recommended Permit Conditions.*

Introduction This document provides recommended permit conditions for field soil fumigation applications of metam sodium, metam potassium, and dazomet products.

In this Appendix This Appendix contains the following topics.

Application Method #	Application Method
1	Dazomet Field Soil Fumigation Recommended Permit Conditions
2	Metam Sodium and Metam Potassium Field Soil Fumigation Recommended Permit Conditions for Drench Applications
3	Metam Sodium and Metam Potassium Field Soil Fumigation Recommended Permit Conditions for Drip Applications
4	Metam Sodium and Metam Potassium Field Soil Fumigation Recommended Permit Conditions for Flood Applications
5	Metam Sodium and Metam Potassium Field Soil Fumigation Recommended Permit Conditions for Power Mulcher and Rotary Tiller (Rototiller) Applications
6	Metam Sodium and Metam Potassium Field Soil Fumigation Recommended Permit Conditions for Rod Bar Applications
7	Metam Sodium and Metam Potassium Field Soil Fumigation Recommended Permit Conditions for Shank Applications
8	Metam Sodium and Metam Potassium Field Soil Fumigation Recommended Permit Conditions for Spray Blade with Soil Cap Applications
9	Metam Sodium and Metam Potassium Field Soil Fumigation Recommended Permit Conditions for Sprinkler Applications

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Appendix M

Methyl Bromide Field Fumigation Recommended Permit Conditions

Background	Formerly Subsection C.7.3, Part 7.3.2 – <i>Methyl Bromide Field Fumigation Recommended Permit Conditions</i> .
Introduction	In addition to labeling and California regulation requirements, DPR recommends the following permit conditions.
About the permit conditions	<p>These permit conditions are a consolidation of certain methyl bromide regulations and label requirements, and are meant to clarify the use requirements in 3 CCR sections 6447 (general requirements), 6447.1 (notification), and 6447.2 (buffer zones). These permit conditions also clarify new label requirements for buffer zones, difficult to evacuate sites, emergency preparedness and response measures, tarp perforation and removal, and label references to buffer zones by specifying whether the requirements apply to the inner buffer zone or the outer buffer zone. DPR’s intent is that by complying with these permit conditions, permittees would simultaneously comply with the above-mentioned regulations and label requirements. These permit conditions also include all applicable chloropicrin permit conditions.</p> <p>Consistent with 3 CCR section 6447, these permit conditions do not apply to:</p> <ul style="list-style-type: none">• Greenhouses and other similar structures• Potting soil• Golf courses• Replant of individual vine or tree-sites (tree holes) less than one contiguous acre, and• Raised-tarpaulin nursery fumigations of less than one acre.
Greenhouse, potting soil, and other fumigations	For greenhouse fumigations with methyl bromide, follow <i>Methyl Bromide Recommended Permit Conditions for Soil Fumigation Within a Greenhouse</i> in Appendix I. For potting soil, follow <i>Recommended Permit Conditions for Tarped Potting Soil Fumigation</i> in Appendix G.2. For other fumigations to which DPR methyl bromide permit conditions do not apply, follow methyl bromide labeling restrictions, which include a minimum 25-foot buffer zone.

Continued on next page

Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Guidance documents for buffer zones

For California, labeling for all methyl bromide products (even products that contain more than 50% chloropicrin) requires a buffer zone distance specified on the current restricted materials permit, provided that the buffer zone distance is equal to or greater than the buffer zone distance specified in the December 8, 2004 California Department of Pesticide Regulation Methyl Bromide Field Fumigation Guidance Manual. Additionally, regulations specify that the commissioner may not allow a buffer zone that is smaller or a duration that is less in permit conditions than those listed in Methyl Bromide Field Fumigation Buffer Zone Determination, Rev. 3/10. The buffer distances in the 3/10 document are the same as the 12/8/04 document.

