

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

ATMOSPHERIC RESOURCE QUALITY MANAGEMENT

(Ac.)

CODE 370

DEFINITION

A combination of treatments to manage resources that maintain or improve atmospheric quality.

PURPOSE

Minimize or reduce emissions of:

- Particulate matter
- Smoke
- Odors
- Greenhouse gases
- Ozone
- Chemical drift

Maintain or increase visibility

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to cropland, forest land, pastures roads, feedlots, dairies, poultry, swine and other animal feeding operations, equipment yards and staging areas, and other lands that contribute primary airborne particulates (dust, smoke, and chemicals), secondary airborne particulates (ammonia, nitrates (i.e. fertilizers, animal emissions, and animal waste emissions), organic products, odor, greenhouse gases [carbon dioxide (CO₂), nitrous oxide (N₂O), and methane (CH₄)], objectionable odors, and other gases that have a negative impact on air quality.

CRITERIA

General Criteria Applicable to All Purposes

Use of this standard will comply with all applicable federal, state, and local laws and regulations.

The landowner is responsible for acquiring and following all necessary local, state, and federal permits.

Specific Criteria Applicable to Reducing Particulate Matter Emissions

PM-10 is defined as inhalable coarse particles such as from wind erosion, traffic on unpaved roads, tillage and combustion (smoke from fires) which are 10.0 micrometers in diameter or smaller.

PM-2.5 is defined as fine particles such as from ammonia emissions from AFOs and motor vehicle emissions which are 2.5 micrometers in diameter or smaller.

Roads. Minimize PM-10 generation from unpaved roads, staging areas, and equipment storage areas by treating with water, chemicals, soil stabilizers, mulch, or other cover.

The amount of mud tracked onto paved roads shall be reduced by cleaning equipment before leaving the field or cleaning tracked mud off of paved roads.

Confined Animals. Manure management plans shall identify non-critical air periods when confined areas can be cleaned without contributing to high PM-10 concentrations in the air.

Management plans to decrease PM-10 and PM-2.5 production from activities in concentrated animal areas shall include, as appropriate, maintaining minimum manure depths, sprinkler watering, surfacing, and corral cleaning time tables.

Animal feed shall be mixed in an enclosed area or during low wind periods to minimize dust from animal feed processing.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service State Office or download it from the electronic Filed Office Technical Guide for your state.

Sprinkler watering to reduce PM-10 releases from feedlots shall be managed to minimize ammonia emissions from wet manure.

Feed and manure additives shall be utilized to minimize ammonia production and loss to the air (see Indiana (IN) Natural Resources Conservation Service (NRCS) Field Office Technical Guide (FOTG) Standard (592) Feed Management).

The amount, method, and timing of animal waste storage and disposal shall be managed in conjunction with other practices to minimize ammonia volatilization losses from the waste.

Cropland. IN FOTG Standards (329, 345, and 346) Residue and Tillage Management shall be used to reduce the generation of particulate matter from agricultural operations on cropland.

Cover crops shall be established on fields susceptible to PM-10 generation during vulnerable periods (see IN FOTG Standard (340) Cover Crop).

Cover crops shall be planted between the rows in orchards and vineyards to minimize PM-10 generation during harvest operations.

Mowing operations shall be done in a manner which minimizes the generation of particulate matter.

Specific Criteria Applicable to Reducing Smoke Emissions

When burning, follow all procedures specified in agency burn policy including identification of off-site impacts.

Specific Criteria Applicable to Reducing Odor Emissions

IN FOTG Standard (633) Waste Utilization shall be used to reduce the amount of odor during manure spreading operations.

IN FOTG Standard (380) Windbreak – Shelterbelt Establishment shall be sited to minimize the movement of odor away from an odor-producing source to a sensitive area. Tree varieties and placement for the windbreak shall be managed to maximize odor interception and dilution of air, and reduce odor leaving the source.

