

Air Quality  
Handbook for Conservation Management Practices  
for San Joaquin Valley

Minimizing agricultural PM10 from Animal Feeding Operations  
(AFOs)

Dairies and Feedlots

May 2004

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**How to use this booklet:**

The agriculture industry prepared this booklet to provide operators with accurate information and practical guidance for implementation of sound conservation and management practices to minimize PM10 emissions from Animal Feeding Operations (AFOs) in the San Joaquin Valley for the Conservation Management Practice Program.

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## **What is the Conservation Management Practice Program and why it is needed?**

It is a San Joaquin Valley Air Pollution Control District (District) program with the purpose of reducing air pollutants from agricultural sources through Conservation Management Practices (CMPs). CMPs are practices that reduce the emission of air pollutants.

The Conservation Management Practices Program (CMP Program) is scheduled to start on July 1, 2004. Participation in the CMP Program will be mandatory, but the operators will be able to select practices most appropriate for their operation. Operators must submit a CMP Plan and implement a certain number of CMPs. One CMP must be selected for each identified CMP category. Voluntary participation in the CMP Program is also encouraged.

The San Joaquin Valley Basin is an area designed as serious nonattainment for particulate matter smaller than 10 microns in size (PM10) and is required by federal laws to implement Best Available Control Measure (BACM) on all significant sources of emissions. The CMP Program is to implement Best Available Control Measures (BACM) on agricultural sources to achieve PM10 emission reductions to help meet the five percent per year reduction in PM10 emissions starting in 2003 until attainment is reached.

## **What is Rule 4550?**

The CMP Program includes mandatory provisions that are contained in a District Rule 4550. Rule 4550 (Conservation Management Practices) is to ensure that growers and animal feeding operations operators participate with the CMP Program. Operators that fail to comply with the rule will be subject to District enforcement action.

## **Who must provide a CMP Plan?**

Owners/operators of dairy and feedlot facilities with population equal to or more than the following number of animals must provide a CMP Plan:

- 500 mature dairy cows (whether milked or dry)
- 190 cattle (other than mature dairy cows)

Please note that operators who also grow field crops on land greater than 100 acres contiguous or adjacent farmland are required to submit CMP applications for their field crops. A guidance handbook to assist producers in reducing emissions from the growing and harvesting of crops is also available. See page 2 of this handbook for contact information.

## What does the AFO operator have to do?

### Steps

- Select one CMP for implementation from each of the categories.
- Implement the selected CMPs starting July 1, 2004 and keep a record of the implementation of CMPs to be available upon request by the District representative.
- Complete the applications and submit them to the District by December 31, 2004 for approval. The submitted applications constitute a CMP Plan once approved by the District.
- Keep a copy of each submitted applications and each CMP Plan to be available upon request by the District representative.

### Alternative Conservation Management Practices

In the event that there are technical circumstances which prevent the implementation of a CMP, operators can do one of the two things:

- (1) Select a CMP from another category (not applicable for unpaved roads and unpaved equipment/traffic areas categories), or
- (2) Select an alternative practice that is more suitable to the operations for that category. The alternative must provide similar result to the available CMPs. A description of the alternative practice must be submitted to the District for approval.

### Changes to CMP Applications/Plan

Any changes to the CMP Plan or applications must be submitted to the District within 60 days.

### Fee

The District will be sending an invoice after evaluating the CMP applications. The fee for each CMP Plan is shown in the table below and the biennial fee is \$100.

Type of operation	Dairy Operation	Cattle Operation	Fee
Population number	799 or less	999 or less	\$62.75
	800 to 1,999	1,000 to 4,999	\$125.50
	2,000 or greater	5,000 or greater	\$251.00

An operator may send the completed applications to NRCS/RCD first for their evaluation before submitting them to the District to qualify for a 50% fee reduction.

## **What will happen if the AFO operator does not comply with Rule 4550?**

An AFO operator that does not comply with the rule is subject to District enforcement action.

In addition, the CMP Program will be judged on its effectiveness as a whole and not on a farm by farm basis. The District will be evaluating the CMP Program for its effectiveness and can require in the near future more CMPs to be implemented or to increase the number of operators subject to the CMP Program.

## **Categories and Conservation Management Practices for Dairies**

### **1. Category: Corral/Manure Handling**

#### **Sprinkling of open corral**

Description: To ensure adequate corral surface moisture level to prevent visible dust emissions. This measure is not recommended for lactating cows.

Example: Installation of sprinklers or other watering devices to maintain an adequate moisture level.

#### **Frequent scraping and/or manure removal**

Description: Removal of manure from open corrals.

Example: Prevent build up of powdery dust in designated areas.

#### **Freestall housing**

Description: Use of freestall facilities.