Commissioners should determine buffer zone distances and durations using the Methyl Bromide Field Fumigation Buffer Zone Determination, Rev. 3/13. The only change in buffer distances is the deletion of the buffer zones for one fumigation method no longer allowed by labeling, the untarped/shallow/bed method described in 3 CCR section 6447.3(a)(1). The 3/13 document also reconciles the labeling requirements for buffer zone proximity with the recommended permit conditions for field separation. The 1300 feet (1/4 mile) separation to determine isolated and non-isolated blocks no longer applies. Other buffer zone requirements on the labels (e.g., buffer duration,) still apply. To view the buffer determination document, go to <http://www.cdpr.ca.gov/docs/emon/pubs/tac/methbrom.htm>.

Fumigation Management Plan and work site plan

Per 3 CCR section 6447(a), the operator of the property to be treated must submit a proposed work site plan (WSP) to the commissioner for evaluation at least 7 days prior to submitting a notice of intent. In addition, Phase 2 labeling requires the certified applicator supervising the application to verify and sign a site-specific Fumigation Management Plan (FMP) before the start of the application. Commissioners have the option to require submission of only the WSP document as per 3 CCR section 6447(a). In that case, the supervising certified applicator must complete a separate FMP document prior to application, but need not submit the FMP to the CAC.

Continued on next page

Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Fumigation Management Plan and work site plan
(continued)

Alternatively, Commissioners have the option to require a single comprehensive document that covers both requirements. To cover both requirements with a single document, the operator of the property to be treated shall submit a proposed FMP to the commissioner for evaluation at least 7 days prior to submitting the notice of intent, and include all elements specified by the label (except those that are required just prior to application, such as soil moisture), plus a description of:

- The notification procedure to property operators pursuant to section 6447.1(b);
 - Any activities within the buffer zone(s) as specified in sections 6447.2(e) and (f); and
 - Any workday/work hour limitations and respiratory protection as specified in sections 6784(b)(2)(C) and (b)(3).
-

Notification to neighbors and emergency preparedness and response measures

NOTE to the commissioner: These recommended permit conditions consolidate the notification requirements in 3 CCR section 6447.1 with the label notification requirements for Emergency Preparedness and Response. These permit conditions comply with both sets of requirements. The underlined text below shows the additional requirements needed to comply with labeling. If triggered, the labels' Emergency Preparedness and Response measures require either notification or monitoring. If the consolidated notification procedure is followed, monitoring would not be needed.

Initial notification

The certified applicator supervising the fumigation and the operator of the property to be treated shall assure that operators of the following properties within 300 feet of the perimeter of the outer buffer zone receive notification that a permit to use methyl bromide near their property has been issued by the commissioner: properties that contain schools, residences, hospitals, convalescent homes, onsite employee housing, or businesses.

Continued on next page

Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Initial notification (continued)

Notification shall be in writing, in both English and Spanish, or by other means approved by the commissioner. The operator of the property to be treated shall assure that notification is delivered at least seven days prior to the submission of the notice of intent. The notification shall include the following information:

- The name of the chemical(s) to be applied;
 - Name of fumigant product(s) and the EPA Registration number;
 - Name, business address, and business telephone number of the operator of the property to be treated;
 - Contact information for the applicator;
 - Name, business address, and business telephone number of the commissioner;
 - The earliest and latest dates that the fumigation will start (must not range more than 4 weeks);
 - How to request subsequent notification of specific date and time of the fumigation;
 - Location of the application block;
 - Early signs and symptoms of exposure to the fumigant(s) applied, what to do, and who to call if you believe you are being exposed (911 in most cases); and
 - How to find additional information about fumigants.
-

Specific notification when requested

The operator of the property to be treated shall assure that specific notification of the date and time of the start of the fumigation and anticipated expiration of buffer zones is provided to those persons notified above who request specific fumigation information. This specific fumigation notification shall be provided at least 48 hours prior to starting the fumigation. If a request for specific notification is received after the submission of the notice of intent and before the fumigation begins, the specific fumigation notification shall be provided prior to starting the fumigation, but the 48-hour requirement shall not apply. If the fumigation of an application block does not commence within the time frame specified in 6447.1(a)(2), then a new notification must be provided to those persons who requested the information, but the 48-hour requirement shall not apply unless required by the commissioner.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

General buffer zone requirements

The inner and outer buffer zones mentioned in 3 CCR section 6447.2 must extend outward from the edge of the application block perimeter equally in all directions.

