

Application Method 1

Dazomet Field Soil Fumigation Recommended Permit Conditions

Scope In addition to labeling and regulations, DPR recommends the following permit conditions. These permit conditions were developed to mitigate hazards of offsite movement of methyl isothiocyanate (MITC) following applications of metam sodium, metam potassium, and dazomet. DPR risk assessment and incident reports identified excess risk to field workers and bystanders near applications of these fumigants.

Additional restrictions may apply for fields located within California’s nonattainment areas. To determine if a field is within a nonattainment area, go to www.cdpr.ca.gov and click on “A-Z Index” then “Nonattainment area maps.” Additional restrictions for nonattainment areas are listed in the volatile organic compound regulations in Title 3, California Code of Regulations (3 CCR) sections 6450 through 6450.2.

- CAC discretion**
1. Follow the most restrictive requirement, whether it is the label, regulations, or local CAC’s adopted permit conditions. DPR may provide specific guidance about exceptions.
 2. The CACs have the discretion to use mitigating conditions based on the local use conditions that have worked for them in the past.
 3. These recommended permit conditions are based on the fairly limited data that DPR has available. This data does not cover all environmental conditions, climates, soil types, etc.
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Emergency response plan The county agricultural commissioner must be notified immediately if the emergency response plan is implemented.

Restrictions near Schools, Day care centers, and Preschools All applications are prohibited ½ mile or less from the perimeter of a school property (see Appendix I for definition of “School”) unless the school is not scheduled to be in session during both the application and the 36-hour period following the end of the application.

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Recommended Permit Conditions, Continued

Application method requirements

The following requirements apply to all applications of dazomet:

1. All application equipment must be inspected immediately prior to use to assure it is in good working condition.
2. All irrigation equipment that will be used for post-application water treatments (see Appendix I for definition of “Post-Application Water Treatment”) must be inspected and tested prior to beginning the application to assure it is in good working condition.
3. Tarps are not permitted in lieu of post-application watering.
4. Application block size is limited to a maximum of 40 acres within a 24-hour period.

Offsite movement suppression requirements: emergency response measures

For all dazomet applications, the certified applicator supervising the application must verify that the operator of the property to be fumigated has the capability to respond to offsite movement of MITC. The specific capability required is shown in Tables 1 and 2. The supervising certified applicator must document that capability in the Emergency Response Plan located in the Fumigation Management Plan:

Table 1. Required Capability to Suppress Offsite Movement Near “Schools”

Distance to Perimeter of Nearest School* Property	Water Treatment Requirements
½ mile or less and school is scheduled to be in session	Application prohibited
Greater than ½ mile and up to 1 mile, and school is scheduled to be in session	Irrigation equipment and water available for 48 hours post-application Exception: May substitute 3-inch soil cap if: <ol style="list-style-type: none"> 1. Water is not available, and 2. Application is bedded or strip.

*See Appendix I for definition of “School”

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Recommended Permit Conditions, Continued

Offsite movement suppression requirements: emergency response measures (continued)

Table 2. Required Capability to Suppress Offsite Movement Near “Occupied Structures” or “Bystander Areas”

Distance to Perimeter of Nearest Occupied Structure or Bystander Area*	Water Treatment Requirements
¼ mile or less	Irrigation equipment and water available for 48 hours post-application Exception: May substitute 3-inch soil cap if: 1. Water is not available, and 2. Application is bedded or strip.
Greater than ¼ mile up to 1 mile	Irrigation equipment and water available for 24 hours post-application Exception: May substitute 3-inch soil cap if: 1. Water is not available, and 2. Application is bedded or strip.
Greater than 1 mile	Not required

* See Appendix I for definitions of “Occupied Structure” and “Bystander Area”

1. When planning to use water to suppress offsite movement, the certified applicator supervising the application must select, and document in the Emergency Response Plan located in the Fumigation Management Plan, a combination of water quantity, irrigation rate, and duration that meets all three of the following specifications:
 - total quantity of 0.20–0.40 inches of water over the treatment site,
 - irrigation delivery rate of 0.15–0.25 inches per hour, and
 - irrigation duration of 2–3 hours.

The ranges of 0.20–0.40 inches of water and 0.15–0.25 inches per hour allow the CAC to determine the amount of water required based on local conditions such as soil type and moisture content, and air and soil temperature at the time of application.

