FUGITIVE DUST CONTROL GUIDELINES

AND

BEST MANAGEMENT PRACTICES

FOR

CONFINED HEIFER REPLACEMENT

FEEDING OPERATIONS

"CLEAN AIR IS EVERYONE'S RESPONSIBILITY"

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Recommended

Gary W. Pruitt, Air Pollution Control Officer

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BACKGROUND

A Confined Heifer Replacement Feeding Operation is a facility at which replacement heifers are raised until they are mature enough to begin milking, and fed growing rations for the eventual purpose of milking. While there are many small Confined Heifer Replacement Operations in Yakima County, the Yakima Regional Clean Air Agency (YRCAA) has recognized Heifer Replacement Feeding Operations with inventories of over 1,000 head as potential air pollution sources since the initial adoption of registration regulations in 1976. There are several Heifer Replacement Feeding Operations located in Yakima County which are able to support normal inventories in excess of 1,000 head. YRCAA's primary air quality concern regarding Heifer Replacement Feeding Operations is the generation of fugitive dust emissions from feed pens, private roads and alleyways. Emissions from hay and grain processing and handling are also an air quality concern.

During the hot, dry weather typical in Yakima County during the summer months, cattle are lethargic during the heat of the day. When temperatures drop in the evening, the cattle become active and have the potential to generate fugitive dust from pens. Vehicle traffic on unpaved roads, cattle movement in alleys, and feed chopping, mixing and handling can also contribute to fugitive dust emissions from Heifer Replacement Feeding Operations. This dust may impact neighboring properties.

In recent years, most feedlot operators have instituted various practices to control fugitive dust emissions. Fugitive dust control measures can require a significant commitment of time and resources by owners and operators.

YRCAA Regulation I, Section 3.08B and WAC 173.400 requires air pollution sources to take "reasonable precautions" to prevent the release of fugitive emissions. Since particulate emissions from Heifer Replacement Feeding Operations are considered to be fugitive dust emissions, these guidelines are intended to use existing regulations and clarify what constitutes "reasonable precautions" to minimize emissions of fugitive dust from Heifer Replacement Feeding Operations. The primary mechanism for doing this is to identify best management practices (BMPs) for fugitive dust control and implement these practices according to flexible, site-specific fugitive dust control plans developed by each Heifer Replacement Feeding Operation and approved by YRCAA.

YRCAA began working with local beef cattle feedlots in 1994 to minimize dust emissions. As a result, fugitive dust control plans were developed and implemented. Since then, the plans, and their effectiveness, have improved each year. YRCAA staff met with Heifer Replacement feedlot owners in March of 2001 to discuss fugitive dust control plans. As a result, these guidelines were developed to serve as a vehicle for applicable Heifer feeding operations to acknowledge requirements and their commitment to continued improvement of effective fugitive dust control.

In 1998 EPA increased attention to, and expectations from, Confined Animal Feeding Operations to include all operations where animals are confined for the purpose of feeding.

In 1999 YRCAA staff met with representatives from local beef cattle and heifer replacement operations and proposed changes to these guidelines including:

- application of the guidelines to heifer replacement operations;
- application of the guidelines to feed processing and handling operations; and
- a requirement for annual fugitive dust control plans (updates to existing plans will be accepted) to include a detailed plan for preventing or controlling dust from feed processing and handling on heifer replacement operations..

These guidelines now apply to Heifer Replacement Operations where more than 1,000 cattle are confined for feeding and the potential for significant dust emissions exists. These guidelines now require a detailed plan for preventing or controlling dust from feed processing and handling. It is recognized that 100% of the dust emissions from feeding operations cannot be eliminated. All solutions or practices need to be economically and technically feasible. Yakima County has a Right-to-Farm Ordinance that recognizes agricultural activities conducted on farmland to be presumed reasonable and do not constitute a nuisance unless the activity has a substantial adverse, on-going effect on the public health and safety.

NOTE:
These guidelines were approved by the YRCAA Governing Board of directors in July, 2002. Since then, some regulations have changed or have been repealed. YRCAA staff updated these guidelines in July, 2009 to accommodate the regulatory references.