In general, all non-handlers, including field workers, residents, pedestrians, and other bystanders, must be excluded from the inner and outer buffer zones during the buffer zone period. Specific exceptions may be approved by the commissioner within the outer buffer zone (see “Outer buffer zone” section below).

The buffer zone restrictions shall begin at the start of fumigation. The buffer zone restrictions shall remain in effect for at least 48 hours after the completion of the application to the application block.

Inner buffer zones

The operator of the property to be treated shall assure that no persons are allowed within the inner buffer zone mentioned in 3 CCR section 6447.2 except to transit by vehicle or bicycle and perform fumigation-handling activities.

Inner buffer zones are not permitted to include bus stops or other locations where persons wait for public transit.

The inner buffer zone shall not extend into adjoining agricultural property except as provided below:

The inner buffer zone may extend into adjoining agricultural property if the adjoining property operator gives written permission and allows the operator of the property to be treated to post the inner buffer zone boundary on the adjoining property with signs. If such written permission is given, the operator of the property to be treated shall assure that:

- The inner buffer zone boundaries on the adjoining property are posted with signs while the buffer zone is in effect; and
- The signs are posted at intervals not exceeding 200 feet.

Continued on next page

Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Inner buffer zones (continued)

Unless there is a physical barrier that prevents bystander access to the inner buffer zone, inner buffer zone signs must also be placed along or outside the perimeter of the inner buffer zone, at all usual points of entry, and along likely routes of approach from areas where people not under the owner's control *may* approach the buffer zone.

- Some examples of points of entry include, but are not limited to, roadways, sidewalks, paths, and bike trails.
- Some examples of likely routes of approach include, but are not limited to, the area between a buffer zone and a roadway, or the area between a buffer zone and a housing development.

Inner Buffer Zone signs must meet the following criteria:

- The printed side of the sign must face away from the application block toward areas from which people could approach.
- Signs must remain legible during the entire posting period and must meet the general standards outlined in the WPS for sign size, text size, and legibility (see 40 CFR §170.120).
- Signs must be posted no sooner than 24 hours prior to the start of the application and remain posted until the buffer zone period has expired.
- Signs must be removed within 3 days after the end of the buffer zone period.
- Inner Buffer Zone signs which meet the criteria above will be provided at points of sale for applicators to use.
- The Inner Buffer Zone signs must contain the following information:
 - “Do Not Walk” symbol
 - DO NOT ENTER/NO ENTRE
 - Methyl Bromide [Product Name] Fumigant BUFFER ZONE
 - Contact information for the certified applicator in charge of the fumigation

Continued on next page

Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Inner buffer zones (continued)

Exception: If multiple contiguous blocks are fumigated within a 14-day period, the entire periphery of the contiguous blocks' buffer zones *may* be posted. Inner Buffer Zone signs must be posted no sooner than 24-hours prior to the start of the first application. The signs must remain posted until the last buffer zone period expires and signs must be removed within 3 days after the buffer zone period for the last block has expired.

Inner buffer zones must not include buildings under the control of the owner of the application block and used for storage (e.g., sheds, barns, garages), UNLESS,

1. The storage buildings are not occupied during the buffer zone period, and
2. The storage buildings do not share a common wall with an occupied structure.

Outer buffer zones

The operator of the property to be treated shall assure that no persons are allowed within the outer buffer zone except to transit by vehicle or bicycle, perform fumigation-handling activities, and commissioner-approved activities as identified in the restricted materials permit conditions. In no instance shall persons be allowed within the outer buffer zone for more than 12 hours in a 24-hour period.