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Recommended Permit Conditions, Continued

Offsite movement suppression requirements: emergency response measures
(continued)

2. Follow the application site monitoring requirements under “Application Site Monitoring Requirements” detailed later in these permit conditions.
 3. Whenever offsite movement of MITC is detected, cease the application (if still underway) and initiate the Emergency Response Plan indicated in the Fumigation Management Plan.
 4. The county agricultural commissioner must be notified immediately if the emergency response plan is implemented.
 5. Obtain authorization from the CAC prior to restarting any application that has been ceased due to a response.
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Permit application

Permit applications must include a map of all “occupied structures” and “bystander areas” (see Appendix I for definitions of “Occupied Structure” and “Bystander Area”) within ½ mile of the fumigation site and all schools within 1 mile of the fumigation site.

Notice of intent

1. The Notice of Intent (NOI) is required to be submitted at least 48 hours prior to the start of fumigation.
 2. In addition to information required in 3 CCR section 6434(b), the following information must be submitted with the NOI:
 - The number of application blocks to be treated and acreage of each application block.
 - The time (within a 12-hour window) that each application is scheduled to commence. If the application fails to commence within the 12-hour window, a new NOI is required, but another 48-hour waiting period would not be needed unless required by the CAC.
 - The method of post-application treatment to be used to suppress offsite movement, including number of post-application water treatments, if applicable.
 - The buffer zone size and buffer zone duration if longer than required by the label.
 - The certified applicator’s 24-hour contact telephone number.
 - Written agreement(s) required by labeling to allow the buffer zone to extend onto any areas not under the control of the owner of the application block, if applicable. (Attach these agreements to the Fumigation Management Plan.)
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Recommended Permit Conditions, Continued

Notice of intent (continued)

- Proof that sufficient water is available for application, post-application water treatment, and offsite movement suppression requirements. (Also attach to Fumigation Management Plan.)
 - Proof of sufficient soil, if soil capping can be used in lieu of water for the offsite movement suppression requirements. (Also attach to Fumigation Management Plan.)
 - Include the map required for Fumigation Management Plan in the NOI.
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Application timing

Dazomet applications must start no earlier than 1 hour after sunrise. Applications must be completed in time to allow incorporation and post-application water treatment to begin no later than 1 hour before sunset.

Buffer zones

1. Label buffer zone credits are not allowed.
 2. Tables
 - Use buffer zone tables 1, 2, and 3 to determine the buffer zone distance based on application type.
 - For greenhouse applications, please refer to the buffer zone table on the product label to determine buffer zone distance.
 - For mechanically incorporated dazomet applications to golf course fairways that meet dimension requirements described on the product label (length of application area is twice the distance of the width), please refer to buffer zone Table 2. If the application area does not meet these size requirements, please refer to buffer zone Table 1 in these permit conditions.
 - If the buffer zone tables do not capture the specific acreage or application rate, round up to the nearest acre or rate.
 3. Permission for adjoining properties
 - When the buffer zone of an application block extends onto an area not under the control of the owner of the application block, a written agreement must be submitted with the NOI and attached to the Fumigation Management Plan.
 - If the written agreement is not included in the NOI, the buffer zone cannot encroach beyond the property line of such areas (residential areas, occupied structures, publicly owned parks, etc., as described on the product label).
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Recommended Permit Conditions, Continued

Application site monitoring requirements

1. General Requirements
 - Monitoring information must be recorded on the form “Monitoring During Application (Field Fumigation) DPR-ENF-223” or an equivalent form and attached to the Post-Application Summary.
 - If monitoring indicates a change that could result in offsite movement (e.g., increased or greatly decreased wind speed, change in wind direction toward occupied structures) the certified applicator supervising the application must be ready to carry out the requirements described in the Emergency Response Plan located in the Fumigation Management Plan.
 - Application site monitoring as described in this permit condition is separate from the “Fumigant Site Monitoring” option of the “Emergency Preparedness and Response Measures” specified on the label, and must be conducted for each application.
 - Whenever “Emergency Preparedness and Response Measures” are triggered, and the “Fumigant Site Monitoring” option is selected, the supervising certified applicator must ensure that the monitoring is conducted as follows:
 - Monitoring must be done at the outer edge of the buffer zone.
 - Monitoring must be done in the direction of bystanders, residences, and businesses, and in the direction that the wind is blowing.
 - Monitoring must be done in all directions on calm days (see Appendix I for definition of “Calm Day”).
 - Person monitoring must have full olfactory capabilities (e.g., not impaired by allergies or colds).
2. Pre-Application
 - Monitor and document wind speed and direction, and soil and air temperature at the application site immediately prior to application.
3. During Application
 - The following conditions must be monitored every hour until the application is completed, recorded on the form “Monitoring During Application (Field Fumigation) DPR-ENF-223” or an equivalent form during the application, and attached to the Post-Application Summary:
 - Wind speed and wind direction; and
 - Any unusual conditions observed at or adjacent to the application site (e.g., odor, reported symptoms of exposure, equipment failure, or spill).