GUIDELINES

I. What is the Purpose of the Guidelines?

The purpose of these guidelines is to provide guidance for effective control of fugitive dust emissions at Confined Heifer Replacement Feeding Operations. Compliance with these guidelines does not necessarily constitute compliance with the regulations. Components of the purpose are:

- To achieve sufficient control of fugitive dust emissions and fallout from Confined Heifer Replacement Feeding Operations to ensure compliance with state laws and regulations.

- To achieve dust control by describing a menu of best management practices (BMPs) for Confined Heifer Replacement Feeding Operations that will be implemented through the use of flexible, site-specific fugitive dust control plans.

- To clarify what constitutes "reasonable precautions to prevent" emissions of fugitive dust as required by YRCAA Restated Regulation I, Section 5.06.

- To educate owners and operators on effective management of fugitive dust control measures and provide a means by which Confined Heifer Replacement Feeding Operations can demonstrate that they are taking reasonable precautions to protect the air quality in Yakima County.

II. Who Needs to Comply with the Guidelines?

- All Confined Heifer Replacement Feeding Operations with inventories of over 1,000 head of heifers six months of age and older, confined and fed during the dry season, May through October, must comply with these guidelines.

- These guidelines may also be followed for resolving fugitive dust emission problems which may arise from Operations with smaller inventories.

III. How do the Guidelines Work?

- Confined Heifer Replacement Feeding Operations must prepare fugitive dust control plans and submit them to YRCAA for approval.

- A plan must identify best management practices (BMPs) and operational procedures proposed to be used to control fugitive dust.

- YRCAA and the Confined Heifer Replacement Feeding Operations are expected to work together in good faith toward development of a dust control plan which is acceptable to both the Operation and the YRCAA.

- Confined Heifer Replacement Feeding Operations must implement approved fugitive dust control plans according to the criteria and/or implementation schedules outlined in their plans.

- A Confined Heifer Replacement Feeding Operation may make modifications to an approved fugitive dust control plan as long as the effectiveness of the plan is not diminished.

- YRCAA may initiate negotiations with a Confined Heifer Replacement Feeding Operation to modify an approved plan, if that plan is not sufficiently effective in minimizing fugitive dust emissions.

Applicability: Should a dispute arise as to the enforcement of this plan, the YRCAA may request the dairy dust committee review the dispute and provide input as to an acceptable outcome.

Non-compliance or ineffective dust control may be subject to notice of violation and penalties.

IV. Where and When Should Dust Control Plans be Filed?

- Heifer Replacement Feeding Operations must submit plans to the YRCAA.

- Existing Heifer Replacement Feeding Operations must submit plans annually, no later than April 15th.

- New or expanding Heifer Replacement Feeding Operations (those operations exceeding 1000 head or more of animals six months of age or older, being raised for milk cow replacements) must file notice with YRCAA which includes a fugitive dust control plan for the new facility or addition. This plan must be approved prior to operating the facility.

V. What must be in a Dust Control Plan?

1. <u>A description of the Operation, including:</u>

    - A map or drawing of the Operation which adequately represents the layout of the Operation and provides enough detail to allow YRCAA to adequately review the feasibility and appropriateness of various BMPs for the facility.

    - A description of the operational capacity of the Operation, including the maximum number of cattle which could be confined.

    - A description of the water available to the operation for dust control. This description should include the source and quantity of water available and any permit or other limitations which would impact the Operation's ability to employ water application as a BMP.

    - Site-specific features or characteristics shall remain flexible to allow for adaptation to the needs of the feeding operation.

2. A description of BMPs to be used under the plan.

Both existing and newly-proposed BMPs for control of dust from cattle pens, sorting alleys, feed alleys, and surrounding roads should be described. BMPs for feed processing and handling operations must also be described. Descriptions must include:

- which BMP or BMPs will be used, where they will be used, and what to percentage of the facility they will be applied;

- a description of the equipment and materials to be used, including a description of the normal operational capacity or application rate of any equipment;

- An operational plan for implementing each BMP.

  The operational plan should describe how the Operation will implement BMPs and the conditions or criteria the Operation will use to determine when and how to implement each BMP.

  It is recognized that operations and conditions are variable and that the same BMP may be implemented differently by individual Operation. This variability makes the description of how BMPs will be operated an especially important component of an Operation's fugitive dust control plan.