The outer buffer zone shall not extend into properties that contain schools, convalescent homes, hospitals, and other similar sites determined by the commissioner.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Outer buffer zones (continued)

Outer buffer zones must not include residential areas (e.g., employee housing, private property), buildings (e.g., commercial, industrial), outdoor residential areas (e.g., lawns, gardens, play areas) and other areas that people may occupy, UNLESS,

- The occupants provide written agreement prior to the application that they will voluntarily vacate the buffer zone during the entire buffer zone period, and
- Reentry by occupants and other non-handlers must not occur until,
 - The buffer zone period has ended, and
 - Sensory irritation is not experienced upon re-entry.
 - For products containing more than 89% of methyl bromide, the certified applicator or handler(s) under his/her supervision has monitored the structures and has not experienced any sensory irritation upon re-entry. Entry by occupants and other non-handlers must not occur until two consecutive air samples for methyl bromide have been taken in the structure at least 1 hour apart and both samples indicate less than 1 ppm methyl bromide.

For publicly owned and/or operated areas such as parks, sidewalks, permanent walking paths, playgrounds, and athletic fields, outer buffer zones must not include these areas, UNLESS,

1. The area is not occupied during the buffer zone period,
2. Entry by non-handlers is prohibited during the buffer zone period, and
3. Written permission to include the public area in the buffer zone is granted by the appropriate state and/or local authorities responsible for management and operation of the area.

There is no requirement to post signs on the outer buffer zone perimeter. The labeling requirement for posting applies to the inner buffer zone.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Difficult to evacuate sites

No fumigant application with an outer buffer zone greater than 300 feet is permitted within 1/4 mile (1,320 feet) of difficult to evacuate sites unless the site is not occupied by children from state-licensed day care centers, students (pre-K to grade 12), patients, or prisoners during the application and the 36-hour period following the end of the application.

No fumigant application with an outer buffer zone of 300 feet or less is permitted within 1/8 mile (660 feet) of difficult to evacuate sites unless the site is not occupied by children from state-licensed day care centers, students (pre-K to grade 12), patients, or prisoners during the application and the 36-hour period following the end of the application.

NOTE to the commissioner: Based on local conditions, commissioners should determine whether the 1/4 mile or 1/8 mile distance is measured from the fumigation to a difficult to evacuate site's property line or occupied structure, and one of these should be specified in the permit conditions.

NOTE to the commissioner: When the outer buffer zone is more than 1020 feet, 3 CCR section 6447.2(i) still applies: When a school property is within 300 feet of the perimeter of the outer buffer zone, the injection shall be completed no less than 36 hours prior to the start of a school session. School session shall be those times when students are attending scheduled classes.

Tarp perforation and/or removal

Tarps that qualify for any percentage reduction in buffer zone distance must not be perforated until a minimum of 9 days (216 hours) have elapsed after the application is complete, and must not be removed until a minimum of 1 day (24 hours) after perforation, unless a weather condition exists which necessitates early tarp perforation or removal as specified by the label. Tarps that qualify for reductions in buffer zone distances are listed in the methyl bromide portion of the U.S. EPA web site at <http://www2.epa.gov/soil-fumigants/tarps>.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Additional information

Tarps that qualify for a reduction in buffer zone distance are generally prohibited for use with methyl bromide by 3 CCR section 6447(e). The recommended permit conditions allow these “high barrier” tarpaulins (e.g., totally impermeable films, virtually impermeable films) to be used with methyl bromide. This can be allowed as long as the permit conditions pertaining to the tarps (i.e., buffer distances, buffer duration, and tarp cutting intervals) are equally or more stringent than the regulations. Additionally, none of the buffer zone credits described on the label can be used for methyl bromide because they are not options in the 12/8/04 Guidance Manual.

Although not included in the permit conditions, use of metalized tarps should be discouraged because they may have disposal issues in California.