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Recommended Permit Conditions, Continued

Application site monitoring requirements
(continued)

4. Post-application
 - On the day of application, the certified applicator supervising the application must ensure that a trained handler is at the site continually from 1 hour before sunset through 1 hour after sunset, in addition to the periods required to conduct post-application monitoring. If the trained handler is an employee, he or she must have the authority to initiate the Emergency Response Plan whenever needed, or must be able to immediately contact the person who has that authority.
 - Post-application field monitoring shall be conducted for 12 hours following application and recorded on form “Monitoring Post-Application DPR-ENF-224” or an equivalent form and attached to the Post-Application Summary. Specific monitoring requirements are shown in Tables 3 and 4:

Table 3. Frequency of Post-Application Monitoring Required Near “Schools”

Distance to Perimeter of Nearest School* Property	Monitoring Requirements
½ mile or less and school is scheduled to be in session	Application prohibited
Greater than ½ mile and up to 1 mile, and school is scheduled to be in session	Every hour

*See Appendix I for definition of “School”

Table 4. Frequency of Post-Application Monitoring Required Near “Occupied Structures” or “Bystander Areas”

Distance to Perimeter of Nearest Occupied Structure or Bystander Area*	Monitoring Requirements
¼ mile or less	Every hour
Greater than ¼ mile	Every 2 hours

*See Appendix I for definitions of “Occupied Structure” and “Bystander Area”

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Recommended Permit Conditions, Continued

Application site monitoring requirements
(continued)

Each time post-application monitoring is conducted, the following conditions must be monitored and recorded:

- Wind speed and direction at the application site.
 - Air temperature at the application site.
 - Post-application watering information (see “Post-Application Water Treatments (Field Fumigation) DPR-ENF-225”). Record start and stop times for water treatments, as well as total inches applied.
 - Any unusual conditions observed at the application site (e.g., odor, reported symptoms of exposure, equipment failure, or spill).
 - Monitoring must be done in all directions on calm days.
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Post-application water treatments

1. Post-application water treatments are required and must be recorded on the “Post-Application Water Treatments (Field Fumigation) DPR-ENF-225” or equivalent form and attached to the Post-Application Summary. Each post-application water treatment discussed below must be completed within 2–3 hours.
 2. Additional post-application water treatments can be applied at any time in response to odor or illness provided the required water treatments listed below are completed in the specified time periods.
 3. Water Treatment Schedule:
 - Post-application water 1 (Day 1)—Apply a minimum of 0.20–0.40 inches of water to the application block, at a rate of 0.15–0.25 inches per hour, starting within 30 minutes of completion of the application. Additional water treatment can be made as necessary to ensure the soil profile is thoroughly wetted and all granules are activated.
 - Post-application water 2 (Day 1)—Apply a minimum of 0.75 inch of water to the application block, at a rate of 0.15–0.25 inches per hour, on the same day of application, beginning no earlier than 1 hour before sunset and completing by midnight.
 - Post-application water 3 (Day 2)—Apply a minimum of 0.4 inch of water to the application block, at a rate of 0.15–0.25 inches per hour, beginning no earlier than 1 hour before sunset and completing by midnight.
 - Post-application water 4 (Day 3)—Apply a minimum of 0.2 inch of water to the application block, at a rate of 0.15–0.25 inches per hour, beginning no earlier than 1 hour before sunset and completing by midnight.
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Recommended Permit Conditions, Continued

**Post-
application
water
treatments**
(continued)

- Post-application water 5 (Day 4)—Apply a minimum of 0.1 inch of water to the application block, at a rate of 0.15–0.25 inches per hour, beginning no earlier than 1 hour before sunset and completing by midnight.

The 0.20–0.40 inch range allows the CAC to determine the amount of water required, based on local conditions such as soil type and moisture content, and air and soil temperature at the time of application.

Buffer Zone Table 1. Dazomet Buffer Zone Values (feet) for Mechanically Incorporated Applications (except to Golf Courses, Fairways, and Greenhouses)