Example: Use of freestall.

#### **Fibrous layer in dusty areas**

Description: Addition of fibrous material to working pens.

Example: Adding wood chips or other materials to sorting alleys and high traffic areas to hold moisture and keep down dust disturbance, and putting damp manure solids right off of the separator into the heifer pens on a daily basis and working it with a rotary harrow. Applies to heifers.

#### **Pull-type manure harvesting equipment**

Description: Using a pull-type piece of equipment to leave an even corral surface.

Example: Piece of equipment should allow operators to leave an even corral surface of compacted manure on top of the soil. Pulling blades will do better than pushing blades

#### **Scraping/harrowing**

Description: Scraping/ harrowing in morning hours when moisture is higher.

Example: Scraping/harrowing in early morning when moisture is higher.

#### **Shaded areas in open corrals**

Description: Animals in open areas will loaf in shaded areas increasing stocking density and reducing dust.

Example: Providing shaded areas for animals to loaf in.

## 2. Category: Overall Management/Feeding

### **Bulk materials control**

Description: Minimize visible dust emissions from bulk materials.

Example: To apply water or suitable chemical/organic, or cover the bulk materials with tarps, plastic or suitable material, or construct wind barriers such as a 3-sided structure surrounding the bulk materials (e.g.: feed commodity story barns)

### **Feeding near dusk**

Description: Feeding young stock during evening hours.

Example: Feeding animals during the evening hours when conditions will generate less dust.

### **Wet Feed during mixing**

Description: To increase moisture feed levels.

Example: Addition of water or moist supplements to reduce the amount of generated dust.

### **Place wet material in feedwagon first before mixing**

Description: Mix wet feed with dry feed for suppression.

Example: Place wet material into feedwagon first to suppress dust generation.

### **Downwind shelterbelts/boundary trees**

Description: Planting rows of vegetation around facility and surrounding to create a barrier for air exiting from the facilities.

Example: Use a perimeter barriers or vegetation to disrupt the wind flow.

## 3. Unpaved Roads

### **Dust Suppressants**

Description: Application of any non-toxic chemical or organic dust suppressant which meets any specification required by any federal, state, or local water agency and is not prohibited for use by any applicable regulations. See District Regulation VIII for additional requirements.

Example: To use a variety of products; water application, hygroscopic suppressants (road salts), petroleum emulsions, adhesives, polymers emulsions, and bituminous materials (road oil), sodium chloride, chippings from farm. Water or chemical dust suppressants will bind soils.

### **Gravel**

Description: Placing a layer of gravel with enough depth to minimize dust generated from vehicle movement and to dislodge any excess debris which can become entrained.

Example: To add a layer of washed gravel, rock, or crushed rock.

### **Speed Reduction**

Description: Enforcement of speeds that reduces visible dust emissions.

Example: Posting speed limits on or surrounding operation.

### **Access Restriction**

Description: To restrict public access to private roads.



Example: To install a device which will limit use of road on or surrounding an operation.

### **Pavement**

Description: To pave currently unpaved areas

Example: To pave unpaved roads to prevent dust from vehicle traffic.

### **Track Out Control**

Description: Minimize any and all material that adheres to and agglomerates on all vehicles and equipment from unpaved roads and falls onto a paved public road or the paved shoulder of a paved public road.

Example: Accomplished by maintaining sufficient length of paved/graveled interior roads to allow mud and dirt to drop off vehicles before exiting the site; or use of a grizzly to dislodge debris from tires and undercarriage of vehicles leaving site.

### **Speed bumps**

Description: Installation of mechanisms to slow traffic.

Example: To install physical devices which slow down the speed of traffic.

### **Appropriate equipment and vehicles**

Description: Using trip appropriate vehicles

Example: Using four wheelers or electric carts rather than trucks for routine trips

## **4. Category: Unpaved Vehicle/Equipment Traffic Areas**

### **Dust Suppressants**

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Example: To use a variety of products; water application, hygroscopic suppressants (road salts), petroleum emulsions, adhesives, polymers emulsions, and bituminous materials (road oil), sodium chloride, chippings from farm. Water or chemical dust suppressants will bind soils.

### **Gravel**

Description: Placing a layer of gravel with enough depth to minimize dust generated from vehicle movement and to dislodge any excess debris which can become entrained.

Example: To add a layer of washed gravel, rock, or crushed rock.

### **Access Restriction**

Description: To restrict public access to private roads.



Example: To install a device which will limit use of road on or surrounding an operation.

### **Speed Reduction**

Description: Enforcement of speeds that reduces visible dust emissions.

Example: Posting speed limits on or surrounding operation.

### **Pavement**

Description: To pave currently unpaved areas

Example: To pave unpaved roads to prevent dust from vehicle traffic.