Appendix N

Volatile Organic Compounds

Overview

Introduction This appendix contains information on Volatile Organic Compounds (VOCs).

In this Appendix This Appendix contains the following topics.

Section	Topic	See page
N.1	Federal Nonattainment Areas Affected by California Regulations to Reduce Emissions from Fumigant Pesticides	N-3
N.2	Field Fumigation Methods (FFM), FFM Codes for Pesticide Use Reporting, and Emission Ratings	N-5

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FEDERAL NON-ATTAINMENT AREAS
AFFECTED BY CALIFORNIA REGULATIONS
TO REDUCE EMISSIONS
FROM
FUMIGANT PESTICIDES

January 2008



* Sacramento Metro NAA
- all of Sacramento and Yolo counties, and parts of El Dorado, Placer, Solano and Sutter counties.

* San Joaquin Valley NAA
- all of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare counties, and the valley portion of Kern County.

* South Coast NAA
- all of Orange County, and parts of Los Angeles, Riverside and San Bernardino counties.

* Southeast Desert NAA
- the desert portions of Riverside (Coachella Valley), Los Angeles (Lancaster/Palm dale), and San Bernardino (Barstow) counties.

* Ventura NAA - all of Ventura County.

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California Department of Pesticide Regulation
Volatile Organic Compound Regulations
Field Fumigation Methods (FFM), FFM Code for Pesticide Use Reporting, and Emission Ratings

Regulation Section	Field Fumigation Method	FFM Code	Emission Rating (%)
6447.3	Methyl Bromide Fumigation Methods (With or without chloropicrin)	1100 series	
6447.3(a)(1)	Nontarpaulin/Shallow/Bed	1101	100*
6447.3(a)(2)	Nontarpaulin/Deep/Broadcast	1102	74*
6447.3(a)(3)	Tarpaulin/Shallow/Broadcast – Nobel Plow	1103	48
	Tarpaulin/Shallow/Broadcast – Nobel Plow – Strip	1104	74*
	Tarpaulin/Shallow/Broadcast – Closing shoes and compaction roller	1105	100*
6447.3(a)(4)	Tarpaulin/Shallow/Bed	1106	100*
6447.3(a)(5)	Tarpaulin/Deep/Broadcast	1107	48
	Tarpaulin/Deep/Broadcast – Strip	1108	74*
6447.3(a)(6)	Drip System - Hot Gas	1109	100*
6447.3(a)(3)	Tarpaulin/Shallow/Broadcast – Nobel Plow–with tarp eligible for 60% credit	1143	48
	Tarpaulin/Shallow/Broadcast – Nobel Plow – Strip –with tarp eligible for 60% credit	1144	74*
	Tarpaulin/Shallow/Broadcast – Closing shoes and compaction roller–with tarp eligible for 60% credit	1145	100*
6447.3(a)(4)	Tarpaulin/Shallow/Bed –with tarp eligible for 60% credit	1146	100*
6447.3(a)(5)	Tarpaulin/Deep/Broadcast –with tarp eligible for 60% credit	1147	48
6447.3(a)(6)	Drip System - Hot Gas –with tarp eligible for 60% credit	1149	100*
	Other label method for Methyl Bromide (with or without chloropicrin)**	1190	---
		-	-
6448.1	1,3-Dichloropropene Fumigation Methods (with or without chloropicrin)	1200 series	
6448.1(d)(1)	Nontarpaulin/Shallow/Broadcast or Bed	1201	65*
6448.1(d)(2)	Tarpaulin/Shallow/Broadcast	1202	65*
	Tarpaulin/Shallow/Bed	1203	65*
6448.1(d)(3)	Nontarpaulin/Shallow/Broadcast /Three Water Treatments	1204	44
6448.1(d)(4)	Tarpaulin/Shallow/Bed/Three Water Treatment	1205	44
6448.1(d)(5)	Nontarpaulin/Deep/Broadcast or Bed	1206	26
6448.1(d)(6)	Tarpaulin/Deep/Broadcast	1207	26
	Tarpaulin/Deep/Bed	1208	26
6448.1(d)(7)	Chemigation (Drip System)/Tarpaulin	1209	29
6448.1(d)(5)	Nontarpaulin/Deep/Strip	1210	26
6448.1(d)(5)	Nontarpaulin/Deep/GPS-targeted	1211	26
6448.1(d)(2)	Tarpaulin/Shallow/Broadcast –with tarp eligible for 60% credit	1242	10
	Tarpaulin/Shallow/Bed–with tarp eligible for 60% credit	1243	65*
6448.1(d)(4)	Tarpaulin/Shallow/Bed/Three Water Treatment –with tarp eligible for 60% credit	1245	44
6448.1(d)(6)	Tarpaulin/Deep/Broadcast –with tarp eligible for 60% credit	1247	10
	Tarpaulin/Deep/Bed–with tarp eligible for 60% credit	1248	26
6448.1(d)(6)	Tarpaulin/Deep/Broadcast-strip –with tarp eligible for 60% credit	1249	21
6448.1(d)(7)	Chemigation (Drip System)/Tarpaulin –with tarp eligible for 60% credit	1259	29
	Other label method for 1,3-Dichloropropene (with or without chloropicrin)**	1290	---
6449.1	Chloropicrin-Fumigation Methods	1100-1300 series	
6447.3(a)(1)	Nontarpaulin/Shallow/Bed	1101	64*