lbs product/ac	Acres Treated													
	40	30	20	15	10	9	8	7	6	5	4	3	2	1
421	2050	1750	1250	1050	800	800	800	800	800	500	500	500	500	150
396	1900	1500	1100	900	700	700	700	700	700	400	400	400	400	100
386	1900	1500	1100	900	700	700	700	700	700	400	400	400	400	100
376	1900	1500	1100	900	700	700	700	700	700	400	400	400	400	100
366	1900	1500	1100	900	700	700	700	700	700	400	400	400	400	100
356	1700	1350	1000	800	650	350	650	650	650	350	350	350	350	100
347	1700	1350	1000	800	650	350	650	650	650	350	350	350	350	100
337	1700	1350	1000	800	650	350	650	650	650	350	350	350	350	100
327	1500	1150	850	700	550	550	550	550	550	300	300	300	300	100
317	1500	1150	850	700	550	550	550	550	550	300	300	300	300	100
307	1500	1150	850	700	550	550	550	550	550	300	300	300	300	100
297	1300	1000	750	600	500	500	500	500	500	250	250	250	250	100
287	1300	1000	750	600	500	500	500	500	500	250	250	250	250	100
277	1300	1000	750	600	500	500	500	500	500	250	250	250	250	100
267	1300	1000	750	600	500	500	500	500	500	250	250	250	250	100
262	1000	800	600	500	400	400	400	400	400	200	200	200	200	100
257	1000	800	600	500	400	400	400	400	400	200	200	200	200	100
248	1000	800	600	500	400	400	400	400	400	200	200	200	200	100
238	1000	800	600	500	400	400	400	400	400	200	200	200	200	100
228	850	700	500	450	350	350	350	350	350	200	200	200	200	100
218	850	700	500	450	350	350	350	350	350	200	200	200	200	100
208	850	700	500	450	350	350	350	350	350	200	200	200	200	100
198	650	550	400	350	250	250	250	250	250	150	150	150	150	100
188	650	550	400	350	250	250	250	250	250	150	150	150	150	100
178	650	550	400	350	250	250	250	250	250	150	150	150	150	100
168	650	550	400	350	250	250	250	250	250	150	150	150	150	100
158	500	450	300	300	200	200	200	200	200	150	150	150	150	100
149	500	450	300	300	200	200	200	200	200	150	150	150	150	100
139	500	450	300	300	200	200	200	200	200	150	150	150	150	100
131	500	450	300	300	200	200	200	200	200	150	150	150	150	100
129	300	300	200	200	100	100	100	100	100	100	100	100	100	100
119	300	300	200	200	100	100	100	100	100	100	100	100	100	100
109	300	300	200	200	100	100	100	100	100	100	100	100	100	100
99	250	250	150	150	100	100	100	100	100	100	100	100	100	100
89	250	250	150	150	100	100	100	100	100	100	100	100	100	100
79	250	250	150	150	100	100	100	100	100	100	100	100	100	100
69	250	250	150	150	100	100	100	100	100	100	100	100	100	100
≤65	200	200	150	150	100	100	100	100	100	100	100	100	100	100

Buffer Zone Table 2. Dazomet Buffer Zone Values (feet) for Mechanically Incorporated Applications to certain Golf Course Fairways

For mechanically-incorporated applications to golf course fairways only, minimum buffer zone values in Table 2 apply provided that both of the following conditions are met:

- 1) The application area is 5 acres or less; and
- 2) The length of the application area is at least twice the width of the application area (e.g., the length is 80 feet and the width is no greater than 40 feet).

Buffer Zone (feet)					
Application Rate (lbs product/Acre)	5 Acres	4 Acres	3 Acres	2 Acres	1 Acre or less
525	700	700	700	700	200
396	400	400	400	400	100
386	400	400	400	400	100
376	400	400	400	400	100
366	400	400	400	400	100
356	350	350	350	350	100
347	350	350	350	350	100
337	350	350	350	350	100
327	300	300	300	300	100
317	300	300	300	300	100
307	300	300	300	300	100
297	250	250	250	250	100
287	250	250	250	250	100
277	250	250	250	250	100
267	250	250	250	250	100
262	200	200	200	200	100
257	200	200	200	200	100
248	200	200	200	200	100
≤238	200	200	200	200	100

Buffer Zone Table 3. Dazomet Buffer Zone Values (feet) for Water Incorporated Applications (except to Golf Courses, Fairways, and Greenhouses)