  The operational plan must describe the criteria the Operation will use to determine when to implement each BMP and the criteria for selecting application rates, if applicable. Examples of criteria include:

  1. pen conditions --- such as moisture, surface compaction, amount of loose material, mound condition, etc.;
  2. recent weather;
  3. forecasted weather; and
  4. cattle management program

- A detailed Operation Plan for feed processing and handling that minimizes dust for the following operations:

  1. hay chopping
  2. grain processing
  3. feed mixing, and
  4. feed handling

- List or identify the person responsible at your facility for the operation's dust control plan and its implementation.

3. A schedule of future BMP implementation, if applicable.

   If an Operation intends to implement an additional BMP or BMPs in the future, a target date for implementation of the future BMPs should be included in the Operation's fugitive dust control plan when that component is identified.

VI. How are Plans Developed and Approved?

- An Operation is responsible for preparing a fugitive dust control plan and submitting the plan or update to YRCAA for approval on or before April 15th. Professional assistance may be used in developing and reviewing the plan.

- Within 30 days, YRCAA staff must review the plan and notify the Operation of plan approval in writing or request additional information or propose alternative practices to approve the plan. Failure of YRCAA to notify the Operation or request additional information shall constitute approval.

- Operations must respond to agency requests for information or modification of the plan within 30 days.

- The approval process may include good faith discussion, evaluation, collection of information, and other efforts to resolve differences of opinion about the plan, so long as reasonable progress toward the development and approval of the Operation's fugitive dust control plan is being made.

The purpose of good faith negotiation is to share information and resolve differences of opinion regarding an Operation's fugitive dust control plan. Both the Operation and YRCAA need to be able to exchange information freely and in good faith. Information obtained by YRCAA in the course of negotiation is not obtained for the purpose of any future enforcement activity.

- If agreement on an Operation's fugitive dust control plan cannot be reached after thorough good faith evaluation of alternatives and consideration of plan effectiveness, costs, and other pertinent matters, YRCAA may initiate compliance action.

VII. How Can Changes be Made to an Approved Plan?

An Operation may make modifications to an approved fugitive dust control plan as long as the effectiveness of the plan is not diminished. Changes to a plan must be documented and YRCAA must be notified of the changes. Modifications include but are not limited to:

- significant changes in operational procedures for dust abatement;

- changes in criteria used to determine BMP implementation.

VIII. How Does the YRCAA Determine When a Dust Control Plan is Adequate?

In considering whether a dust control plan achieves the purpose of the guidelines, excluding natural adverse weather conditions (see Section 3.08B3 for exemptions), YRCAA may consider:

- whether the plan utilizes BMP's identified in Section X of these guidelines;
- consistency between the proposed BMP's and the BMP's outlined in the guidelines;
- the extent of use of effective measures that reduce dust at other Operations;
- the ability of the proposed BMPs to maintain conditions which adequately minimize emissions;
- other measures in the plan which may be effective in minimizing fugitive dust, but which are not recognized BMPs;
- the adequacy of the operational plan, including the criteria used to begin, end and apply the proposed BMPs;
- Adverse weather conditions; and
- Evidence that proposed measures have been effective in similar conditions.

IX. How Will Compliance and Effectiveness of the Plan be Determined?

Compliance - After a fugitive dust control plan has been approved, an Operation may be inspected to determine if the BMPs and their operational plans are in effect. If inspection determines that unreasonable dust is emitted beyond the property line of the Operation or reasonable precautions are not being taken to prevent emissions, a Notice of Violation may be issued.

Effectiveness - After the plan is in place, inspection results may be used to evaluate the effectiveness of the plan in reducing fugitive dust. If inspection indicates that the plan is not effective, YRCAA will request information from the Operation or propose additional or alternative dust control measures. As with the development of the initial plan, YRCAA and the Operation will work together in good faith to revise the fugitive dust control plan to increase its effectiveness.

X. Description and use of Best Management Practices

General Principles

- A dust control plan may modify the design or operation of BMP's from the systems described below as long as their effectiveness is not diminished.

- The principle mechanism by which most of these BMP's operate is to maintain pen, alley, and roadway conditions which prevent loose particles from become airborne as fugitive dust. Feed processing and handling operations must also be designed, operated and maintained to minimize dust emissions.