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6447.3(a)(2)	Nontarpaulin/Deep/Broadcast	1102	64*
6447.3(a)(3)	Tarpaulin/Shallow/Broadcast – Nobel Plow	1103	44
	Tarpaulin/Shallow/Broadcast – Nobel Plow – Strip	1104	64*
	Tarpaulin/Shallow/Broadcast – Closing shoes and compaction roller	1105	64*
6447.3(a)(4)	Tarpaulin/Shallow/Bed	1106	64*
6447.3(a)(5)	Tarpaulin/Deep/Broadcast	1107	44
	Tarpaulin/Deep/Broadcast – Strip	1108	64*
6447.3(a)(3)	Tarpaulin/Shallow/Broadcast – Nobel Plow–with tarp eligible for 60% credit	1143	7
	Tarpaulin/Shallow/Broadcast – Nobel Plow – Strip –with tarp eligible for 60% credit	1144	7
	Tarpaulin/Shallow/Broadcast – Closing shoes and compaction roller–with tarp eligible for 60% credit	1145	7
6447.3(a)(4)	Tarpaulin/Shallow/Bed –with tarp eligible for 60% credit	1146	7
6447.3(a)(5)	Tarpaulin/Deep/Broadcast –with tarp eligible for 60% credit	1147	7
	Tarpaulin/Deep/Broadcast – Strip –with tarp eligible for 60% credit	1148	7
6448.1(d)(1)	Nontarpaulin/Shallow/Broadcast or Bed	1201	64*
6448.1(d)(2)	Tarpaulin/Shallow/Broadcast	1202	44
	Tarpaulin/Shallow/Bed	1203	64*
6448.1(d)(3)	Nontarpaulin/Shallow/Broadcast /Three Water Treatments	1204	43
6448.1(d)(4)	Tarpaulin/Shallow/Bed/Three Water Treatment	1205	43
6448.1(d)(5)	Nontarpaulin/Deep/Broadcast or Bed	1206	64*
6448.1(d)(6)	Tarpaulin/Deep/Broadcast	1207	44
	Tarpaulin/Deep/Bed	1208	44
6448.1(d)(7)	Chemigation (Drip System)/Tarpaulin	1209	12
6448.1(d)(5)	Nontarpaulin/Deep/Broadcast/Strip	1210	64
6448.1(d)(5)	Nontarpaulin/Deep/Broadcast/GPS-targeted	1211	64
6448.1(d)(2)	Tarpaulin/Shallow/Broadcast –with tarp eligible for 60% credit	1242	7
	Tarpaulin/Shallow/Bed–with tarp eligible for 60% credit	1243	7
6448.1(d)(4)	Tarpaulin/Shallow/Bed/Three Water Treatment –with tarp eligible for 60% credit	1245	7
6448.1(d)(6)	Tarpaulin/Deep/Broadcast –with tarp eligible for 60% credit	1247	7
	Tarpaulin/Deep/Bed–with tarp eligible for 60% credit	1248	7
6448.1(d)(6)	Tarpaulin/Deep/Broadcast-strip –with tarp eligible for 60% credit	1249	7
6448.1(d)(7)	Chemigation (Drip System)/Tarpaulin –with tarp eligible for 60% credit	1259	7
	Other label method for Chloropicrin**	1390	---
6450.1	Metam-Sodium and Metam-Potassium Fumigation Methods	1400 series	
6450.1(e)(1)	Sprinkler/Broadcast or Bed/One Water Treatment	1401	77*
6450.1(e)(2)	Sprinkler/Broadcast or Bed/Two Water Treatments	1402	28
6450.1(e)(3)	Sprinkler/Broadcast or Bed/Three Water Treatments	1403	21
6450.1(e)(4)	Nontarpaulin/Shallow/Broadcast or Bed/One Water Treatment	1404	77*
6450.1(e)(5)	Nontarpaulin/Shallow/Broadcast or Bed /Two Water Treatments	1405	28
6450.1(e)(6)	Nontarpaulin/Shallow/Broadcast or Bed/Three Water Treatments	1406	21
6450.1(e)(7)	Chemigation (Drip System) Tarpaulin	1407	9
	Chemigation (Drip System) Nontarpaulin	1408	9
6450.1(e)(8)	Rotary Tiller	1409	14
	Power Mulcher	1410	14
	Soil Capping	1411	14
6450.1(e)(9)	Flood	1412	77*
6450.1(e)(12)	Drench	1413	100