lbs product/Ac	Acres Treated													
	40	30	20	15	10	9	8	7	6	5	4	3	2	1
262	1000	800	600	500	400	400	400	400	400	240	240	240	240	100
257	1000	800	600	500	400	400	400	400	400	240	240	240	240	100
248	1000	800	600	500	400	400	400	400	400	240	240	240	240	100
238	1000	800	600	500	400	400	400	400	400	240	240	240	240	100
228	850	700	500	450	350	350	350	350	350	200	200	200	200	100
218	850	700	500	450	350	350	350	350	350	200	200	200	200	100
208	850	700	500	450	350	350	350	350	350	200	200	200	200	100
198	650	550	400	350	250	250	250	250	250	150	150	150	150	100
188	650	550	400	350	250	250	250	250	250	150	150	150	150	100
178	650	550	400	350	250	250	250	250	250	150	150	150	150	100
168	650	550	400	350	250	250	250	250	250	150	150	150	150	100
158	500	450	300	300	200	200	200	200	200	150	150	150	150	100
149	500	450	300	300	200	200	200	200	200	150	150	150	150	100
139	500	450	300	300	200	200	200	200	200	150	150	150	150	100
131	500	450	300	300	200	200	200	200	200	150	150	150	150	100
129	300	300	200	200	100	100	100	100	100	100	100	100	100	100
119	300	300	200	200	100	100	100	100	100	100	100	100	100	100
109	300	300	200	200	100	100	100	100	100	100	100	100	100	100
99	250	250	150	150	100	100	100	100	100	100	100	100	100	100
89	250	250	150	150	100	100	100	100	100	100	100	100	100	100
79	250	250	150	150	100	100	100	100	100	100	100	100	100	100
69	250	250	150	150	100	100	100	100	100	100	100	100	100	100
65	200	200	150	150	100	100	100	100	100	100	100	100	100	100

Appendix I: Definitions

Application: Activities required to incorporate metam sodium, metam potassium, or dazomet into the prepared soil. Applying additional water to the treated soil in order to suppress offsite movement of MITC is not part of the application process.

Bystander Area: An area typically used or visited by people, such as parks, playgrounds, lakes, reservoirs, bus stops, and other similar areas, or other areas identified by the CAC.

Calm Day: Day when wind speeds are forecasted to drop below 5 miles per hour and/or when field observation confirms the same.

Drench Application: Application is made to pre-formed beds or to rows, using low-pressure (30–35 pounds per square inch) booms with nozzles <12 inches above the top of the beds.

MITC: Methyl isothiocyanate. A breakdown product of metam sodium, metam potassium, and dazomet.

Offsite Movement Suppression Requirement: Written procedures that will provide an adequate emergency response in the event MITC odors from metam sodium, metam potassium, or dazomet are detected away from the application site, or symptoms are reported. The plan provides instructions on response procedures to cooperators and employees involved in metam sodium, metam potassium, and dazomet applications. This requirement is separate from the post-application water treatment requirements.

Occupied Structure: A structure that is, will be, or may be occupied at any time during the application and/or buffer-zone period. This includes living and working areas that are associated with the structure (e.g., yard, garden). Homes occupied by the property owner or permittee are excluded from this definition.

Post-Application Water Treatment: Required water that is applied following completion of an application of MITC for the purpose of inhibiting offgassing from treated soils. Each post-application water treatment must be applied following the constraints pertaining to post-application timing, quantity, rate, and duration as listed in the post-application requirements section of the Recommended Permit Conditions.

Power Mulcher Application: Metam is sprayed on or injected under the soil surface immediately in front of a power driven mulcher. The treated soil is mulched with untreated soil at a depth set to where pest control is desired and immediately compressed by a soil-compacting device.

Rod Bar Application: Backward-facing hollow tube (rod) attached to a metal blade-like horizontal bar. The rod bar is designed to operate under the surface of pre-formed beds, dispersing metam through holes spaced ½–1 inch linearly along the entire length of the bar. The application is immediately followed by a bed shaper or solid press rollers that compact the soil over the treated area. The rod bar application method is a variation of the shank injection method described on metam sodium and metam potassium product labels. As such, follow the product label requirements for shank injection applications when using the rod bar application method.

Rotary Tiller Application: Metam is sprayed on or injected under the soil surface immediately in front of a power driven tiller. The treated soil is tilled with untreated soil at a depth set to where control is desired and immediately compressed by a soil-compaction device.

School: An institution for the instruction of children from kindergarten through high school. Also included are day care centers and preschools, as defined in the California Health and Safety Code section 1596.76. *"Day care center" means any child day care facility other than a family day care home, and includes infant centers, preschools, extended day care facilities, and schoolage child care centers.* This excludes family home day care. (Users can find day care centers in their area by going to the following website: <https://secure.dss.ca.gov/CareFacilitySearch/>. Search by ZIP code, city, or county to find the names and addresses of the following child care centers in a specific area.)

Soil Capping Application: Following a metam sodium or metam potassium band treatment, a minimum of 6 inches of untreated soil is placed over the band.

Spray Blade Application: An 8–14 inch horizontal “V”-shaped blade designed to operate under the soil surface with one or two backward-facing spray nozzles placed under the leading edge. The blade is placed 1–4 inches below the soil surface and the resulting subsurface band is further covered with disk-hillers immediately following to form a minimum 6-inch protective cap over the treated band.