- Nothing in these guidelines should be construed to limit the ability of the Operation to be innovative or to use effective management practices that differ from those offered in these guidelines.

Best Management Practices

1. Fixed Water Application – Sprinklers (Only recommended if disease and insect control is NOT a factor)

Description

Sprinklers are installed throughout the cattle pens to apply water to the pen surface to prevent dust from becoming airborne. Sprinklers must be designed and installed to allow maximum practical coverage of the pen area and be capable of applying adequate amounts of water to control fugitive dust.

Sprinkler systems can provide uniform coverage under favorable weather conditions (low wind). High winds can reduce the effectiveness of sprinkler systems.

High and low pressure sprinkler systems may be used to control fugitive dust. High pressure systems use fewer sprinkler heads under greater pressure to achieve coverage. Low pressure systems generally use a higher number of heads at a lower pressure. System cost and an Operation's layout and characteristics are factors which will affect the choice of system. To effectively use any sprinkler system, pre-planning of water application is needed. Sprinklers can be fitted with automated control systems to minimize the labor required to operate the system. Sprinkler systems require varying degrees of maintenance to ensure their effectiveness.

Factors to Consider in Selecting Fixed Water Application as a BMP

- Availability of sufficient quantities of water to control dust
- Capital and operating costs for equipment
- Cost of water
- Water quality concerns, including potential for run-off
- Potential insect breeding and odor problems
- Selection of criteria for determining when to apply water and what application rates to use under variable conditions

* It is important to note that water application to heifer replacement feeding pens may be used in small quantities to cool cattle and raise humidity that will help control dust. However, large quantities that make the pens damp (suppressing dust) will promote infectious disease that cannot be tolerated.

2. <u>Mobile Water Application - Water Trucks</u>

Description

Trucks with water tanks and spray nozzles are driven through alleyways between feeding pens and water is applied to the pen surface to prevent dust from becoming airborne. Proper equipment and operation is necessary to obtain coverage sufficient to ensure that pen conditions are adequate to minimize generation of dust. Because large areas cannot be simultaneously covered by a water truck, the decision to apply water must be made early enough that there is sufficient start up time to achieve adequate coverage before fugitive dust becomes a problem. The Operation must have sufficient equipment and an operational plan for its use which will allow coverage of the target area.

Water trucks may have a lower fixed cost than large sprinkler systems, but may also have higher operating costs due to the labor required to operate the truck and spray nozzles. A facility to refill water tanks is required. Maintenance of water trucks and spray equipment is critical to minimizing equipment breakdowns. Water trucks are versatile and can be equipped to apply water to road and alleyways in addition to pens.

Factors to Consider in Selecting Mobile Water Application as a BMP

- Availability of sufficient quantities of water to control dust
- Capital and operating costs for equipment
- Cost of water
- Water quality concerns, including potential for run-off
- Potential insect breeding and odor problems
- Selection of criteria for determining when to apply water and what application rates to use under variable conditions
- Lead-time to achieve adequate coverage
- Potential injury to animals due to collision with equipment

3. Pen Maintenance

Description

Removing excess manure from pens may reduce dust emissions by limiting the volume of loose material which can become airborne. If used in conjunction with water application, this practice may reduce the volume of water needed for dust control. However, dust control management in some manner has a higher potential to control dust than removal of material from the livestock pens as in some cases the volume of material has little influence on the amount of potential dust.

An Operation must have an appropriate place to store or dispose of manure removed from pens. (This could be a management challenge or a violation of the nutrient management act if there is any runoff.)

Factors to Consider in Selecting Pen Maintenance as a BMP

- Size and number of pens
- Cost of labor and equipment
- Minimized disturbance of hard pan
- Minimize disturbance of inter-mound area
- Control of dust during maintenance work
- Criteria used to time maintenance work is critical to success
- Ability to supplement with other BMPs, such as water application

4. Surface Amendments/Applications

Description

Spreading sawdust, apple pumice, or other materials over the surface of pens and alleyways provides dust control by adding texture or moisture to the surface of the pens or alleys or by increasing the density of the surface area. Application of organic material may be suitable mainly for alleyways. Application of certain types of fly ash may also harden the manure surface in pens and further control dust.

As with pen maintenance, surface applications may be more successful and cost-effective at smaller Operations. Costs of surface amendments or applications will be variable, but may be expensive if applied to large areas.