### **Appropriate equipment and vehicles**

Description: Using trip appropriate vehicles

Example: Using four wheelers or electric carts rather than trucks for routine trips

## **Categories and Conservation Management Practices for Feedlots**

### **1. Corral/Manure Handling**

#### **Sprinkle**

Description: To ensure adequate pen surface moisture level to prevent visible dust emissions.

Example: Installation of sprinklers or other watering devices to maintain an adequate moisture level.

#### **Frequent scraping and/or manure removal**

Description: Removal of powdery dust.

Example: Prevent build up of powdery dust in designated areas



Deep and soft

(Pictures from LPES Lesson 42 Controlling dust and odor from open lot livestock facilities)



Thin and well compacted

**Fibrous layer in working areas (e.g., alleys)**

Description: Adding of fibrous material to areas

Example: Adding wood chips or other materials to sorting alleys and high traffic areas to hold moisture and keep down dust disturbance, and putting damp manure solids right off of the separator into the heifer pens on a daily basis and working it with a rotary harrow. Applies to heifers.

**Manure harvesting equipment**

Description: Using a piece of equipment to leave an even corral surface

Example: Piece of equipment should allow operators to leave an even corral surface of compacted manure on top of the soil. Pulling blades will do better than pushing blades.

**Shade for animal**

Description: Animals in open pens will loaf in shade areas increasing stocking density and reducing dust.

Example: Providing shaded areas for animals to loaf in.

**2. Overall Management/Feeding****Bulk materials control**

Description: Minimize visible dust emissions from bulk materials.

Example: To apply water or suitable chemical/organic, or cover the bulk materials with tarps, plastic or suitable material, or construct wind barriers such as a 3-sided structure surrounding the bulk materials (e.g.: feed commodity story barns)

**Feeding near dusk**

Description: Feeding during evening hours.

Example: Feeding animals during the evening hours when conditions will generate less dust.

**Wet Feed during mixing**

Description: To increase moisture feed levels.

Example: Addition of water or moist supplements to reduce the amount of generated dust.

**Place wet material in feedwagon first**

Description: Mix wet feed with dry feed for suppression

Example: Place wet material into feedwagon first to suppress dust generation.

### **Downwind shelterbelts/boundary trees**

Description: Planting rows of vegetation around facility and surrounding to create a barrier for air exiting from the facilities.

Example: Use of perimeter barriers or vegetation to disrupt the wind flow.

## **3. Unpaved Roads**

### **Dust Suppressants**

Description: Application of any non-toxic chemical or organic dust suppressant which meets any specification required by any federal, state, or local water agency and is not prohibited for use by any applicable regulations. See District Regulation VIII for additional requirements.

Example: To use a variety of products; water application, hygroscopic suppressants (road salts), petroleum emulsions, adhesives, polymers emulsions, and bituminous materials (road oil), sodium chloride, chippings from farm. Water or chemical dust suppressants will bind soils.

### **Gravel**

Description: Placing a layer of gravel with enough depth to minimize dust generated from vehicle movement and to dislodge any excess debris which can become entrained.

Example: To add a layer of washed gravel, rock, or crushed rock.

### **Speed Reduction**

Description: Enforcement of speeds that reduces visible dust emissions.

Example: Posting speed limits on or surrounding operation.

### **Access Restriction**

Description: To restrict public access to private roads.



Example: To install a device which will limit use of road on or surrounding an operation.

### **Pavement**

Description: To pave currently unpaved areas

Example: To pave unpaved roads to prevent dust from vehicle traffic.

### **Track Out Control**

Description: Minimize any and all material that adheres to and agglomerates on all vehicles and equipment from unpaved roads and falls onto a paved public road or the paved shoulder of a paved public road.

Example: Accomplished by maintaining sufficient length of paved/graveled interior roads to allow mud and dirt to drop off vehicles before exiting the site; or use of a grizzly to dislodge debris from tires and undercarriage of vehicles leaving site.

### **Appropriate equipment and vehicles**

Description: Using trip appropriate vehicles

Example: Using four wheelers or electric carts rather than trucks for routine trips

## **4. Unpaved Vehicle/Equipment Traffic Areas**

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Description: Application of any non-toxic chemical or organic dust suppressant which meets any specification required by any federal, state, or local water agency and is not prohibited for use by any applicable regulations. See District Regulation VIII for additional requirements.

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Example: Posting speed limits on or surrounding operation.

### **Pavement**

Description: To pave currently unpaved areas

Example: To pave unpaved roads to prevent dust from vehicle traffic.

### **Appropriate equipment and vehicles**

Description: Using trip appropriate vehicles

Example: Using four wheelers or electric carts rather than trucks for routine trips