Specific Criteria Applicable to Reducing Greenhouses Gas Emissions

Management plans to increase carbon sequestration in organic matter and soil and offset CO₂ emissions to the atmosphere shall specify the frequency and

intensity of tillage activities and other carbon-sequestering practices such as crop rotations, cover crops, establishment of permanent vegetation, etc.

Plans to provide renewable energy sources and offset greenhouse gas emissions through biomass removal shall specify the amount and timing of the biomass removal. Sufficient biomass shall be left on the surface to maintain soil quality and to achieve the planned soil loss objective.

Reduction of methane emissions from animal waste storage shall be accomplished using an appropriate anaerobic digester or other approved methane reduction technology.

Nitrogen fertilizers shall be applied to croplands and pastures in a manner which minimizes the loss of nitrous oxide (N₂O) to the air (see IN FOTG Standard (590) Nutrient Management).

Specific Criteria Applicable to Reducing Ozone

Minimize the emissions of nitrogen oxides (NO_x), volatile organic compounds (VOCs), and other ozone precursors from farm equipment, irrigation engines, livestock, and agricultural burning.

Specific Criteria Applicable to Reducing Chemical Drift

Reduce volatile organic compounds from pesticide application by changing formulations and adapting methods of application.

Minimize chemical drift during pesticide applications.

CONSIDERATIONS

Particulate matter. Where appropriate, conservation plans which identify wind erosion controls should evaluate those controls for their PM-10 reductions.

Moving towards a less intensive tillage system (IN FOTG Standards (329, 345, and 346) Residue and Tillage Management) will reduce particulate matter generation and enhance soil carbon sequestration.

Use tillage methods and/or equipment that have been proven to reduce particulate matter generation.

Instead of burning tree-trimming wastes, they can be chipped/shredded and used for composting or as mulch on unpaved roads or other areas that produce particulate emissions.

Irrigation water can be applied to soil surfaces to reduce particulate matter generation.

Mulches, oils, and tree saps can be used on critical areas to help reduce particulate matter generation.

Reduce or limit turning of equipment and vehicles on paved roads to reduce the amount of soil tracked onto roads.

Controlling speed and access on unpaved roads will reduce the generation of particulate matter.

Using cleaner burning fuels, such as natural gas, will reduce the emission of ozone precursors {nitrogen oxides (NO_x) and volatile organic compound (VOCs) from farm engines.

Smoke. Use alternative disposal methods for other combustible materials such as bags, sacks and domestic waste that will be more environmentally beneficial.

Odor. Anaerobic digesters can be constructed for odor control and methane capture.

Consider feed management to reduce odor generation.

Greenhouse gases. Reduce nitrogen losses as N₂O through the use of fertilizer type, amount and application timing and method, as described in conservation practice IN FOTG Standard (590) Nutrient Management.

PLANS AND SPECIFICATIONS

Plans for atmospheric resource quality management that are elements of a more comprehensive conservation plan shall recognize other requirements of the conservation plan and be compatible with them.

Plans and specifications for Atmospheric Resource Quality Management shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Plans and specifications will be listed separately to address particulate matter, smoke, odor and, greenhouse gas management. Plan narratives or job sheets will address identified atmospheric resource concerns to meet quality and condition criteria.

The location of all supporting practices used will be shown on the drawings or conservation plan map.

OPERATION AND MAINTENANCE

The conservation plan should include operation and maintenance items needed to continue treatment of atmospheric resource related concerns.

Records shall be kept in accordance with associated practices and Federal, state and local laws.

REFERENCES

USDA, NRCS. Air Quality Definitions and Acronyms:

http://www.airquality.nrcs.usda.gov/Documents/files/AirQuality_Definitions-Acronyms.pdf

USDA, NRCS. 03/08. Air Quality and Atmospheric Change Fact Sheets:

- Air Quality and Livestock Operations
- Greenhouse Gases and Livestock Operations
- Odors and Livestock Operations
- Particulate Matter and Livestock Operations
- Ozone Precursors and Livestock Operations