Factors to Consider in Selecting Surface Amendment as a BMP

- Size and number of pens
- Consistent availability of materials
- Cost of materials
- Cost of labor
- Criteria used to time maintenance work is critical to success
- Ability to supplement with other BMPs
- More than one application per season may be necessary

- Proven or expected effectiveness of surface amendment available.

5. Wet Manure/Mound Management

Description

Feedlots in the Pacific Northwest mound pack manure to aid in keeping animals dry and comfortable through the wet periods of the winter. As rain falls and the top few inches of the mounds become saturated, this wet material is scraped off and stock-piled (in the pens), revealing dry material underneath. This provides the cattle a dry area to bed down.

The stock-piled wet manure is spread back over the mound in the spring and summer and allowed to dry. This spreading of damp material throughout the pen can add moisture to the pen and aids in surface compaction.

Factors to Consider in Selecting Mound Management as a BMP

- Size and number of pens
- Cost of labor and equipment
- Mounding requirements/practices
- Criteria used to time maintenance work is critical to success
- Ability to supplement with other BMPs

6. Windbreaks

Description

Planting tall vegetation, such as poplar trees, along the edge of the Operation may be effective in reducing the volume of dust which is carried away from the Operation by prevailing winds.

Windbreaks depend on weather conditions for their effectiveness. Changes in wind direction will compromise the effectiveness of this practice.

Poplar trees take six years to reach mature heights and require substantial quantities of water to grow rapidly.

This practice has been untested with respect to controlling fugitive dust from Feeding Operation, but has been effective in reducing emissions from other open dust sources.

Other barriers may be an alternative if they do not pose adverse affects such as fire danger.

7. Feed Processing and Handling BMPs

Description

The primary approach for practices that control dust emissions from feed processing and handling should be preventing the dust from becoming airborne. Various practices have been implemented but the effectiveness of these practices has not been demonstrated. The various practices will be evaluated and those found to be effective will be qualified as BMPs.

Dependence on the lack of wind to prevent transport of dust has proven to be ineffective and is not considered as an effective BMP without the use of one more other BMPs to prevent emissions. Modifying feed processing during unfavorable wind conditions may be advisable if control at the point of emission is not effective.

Examples of BMPs:

- Capture and control equipment;
- Controlling the distance feed is dropped during loading;
- Enclosed processing and mixing;
- Enclosed storage; and
- Sequence of mixing.

Factors to consider in selecting BMPs for feed processing and handling:

- Size and type of operation;
- Cost of labor and equipment;
- Feeding requirements/practices;
- Criteria used to time maintenance work is critical to effectiveness;
- Ability to supplement with other BMPs;
- Proximity of operation to property boundaries; and
- Feed additives to increase moisture may be harmful to cattle and not cost effective.

APPENDIX A

STATUTORY AND REGULATORY REFERENCE

This Section is intended to provide the regulatory framework for Confined Cattle Feeding Operations. Other sections of YRCAA Regulation I may apply, but the sections listed below have the most significant bearing on the industry.

Section 1.03, Declares policy to be to secure and maintain such levels of air quality as will protect human health and safety.

Section 1.07, Declares it unlawful to cause or permit air pollution in violation of YRCAA Restated Regulation I, FCAA, WCAA, CFR, WAC or any permit or order of YRCAA.

Section 2.01, Provides for authorization of YRCAA to collect information from and make investigation of air pollution sources.

Section 2.03 References certain state and federal codes and regulations that may be applicable to emissions from Operations.

Section 3.08 Specific Dust Controls, requires Cattle Feeding Operations to prevent and reduce dust emissions:

3.08B.4.f **Requires Operations With Cattle Populations** of 1,000 or more to submit a Dust Control Plan to YRCAA no later than April 15th of each year.

3.08.B.4.g **Requires Certain Information** to be included in Dust Control Plans.

3.08.B.4.h **Requires Effective** implementation of Dust Control Plans.

Section 4.01 Registration Program requires operations to register initially and annually thereafter and pay a fee.

WAC 173.400 Also contains general rules for air pollution sources:

WAC 173.400.040 Sets general standards for maximum emissions; references VE, Odors and Dust.

RCW 70.94 Washington Clean Air Act