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6450.1(e)(7)	Chemigation (Drip System) Tarpaulin –with tarp eligible for 30% credit	1447	9
6450.1(e)(2)	Night 1 A.M. Start/Sprinkler/Broadcast or Bed/Two Water Treatments	1452	77*
6450.1(e)(10)	1 A.M. Start/Nontarpaulin/Shallow/Broadcast or Bed/Two Water Treatments	1455	13
6450.1(e)(11)	4 A.M. Start/sprinkler/Broadcast or Bed/Two Water Treatments	1472	35
	Other label method for Metam-Sodium and Metam-Potassium**	1490	---
6450.2	Dazomet Fumigation Methods	1500 series	
	Soil incorporation	1501	17
	Surface application – water incorporation	1502	17
	Other label method for Dazomet**	1590	---
6451.1	Sodium Tetrathiocarbonate Fumigation Methods	1600 series	
	Chemigation (Drip)	1601	10
	Chemigation (mini-sprinkler)	1602	10
	Chemigation (flood, basin)	1603	10
	Chemigation (furrow, border)	1604	10
	Chemigation (foggers, jets, misters, other)	1605	10
	Other label method for Sodium Tetrathiocarbonate**	1690	---
6446.1	Methyl Iodide Fumigation Methods***	1700 Series	
	Day Tarpaulin/Shallow/Broadcast	1701	100
	Day Tarpaulin/Shallow/Bed	1702	100
	Day Tarpaulin/Deep/Broadcast	1703	100
	Day Chemigation (Drip)/Tarpaulin	1704	100
	Day Auger-Probe	1705	100

*Method prohibited within the San Joaquin Valley, Southeast Desert, and Ventura nonattainment areas during May 1 – October 31.

**For use only outside of the May 1 – October 31 time period: or areas outside of the nonattainment areas; or for exempted applications (such as described in Sections 6447, 6448, 6449, 6450, and 6451)

***Methyl Iodide is no longer registered. Codes are for applications that were made in 2011 when the chemical was registered for use.

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